Debt Affordability Study

February

2009

This study provides data on the state's historical, current and projected debt positions and develops financial data from which policymakers can review various debt strategies by use of the study's Debt Capacity Model.

Texas Bond Review Board

Debt Affordability Study
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Executive Summary

The 80th Legislature (2007) passed Senate Bill 1332 that amended the Texas Government Code Chapter 1231 to require the Texas Bond Review Board in consultation with the Legislative Budget Board to prepare annually the state's Debt Affordability Study (DAS).

The DAS provides data on the state's historical, current and projected levels of not self-supporting debt. Debt service for not self-supporting debt depends solely on legislative appropriations from the state's general revenue fund and thus draws upon the same sources used to finance the operation of state government. The study's Debt Capacity Model (DCM) provides financial data from which policymakers can review the impact of various strategies for not self-supporting debt to determine acceptable levels of annual debt service and thus prioritize the use of available revenues to meet the highest priority needs.

With a series of five ratio calculations the DCM assesses the impact on general revenue of the state's annual debt-service requirements for current and projected levels of not self-supporting debt over the next five years. Credit rating agencies examine variations of these debt capacity measures to assess the state's debt burden, a key factor affecting the state's credit rating and thus capacity for debt issuance.

Overview of Current State Debt

The state uses long-term debt financing for a variety of projects and program areas. At the end of FY2008, Texas had $31.25 billion in total debt outstanding. Of this amount $2.85 billion (9.1%) consisted of not self-supporting debt while $28.40 billion (90.9%) consisted of self-supporting debt. The state's total debt outstanding has increased from $11.79 billion in FY1998 to the current $31.25 billion as of August 31, 2008.

At the end of FY2008, the Constitutional Debt Limit (CDL) calculation was 1.30 percent for outstanding debt and 4.09 percent for outstanding and authorized but unissued debt. The Texas Constitution prohibits the legislature from authorizing additional state debt if the annual debt service in any fiscal year on state debt payable from the General Revenue Fund exceeds 5 percent of the average of unrestricted general revenue from the preceding three fiscal years. The Texas Constitution also stipulates that state debt payable from the General Revenue Fund does not include debt that, although backed by the full faith and credit of the state, is reasonably expected to be paid from other revenue sources and is not expected to create a general revenue draw. Please note that the 5 ratios calculated in the DCM are not the same as the Constitutional Debt Limit.

When compared to the nation's ten most populous states, Texas remains below the median for four key debt-burden measures calculated by Moody's. It is important to note that states with higher state debt levels may have lower local debt levels and vice-versa. In FY2006 local debt accounted for approximately 85 percent of Texas' total debt burden. (Local debt includes debt issued by cities, counties, school, hospital and special districts.) Among the nation's ten most populous states, Texas ranks 2nd in population, 10th in state debt per capita but 2nd in local debt per capita with an overall rank of 5th for total state and local debt per capita. See Chapter 4 for a discussion of how Texas compares on state and local debt.

Recent Changes in the Constitutional Debt Limit and the Five DCM Ratios

The 80th Legislature passed and the general public authorized more than $9.75 billion in new general obligation debt. Of this amount, $9.25 billion may be considered not self-supporting including $1 billion to finance projects for state agencies, $3 billion to finance cancer center research and $5 billion for transportation projects. The impact of this newly authorized debt on the state's Constitutional Debt Limit is illustrated in *Figure 1*.

Figure 1
Constitutional Debt Limit Including Newly Authorized Debt

Constitutional Debt Limit	Outstanding Debt	Outstanding and Authorized Debt
As of August 31, 2007	1.32%	1.82%
As of August 31, 2008	1.30%	4.09%
As of August 31, 2008 (excluding $5 billion for transportation)	1.30%	2.86%

SOURCE: Texas Bond Review Board.

Based on existing and new authorizations, approximately $7.06 billion in new, not self-supporting debt is expected to be issued between fiscal years 2008 and 2012. The impact of these issuances on each DCM ratio is depicted in *Figures 1 thru 5*. Furthermore, an additional $3.50 billion is planned to be issued from 2013 thru 2017.

Ratio 1: Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue

Statute requires the DAS to include a target and cap for Ratio 1, both of which can be adjusted as requested or as directed by the legislature. Since Texas has historically appropriated less than 2 percent of its unrestricted general revenue for not self-supporting debt service, this study utilizes 2 percent as the target ratio and 3 percent for the maximum (or cap) ratio in its analysis of the key ratio, Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue (Ratio 1). *Figure 2* compares Ratio 1 for fiscal years 2009-2013 as computed for the previous edition of the DAS in January 2008 and for the current edition of February 2009.

Figure 2
Ratio 1: Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue as Computed in January 2008 and February 2009

	2009	2010	2011	2012	2013
January 2008	1.33%	1.57%	1.91%	2.18%	2.33%
February 2009	1.58%	1.98%	2.47%	2.64%	2.74%

SOURCE: Legislative Budget Board and Texas Bond Review Board.

Using the 2 percent target guideline, approximately $152.7 million would be available for additional debt service in fiscal year 2009 and up to $512.9 million would be available at the 3 percent cap level. While this debt-service capacity is currently below the target guideline, when projected issuances are added to outstanding and authorized but unissued debt, the 2 percent target will be exceeded by 2011.

Ratio 2: Not Self-Supporting Debt Service as a Percentage of Budgeted General Revenue
This ratio is similar to Ratio 1 but is more restrictive because the pool of available general revenue in this ratio is limited to budgeted general revenue, a figure that is less than unrestricted general revenue available for debt service. Historically, Texas' not self-supporting debt-service commitment has been less than 1.5 percent of budgeted general revenue. *Figure 3* shows that debt service as a percentage of budgeted general revenue now exceeds 1.5 percent in fiscal years 2010 and 2011 as a result of the new bond authorizations passed by the 80th Legislature and approved by voters in November 2007.

Figure 3
Ratio 2: Not Self-Supporting Debt Service as a Percentage of Budgeted General Revenue as Computed in January 2008 and February 2009

	2009	2010	2011
January 2008	1.14%	1.39%	1.39%
February 2009	1.42%	1.74%	2.08%

SOURCE: Legislative Budget Board and Texas Bond Review Board.

Ratio 3: Not Self-Supporting Debt as a Percentage of Personal Income
Ratio 3 is a strong indicator of a governmental borrower's ability to repay debt obligations by transforming personal income into governmental revenues through taxation. This ratio plays an important role in determining the state's credit ratings. (Standard and Poor's considers up to 3 percent to be a low debt burden for this ratio.) *Figure 4* presents not self-supporting debt as a percentage of personal income.

Figure 4
Ratio 3: Not Self-Supporting Debt as a Percentage of Personal Income as Computed in January 2008 and February 2009

	2009	2010	2011	2012	2013
January 2008	0.37%	0.45%	0.55%	0.65%	0.69%
February 2009	0.35%	0.57%	0.71%	0.74%	0.76%

SOURCE: Legislative Budget Board and Texas Bond Review Board.

Ratio 4: Not Self-Supporting Debt per Capita
Ratio 4 measures the dollar amount of not self-supporting debt per person in Texas. Like Ratio 3, Ratio 4 plays an important role in determining the state's credit rating. When comparing Texas to a peer group of the ten most populous states, Moody's reports that Texas has the lowest debt per capita (Standard and Poor's considers $1,000 or less per capital to be a low debt burden). *Figure 5* presents not self-supporting debt per capita.

Figure 5
Ratio 4: Not Self-Supporting Debt per Capita as Computed in January 2008 and February 2009

	2009	2010	2011	2012	2013
January 2008	$ 136.48	$ 170.32	$ 219.53	$ 270.13	$ 299.38
February 2009	$ 134.23	$ 227.28	$ 293.16	$ 321.09	$ 343.15

SOURCE: Legislative Budget Board and Texas Bond Review Board.

Ratio 5: Rate of Debt Retirement

This percentage highlights the rate at which the state's not self-supporting debt is retired. A high percentage indicates rapid debt retirement. Rating agencies consider a retirement rate of 50 percent principal at 10 years to be the average. As shown in *Figure 6*, Texas' rate of retirement for not self-supporting debt is higher than the average because most of such debt is issued by the Texas Public Finance Authority that structures debt service on not self-supporting debt with level principal payments.

Figure 6
Ratio 5: Rate of Debt Retirement as Computed in January 2008 and February 2009

	Not Self-Supporting	Self-Supporting
January 2008	71.9%	35.1%
February 2009	71.7%	35.5%

SOURCE: Legislative Budget Board and Texas Bond Review Board.

Other Considerations

To have a full perspective on general revenue debt-service expenditures, policymakers may wish to review the impact on Ratio 1 of funding special commitments such as tuition revenue bonds, the Instructional Facilities Allotment and the Existing Debt Allotment discussed in Chapter 3 and Appendix F.

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Chapter 1 - Introduction

The 80th Legislature (2007) passed Senate Bill 1332 that amended the Texas Government Code Chapter 1231 to require the Texas Bond Review Board in consultation with the Legislative Budget Board to prepare annually the state's Debt Affordability Study (DAS).

The DAS provides data on the state's historical, current and projected levels of not self-supporting debt. Debt service for not self-supporting debt depends solely on legislative appropriations from the state's general revenue fund and thus draws upon the same sources otherwise used to finance the operation of state government. The DAS' Debt Capacity Model (DCM) provides financial data from which policymakers can review the impact of various strategies for not self-supporting debt to determine acceptable levels of annual debt service and thus prioritize the state's available revenues to meet the highest priority needs.

By use of a series of five ratio calculations, the DCM assesses the impact on general revenue of the state's annual debt-service requirements for current and projected levels of not self-supporting debt over the next five years. Credit rating agencies examine variations of these debt capacity measures to assess the state's debt burden, a key factor affecting the state's credit rating and thus capacity for debt issuance.

Defining Debt Affordability

As defined in this study, debt affordability is the determination of the state's capacity for additional not self-supporting debt, i.e., debt that has a direct impact on state finances because it must be funded from general revenues. Debt affordability provides an integrated approach that helps manage and prioritize state debt by analyzing historical, current and projected uses of not self-supporting debt in conjunction with the financial and economic resources of the state and its long-term capital needs.

Benefits and Goals of Using a Debt Affordability Study

Other states have used a debt affordability study to assist in managing their overall debt and in making informed financing decisions to fund long-term capital and program needs. Legislators must strike a balance between prioritizing those needs and using available revenues for debt service to fund them. A debt affordability approach assists in maximizing resources for debt financing. The major benefits of using a debt affordability study include:

- Provides an overview of the state's debt position;
- Matches available debt funding with prioritized capital needs by providing a tool to integrate debt management in the capital planning process;
- Establishes a systematic approach to debt management;
- Helps centralize debt management and authorization decisions;
- Helps assess the impact of individual or a group of new debt authorizations on the state's debt burden;
- Evaluates the effect of fluctuating revenues on the state's ability to meet existing debt-service obligations and to issue new debt;
- Ensures sufficient cash balances and reserves;
- Provides important data to the credit rating agencies; and

- Helps achieve the lowest cost financing for taxpayers.

Debt Management in Texas

Texas has a decentralized approach to debt management. When the legislature considers the issuance of new debt, the authorizing legislation is typically considered by legislative finance committees. The legislature usually appropriates debt-service payments for existing debt in the General Appropriations Act that is organized by article based on governmental function. Subsequently, this process leads policymakers to review, develop and approve proposed budget requests by agency or program. (More information on this process is available in Appendix B.)

The Constitutional Debt Limit and Projected Debt Issuance

Article III, Section 49-j of the Texas Constitution prohibits the legislature from authorizing additional state debt if the annual debt service in any fiscal year on state debt payable from general revenue exceeds five percent of the average of unrestricted general revenue from the preceding three fiscal years. The 80th Legislature authorized more than $9.75 billion in new general obligation (GO) debt that was approved by the voters in the November 2007 general election. Of this amount, $9.25 billion may be considered not self-supporting with debt service to be paid from general revenue. As a result the Constitutional Debt Limit (CDL) percentage for FY2008 increased to 4.09 as compared to 1.82 calculated for FY2007.

It is important to note that the CDL is different from the DCM. The CDL is only one measure of Texas' debt burden while the DAS with its DCM is a more practical tool that shows a broader picture of the state's debt burden. (See Chapter 3 and Appendix H for more discussion regarding the CDL.)

Chapter 2 - Current Debt Position of the State

Debt Types
Debt issued by the state of Texas falls into one of two major categories:

- **General Obligation (GO) debt** – GO debt is legally secured by a constitutional pledge of the first monies coming into the state treasury that are not constitutionally dedicated for another purpose. GO debt must be passed by a 2/3 vote of both houses of the legislature and by a majority of the voters.
- **Non-General Obligation (Revenue) debt** - Revenue debt is legally secured by a specific revenue source and does not require voter approval.

State debt is further classified based on its impact on the state's General Revenue Fund:

- **Self-Supporting debt** is designed to be repaid with revenues other than state general revenue. Self-supporting debt can be either general obligation debt or revenue debt.
- **Not Self-Supporting debt** is intended to be repaid with state general revenue. Not self-supporting debt can be either general obligation debt or revenue debt.

Figure 2.1 illustrates the classifications for state debt and provides program examples for each type.

Figure 2.1
Debt Type and Program Examples

Debt Type	General Revenue Impact	Bond Program
General Obligation	Not Self-Supporting	Water Development Bonds - State Participation Higher Education Constitutional Bonds
General Obligation	Self-Supporting	Mobility Fund Bonds Veterans' Land and Housing Bonds
Revenue	Not Self-Supporting	Texas Military Facilities Commission Bonds Parks and Wildlife Improvement Bonds
Revenue	Self-Supporting	Permanent University Fund (PUF) Texas State Affordable Housing Corporation Bonds

SOURCE: Texas Bond Review Board.

State Debt Currently Outstanding
Figure 2.2 provides detail for the state's total debt outstanding at August 31, 2008.

Figure 2.2
Current Debt Outstanding

Debt Types	Self-Supporting	Not Self-Supporting	Total
General Obligation	$8,438,645,000	$2,338,733,000	$10,777,378,000
Revenue	$19,967,125,000	$509,360,000	$20,476,485,000
Total	$28,405,770,000	$2,848,133,000	$31,253,863,000

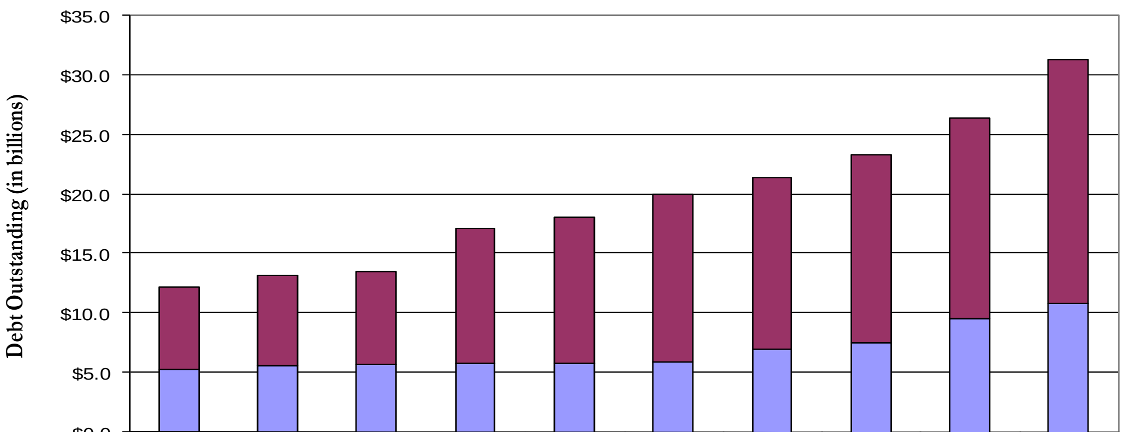
SOURCE: Texas Bond Review Board.

Growth in Unrestricted General Revenue Supports Growth in Total Debt Outstanding

The state's Unrestricted General Revenue increased from $23.8 billion in FY1999 to $36.9 in FY2008, an increase of 55% over the 10-year period (*See Figure 2.8 under* **Debt-Service Commitments**). Over the same 10-year period, the state's total debt outstanding increased from $12.17 billion in FY1999 to $31.25 billion in FY2008, an increase of 157 percent.

From FY1999 to FY2008, GO debt doubled from $5.30 billion to $10.78 billion, an increase of 104 percent most of which occurred in the last four fiscal years. During the same 10-year period, revenue debt increased from $6.88 billion to $20.48 billion, an increase of 197 percent. *Figure 2.3* illustrates Texas' debt outstanding during the past 10-year period by debt type.

Figure 2.3
Texas' Debt Outstanding: Revenue and General Obligation, Fiscal Years 1999 to 2008

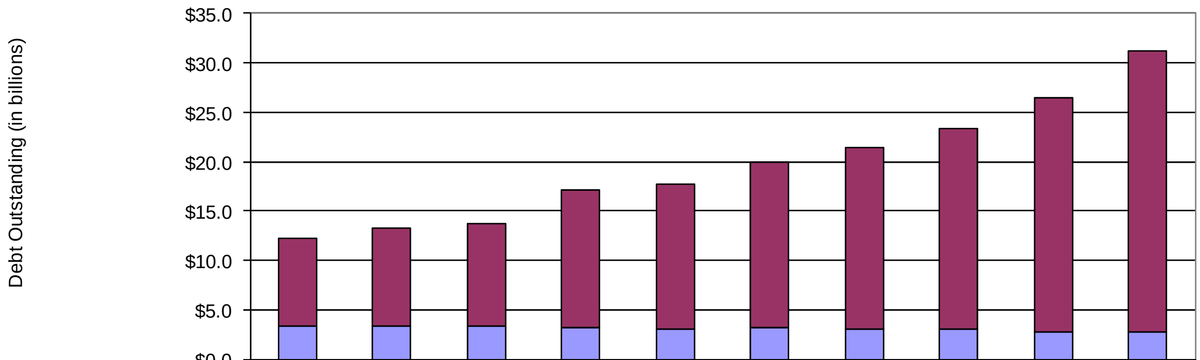


	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
REV	$6.9	$7.6	$7.8	$11.3	$12.3	$14.1	$14.4	$15.8	$16.8	$20.5
GO	$5.3	$5.6	$5.7	$5.8	$5.8	$5.9	$7.0	$7.5	$9.6	$10.8

SOURCE: Texas Bond Review Board.

As shown in *Figure 2.4*, self-supporting debt which is repaid with program revenues increased by 223 percent from $8.80 billion in FY1999 to $28.41 billion in FY2008. During the same time period, not self-supporting debt which is typically repaid with general revenue, actually *decreased* by 16 percent from $3.40 billion in FY1999 to $2.85 billion in FY2008. However, given the new authorizations approved in the November 2007 general election plus the planned issuances in the next fiscal year, not self-supporting debt is likely to increase in the upcoming fiscal years.

Figure 2.4
Texas' Debt Outstanding: Self-Supporting and Not Self-Supporting, Fiscal Years 1999 to 2008



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Self-supporting	$8.8	$9.8	$10.4	$13.9	$14.6	$16.8	$18.3	$20.4	$23.6	$28.4
NSS Debt Out	$3.4	$3.4	$3.3	$3.2	$3.1	$3.2	$3.1	$3.0	$2.8	$2.8

SOURCE: Texas Bond Review Board.

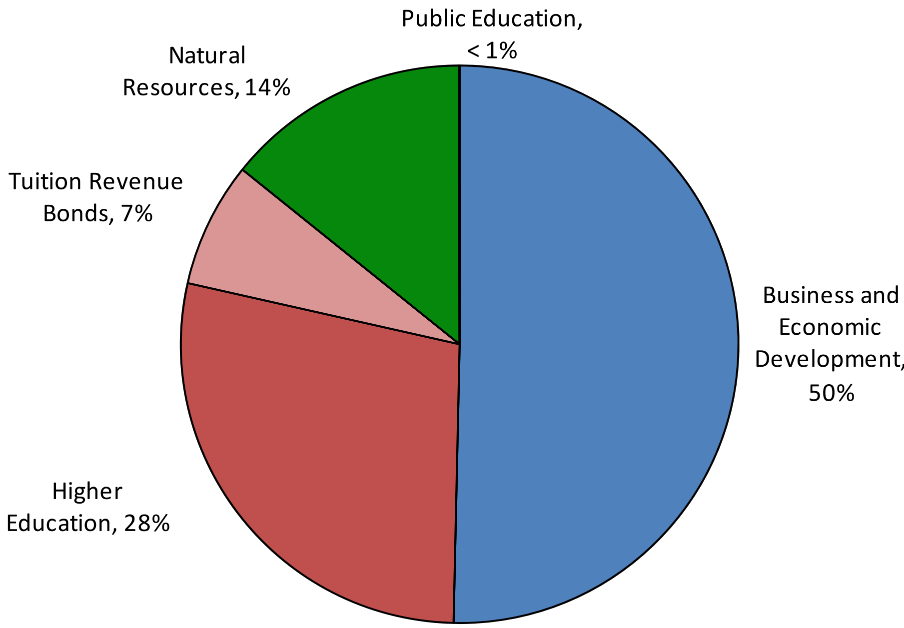
Self-Supporting Debt

From fiscal years 1999 to 2008, self-supporting debt increased by $19.62 billion or 223 percent. At fiscal year-end 2008, the state had a total of $28.41 billion in self-supporting debt outstanding. Such debt is repaid with program revenue and has increased as a percent of total debt outstanding from 72 percent in FY1999 to 91 percent in FY2008. Self-supporting debt includes GO bonds such as Veterans' Land and Housing Bonds and revenue bonds such as Permanent University Fund Bonds.

From fiscal years 1999 to 2008, revenue debt averaged 73 percent of all self-supporting debt and GO debt averaged 27 percent. Consistent with these historical averages, total self-supporting debt outstanding at fiscal year-end 2008 was comprised of 70 percent revenue debt and 30 percent GO debt.

A variety of programs and areas use self-supporting debt as shown in *Figure 2.5*. Of the $28.41 billion self-supporting debt outstanding at the end of fiscal year 2008, 50 percent was issued for business and economic development projects; 28 percent was issued for higher education and an additional 7 percent for tuition revenue bonds; 14 percent was issued for natural resources and less than 1 percent was issued for public education.

Figure 2.5
Self-Supporting Debt Outstanding, Fiscal Year 2008



SOURCE: Texas Bond Review Board.

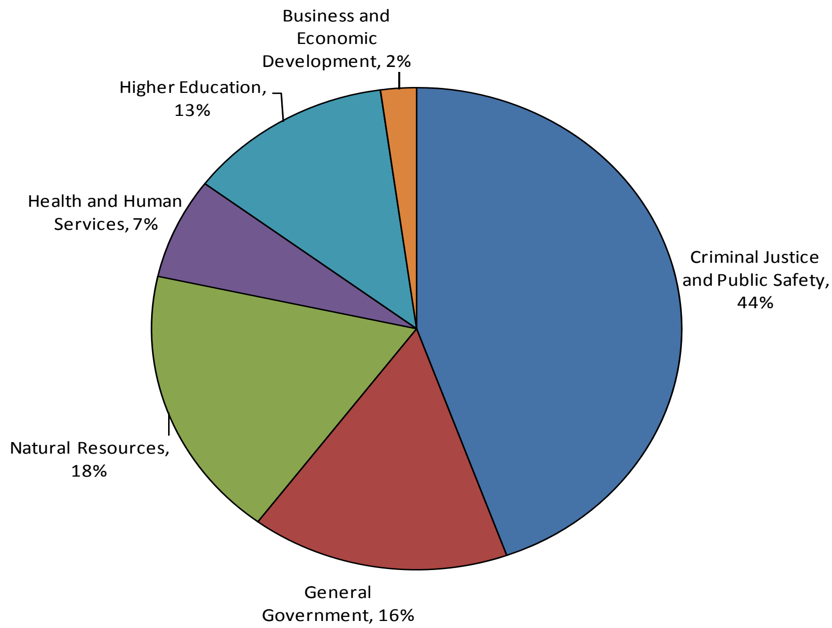
The amount for higher education shown in *Figure 2.5* reflects $8.00 billion of university revenue bonds and an additional $2.06 billion in tuition revenue bonds. All college and university revenue bonds are equally secured by, and payable from a pledge of all or a portion of certain revenue funds of the applicable system or institution of higher education as defined by Chapter 55, Texas Education Code. Historically, the state has appropriated funds to the schools in an amount equal to all or a portion of the debt service for tuition revenue bonds.

Not Self-Supporting Debt

Not self-supporting debt is typically repaid from the state's General Revenue Fund and currently comprises 9 percent of the state's total debt outstanding. Not self-supporting debt includes both GO and revenue debt. Over the decade ending in FY2008, not self-supporting debt outstanding declined to $2.85 billion, a decrease of $536.7 million or 16 percent. From FY1999 to FY2008, GO debt has comprised 79 percent to 82 percent of not self-supporting debt, and during the same period revenue debt has comprised 21 to 18 percent of not self-supporting debt. At fiscal year-end 2008, the composition was 82 percent GO debt and 18 percent revenue debt.

Texas Public Finance Authority issues most of the state's not self-supporting debt. This debt is used to finance projects in a variety of programs and areas. Of the $2.85 billion debt outstanding at the end of fiscal year 2008, 44 percent was issued for criminal justice and public safety; 16 percent was issued for general government; 18 percent was issued for natural resources and 7 percent was issued for health and human services. The remaining was used for higher education (13 percent) and business and economic development (2 percent). Public education institutions and regulatory agencies did not account for any of the not self-supporting debt issued in FY2008.

Figure 2.6
Not Self-Supporting Debt Outstanding, Fiscal Year 2008



SOURCE: Texas Bond Review Board.

Volume of Debt Issued

The volume of debt financing for capital projects and other critical needs has increased over the last decade. The average annual issuance of both new-money bonds and refunding bonds from FY1999 to FY2008 has been $3.44 billion. During FY2008, the state issued $4.60 billion in new-money bonds and $1.54 billion in refunding bonds for a total of $6.14 billion, an increase of 4.6 percent from FY2007 when $5.87 billion was issued. The current estimate for issuances for FY2009 totals $9.2 billion with increases largely attributable to capital projects for the Texas Public Finance Authority, Texas Department of Transportation, Texas Water Development Board and revenue financings for institutions of higher education including tuition revenue bonds.

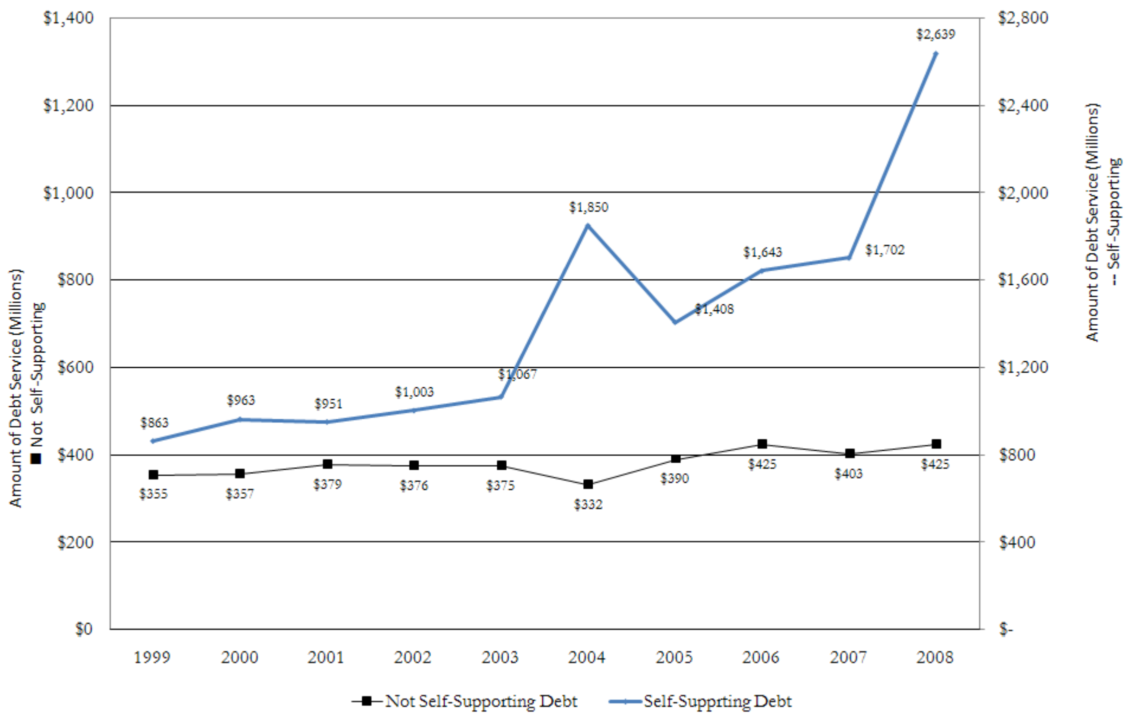
With the credit market problems that began in the latter half of calendar 2008, bond issuances dramatically decreased during the first quarter of fiscal year 2009. Consistent with the market's flight to quality, strong underlying ratings became a key factor necessary for a successful bond sale. While the initial estimate for all issuances for FY2009 is $9.2 billion, the BRB approved $5.3 billion for the first quarter of FY2009, but actual state debt issuances totaled only $74.2 million.

Debt-Service Commitments

The state's total annual debt-service payments for both not self-supporting and self-supporting debt have increased 147 percent over the last decade, rising from $1.24 billion in FY1999 to $3.06 billion in FY2008. While not self-supporting debt service increased by 20 percent from $354.8 million in FY1999 to $425.1 million in FY2008, self-supporting debt service increased by 197 percent from $890.0 million to $2.64 billion over the same 10-year period.

Figure 2.7 indicates the historical annual debt service for not self-supporting and self-supporting debt for fiscal years 1999 thru 2008. (Note the scale on the left is for not self-supporting debt while the scale on the right is for self-supporting debt.) The peak in self-supporting debt service in 2004 is primarily attributable to the University of Texas' refunding of over $400 million of Permanent University Fund Flexible Rate Notes, and the peak in 2008 is attributable to the Department of Transportation's refunding of $775 million in Bond Anticipation Notes with long-term TIFIA bonds on June 1, 2008. The dip in not self-supporting debt in 2004 is attributable to the Texas Public Finance Authority's restructuring of approximately $48 million in GO debt service to later fiscal periods in response to fiscal constraints and decreased debt appropriations by the 78th Legislature.

Figure 2.7
Historical Annual Debt Service for Fiscal Years 1999 to 2008

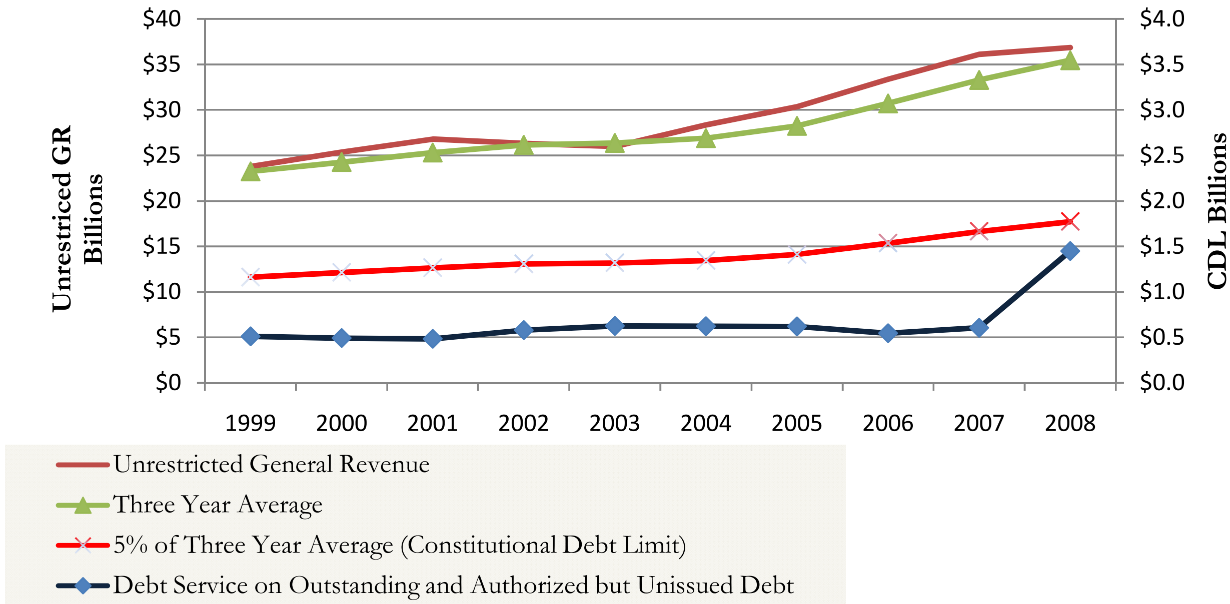


SOURCE: Texas Bond Review Board.

The two curves at the top of *Figure 2.8* plot the state's Unrestricted General Revenue (UGR) (brown curve) and the 3-year moving average for UGR (green curve) as required by the Constitution to calculate the Constitutional Debt Limit (CDL). (Note the scale for those curves is on the left side of the graph.)

The red curve at the bottom of *Figure 2.8* plots the maximum amount of UGR available for debt service under the CDL, i.e., five percent of the moving average of the UGR. The blue curve plots debt service for outstanding and authorized but unissued not self-supporting debt. (Note the scale for those curves is on the right side of the graph.) The white space between the red and blue curves represents available but unused debt-service capacity under the CDL.

Figure 2.8
Unrestricted General Revenue and Constitutional Debt Limit for Fiscal Years 1999 to 2008



SOURCE: Texas Bond Review Board.

During the 10-year period from FY1999 to FY2008, UGR increased by 55 percent from $23.78 billion to $36.87 billion, and the maximum amount of UGR available for debt service under the CDL increased by 184 percent from $511.3 million in FY1999 to $1.45 billion in FY2008. The change in slope of the Debt Service on Outstanding and Authorized but Unissued Debt curve for 2008 results from increased debt service required for the authorized but unissued not self-supporting debt approved by the voters in the November 2007 general election.

Rate of Debt Retirement

Credit rating agencies use the rate of principal retirement for not self-supporting debt as a measure of the state's ability to create new debt capacity, i.e., faster debt retirement provides incremental debt capacity in future years. The rating agencies have benchmarked the rate of debt retirement at an average of 50 percent in 10 years. Nearly 72 percent of the state's not self-supporting debt will be retired in 10 years, but only about 36 percent of the state's self-supporting debt outstanding will be retired in 10 years. The rate of debt retirement is calculated as Ratio 5 in the DCM. (Refer to the Chapter 3 for more details.)

State Credit Ratings

The three major rating agencies are Moody's Investors Service, Standard & Poor's and Fitch Ratings. Because ratings from these agencies provide investors with a measure of an issuer's overall financial soundness and ability to repay its debt, they have a direct bearing on the interest rate the issuer will pay on debt issuances. Higher credit ratings result in lower financing costs. Ratings for the state's general obligation debt are the most important because GO debt pledges the state's full faith and credit to the repayment of the debt and thus provides a benchmark rate for the state's revenue debt.

Rating agencies consider four factors in determining a state's general obligation bond rating: economy, finances, debt and management. Specific items considered are shown in *Figure 2.9*.

Figure 2.9
Factors Affecting State General Obligation Bond Ratings

Economy	Finances
Population trends Wealth Economic diversity Economic stability Infrastructure needs	Change in major general revenue sources Change in permanent or FTE positions Spending per capita General fund balances, rainy day fund balance Accounting and financial reporting practices Tax and revenue administration Investment practices
Debt	**Management**
Pay-down price for net long-term debt Net debt per capita Net debt as a percent of personal income Net debt as a percent of tax valuation Annual debt service on net debt as a percentage of general fund	Coherent structure of governance Constitutional constraints Initiatives and referenda Executive branch controls Mandates to balance budget Fund reserve policies

SOURCE: Texas Bond Review Board.

Currently, Texas' GOs receive the second highest rating from Moody's and Fitch and the third highest rating from Standard & Poor's. (Each rating agency has similar rating scales detailed in Appendix C.) *Figure 2.10* provides the state's current GO bond ratings.

Figure 2.10
State of Texas General Obligation Bond Ratings

Credit Agency	Credit Rating	Outlook
Moody's	Aa1	Stable
Standard and Poor's	AA	Stable
Fitch	AA+	Stable

SOURCE: Fitch Ratings; Moody's; Standard & Poor's.

Texas is generally perceived as a strong credit in the municipal bond market. As such, the state's long-term debt usually trades at interest rates only 5-7 basis points higher than the rates for AAA-rated states. However, credit rating agencies cite a number of reasons why the state's general obligation ratings are unlikely to be upgraded in the near future including: rapid population growth and resulting capital needs for state-financed infrastructure, the state's heavy reliance on the sales tax for general revenue, continuing concerns about school funding and the state's modest reserve levels including the Rainy Day Fund and the ease with which that Fund can be accessed.

Chapter 3 - Debt Ratios in the Debt Capacity Model

An analysis of state debt ratios helps to assess the impact of bond issues on the state's fiscal position. Credit rating agencies use ratios to evaluate the state's debt position and to help determine its credit rating. In developing a mechanism for the state to determine debt affordability or the amount of debt the state can prudently accommodate, the Debt Capacity Model (DCM) computes five key ratios that provide an overall view of Texas' debt burden. Projections of these ratios under varying debt assumptions can provide state leadership with guidelines for decision making for future debt authorization and debt-service appropriations.

Constitutional Debt Limit

Article III, Section 49-j of the Texas Constitution prohibits the legislature from authorizing additional state debt if the annual debt service in any fiscal year on state debt payable from the General Revenue Fund exceeds 5 percent of the average of unrestricted general revenue from the preceding three fiscal years. The Texas Constitution also stipulates that state debt payable from the General Revenue Fund does not include debt that, although backed by the full faith and credit of the state, is reasonably expected to be paid from other revenue sources and is not expected to create a general revenue draw.

As of August 31, 2008, the Constitutional Debt Limit (CDL) was 1.30 percent for outstanding debt and 4.09 percent for outstanding and authorized but unissued debt. Appendix H provides further discussion of the CDL and the historical debt limit calculations from FY1999 through FY2008.

The 80th Legislature authorized more than $9.75 billion in additional general obligation (GO) debt that was approved by the voters at the November 2007 general election. Of the $9.75 billion, $9.25 billion may be not self-supporting. These include HJR 90 (Proposition 15) for $3 billion to finance cancer research, SJR 65 (Proposition 4) for $1 billion to finance capital projects for state agencies, SJR 64 (Proposition 12) to finance $5 billion for transportation projects and SJR 20 (Proposition 16) for $250 million to fund water projects.

The $5 billion for transportation projects (SJR 64 - Proposition 12) will require further legislative action before the debt is issued. Specific details such as the extent to which the debt will be self-supporting will be determined by the legislature. For purposes of this study, this debt was assumed to be not self-supporting. The impact of the new, not self-supporting debt on the CDL is shown in *Figure 3.1*. (It is important to note that the CDL is not the same as Ratio 1 or Ratio 2 from the DCM.)

Figure 3.1
Constitutional Debt Limit Including Newly Authorized Debt

Constitutional Debt Limit	Outstanding Debt	Outstanding and Authorized Debt
As of August 31, 2007	1.32%	1.82%
As of August 31, 2008	1.30%	4.09%
As of August 31, 2008 (excluding $5 billion for transportation)	1.30%	2.86%

Source: Texas Bond Review Board.

Projected Debt Issuance

Based on existing and the new authorizations approved by voters in November 2007 and for which the approximate timing for issuance is known, approximately $7.61 billion in new, not self-supporting debt is expected to be issued between fiscal years 2009 to 2013. These figures include authorized but unissued debt but exclude tuition revenue debt. This debt is comprised of the following items:

- $4.00 billion in GO debt, related to Proposition 12 for transportation projects (TTC);
- $1.59 billion in GO debt for capital projects for certain state agencies (TPFA), including Proposition 4 authorization;
- $1.20 billion in GO debt, related to Proposition 15 for cancer research (TPFA);
- $336.3 million in GO bonds for the Texas Water Development Board WIF Series;
- $237.0 million in GO bonds for the Texas Water Development Board EDAP Series;
- $195.0 million in GO bonds for the Texas Water Development Board State Participation Series.

For purposes of this Debt Affordability Study, the debt issuances listed above are included in each of the ratio analyses. The following possible debt issuances are not included in the ratio analyses:

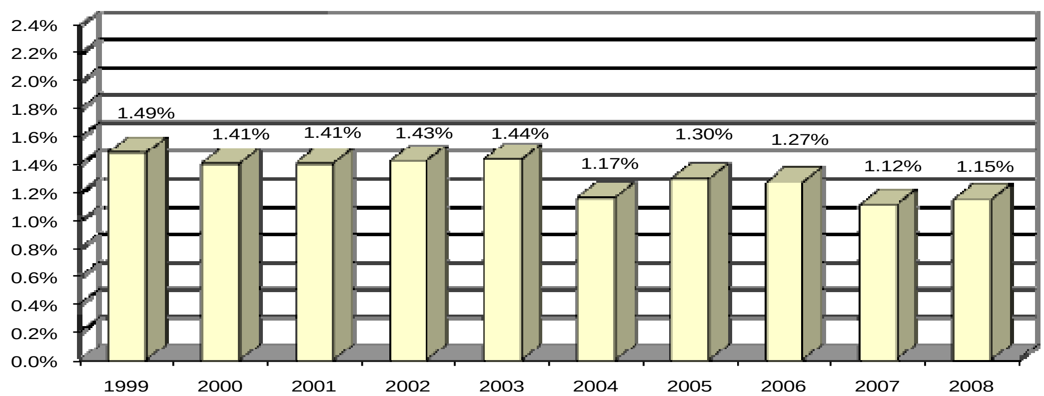
- In May 2008, the Texas Transportation Commission appointed a volunteer committee (2030 Committee) to assess the states infrastructure and transportation needs. The committee divided the needs into four sub-categories: Pavement, Bridges, Urban Mobility and Rural Mobility and Safety. The 2030 Committee identified $313.0 billion as the total investment needed to preserve and enhance the transportation needs of a growing Texas.

Ratio 1: Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue

Ratio 1 is calculated by dividing not self-supporting debt service by unrestricted general revenue. This ratio is a critical determinant of debt capacity because both the ability to generate revenue through taxation and to appropriate funds for debt service are within the state's control. State revenues available to pay debt service are legislatively determined by taxation on such items as sales, business franchises, fuels, crude oil production and natural gas production. The legislature then appropriates required debt service based on the amounts needed for both existing and newly authorized debt.

Target and cap limits for Ratio 1 provide the legislature with realistic benchmarks against which to weigh the fiscal impact of new bond authorizations**.** For the purposes of this report, guideline ratios include a 2 percent target ratio and a 3 percent maximum, or cap. Two percent is used as the target ratio because not self-supporting debt service as a percent of unrestricted general revenue has historically been less than 2 percent as shown in *Figure 3.2*. (Neither *Figure 3.2* nor Ratio 1 should be confused with the CDL calculation. See Appendix H for further discussion of the CDL.)

Figure 3.2
Historical Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue, Fiscal Years 1999 to 2008



SOURCE: Texas Bond Review Board.

Figure 3.3 shows that the required annual debt-service amounts on authorized and issued, authorized and unissued and projected not self-supporting debt from fiscal years 2009 to 2013 will increase from $567.7 million to $1.07 billion, respectively. If unrestricted general revenue and debt-service appropriations remain stable, debt service as a percentage of unrestricted general revenue will increase from 1.58 percent in fiscal year 2009 to 2.74 percent in fiscal year 2013.

At the 2 percent target guideline, approximately $152.7 million would be available for additional debt service for fiscal year 2009 and up to $512.9 million would be available at the 3 percent cap.

Figure 3.3
Ratio 1: Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue, Fiscal Years 2009 to 2013

Fiscal Year	2009	2010	2011	2012	2013
Projected Unrestricted General Revenue	$ 35,066,160,705	$ 35,711,929,034	$ 37,615,301,765	$ 39,123,924,417	$ 40,786,123,461
Not Self-Supporting					
Authorized and Issued Debt	$ 481,351,418	$ 407,491,302	$ 391,481,415	$ 358,244,206	$ 334,344,697
Authorized and Unissued Debt	$ 82,959,841	$ 205,076,642	$ 347,687,772	$ 476,376,793	$ 585,334,753
Projected Debt	$ 3,388,125	$ 96,868,231	$ 153,825,706	$ 154,758,959	$ 153,114,717
Total Debt Service	$ 567,699,384	$ 709,436,175	$ 892,994,893	$ 989,379,958	$ 1,072,794,167
Debt Service as a Percentage of Unrestricted General Revenue					
Authorized and Issued Debt	1.34%	1.14%	1.08%	0.96%	0.85%
plus Authorized and Unissued Debt	1.57%	1.71%	2.05%	2.23%	2.35%
plus Projected	1.58%	1.98%	2.47%	2.64%	2.74%
Additional Debt-Service Capacity					
Target (2.0%)	$ 152,714,941	$ 8,192,618	$ (170,372,283)	$ (239,705,590)	$ (289,291,836)
Cap (3.0%)	$ 512,922,104	$ 367,007,015	$ 190,939,022	$ 135,131,594	$ 102,459,330

SOURCE: Texas Bond Review Board.

It is important to note that *Figure 3.3* only considers the projected debt-service ratios for not self-supporting debt for which the state's general revenue is required for repayment. *Figure 3.4* shows the impact on Ratio 1 of the use of general revenue special debt commitments such as tuition revenue bonds (TRBs) for higher education and the Existing Debt Allotment (EDA) and Instructional Facilities Allotment (IFA) for public education.

Figure 3.4
Impact of Special Debt Commitments on Ratio 1, Fiscal Years 2009 to 2013

Scenario	2009	2010	2011	2012	2013
Debt Service					
Annual Debt Service	$ 567,699,384	$ 709,436,175	$ 892,994,893	$ 989,379,958	$ 1,072,794,167
with Tuition Revenue Bonds (TRBs)	$ 914,266,077	$ 1,030,446,173	$ 1,211,974,514	$ 1,340,176,605	$ 1,423,856,523
with TRBs and all special debt commitments	$ 1,589,473,162	$ 1,634,381,488	$ 1,821,682,235	$ 1,960,882,505	$ 2,034,070,972
Debt Service as a Percent of Unrestricted Revenues					
Annual Debt Service	1.58%	1.98%	2.47%	2.64%	2.74%
with Tuition Revenue Bonds (TRBs)	2.63%	2.92%	3.35%	3.58%	3.64%
with TRBs and all special debt commitments	4.41%	4.56%	5.04%	5.23%	5.19%
Additional Debt-Service Capacity					
Target (2.0%)					
Not Self-Supporting Debt	$ 152,714,941	$ 8,192,618	$ (170,372,283)	$ (239,705,590)	$ (289,291,836)
with Tuition Revenue Bonds (TRBs)	$ (217,649,326)	$ (325,194,227)	$ (489,351,904)	$ (590,502,237)	$ (640,354,192)
with TRBs and all special debt commitments	$ (869,058,837)	$ (916,752,695)	$ (1,099,059,625)	$ (1,211,208,137)	$ (1,250,568,641)
Cap (3.0%)					
Not Self-Supporting Debt	$ 512,922,104	$ 367,007,015	$ 190,939,022	$ 135,131,594	$ 102,459,330
with Tuition Revenue Bonds (TRBs)	$ 130,659,050	$ 27,431,746	$ (128,040,599)	$ (215,665,053)	$ (248,603,026)
with TRBs and all special debt commitments	$ (508,851,674)	$ (557,938,298)	$ (737,748,320)	$ (836,370,953)	$ (858,817,475)

SOURCE: Texas Bond Review Board.

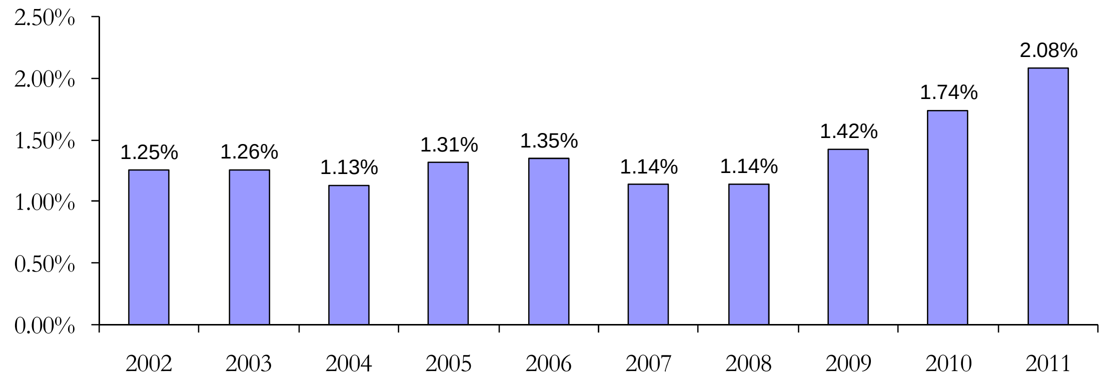
Although the special debt commitments do not count against the Constitutional Debt Limit, they are paid from general revenue and therefore affect the state's financial flexibility to meet other needs. For not self-supporting debt only, Ratio 1 equals 1.58 percent in fiscal year 2009. The ratio increases to 2.63 percent with the addition of tuition revenue bonds, and with the inclusion of all special debt commitments (TRBs, EDA, and IFA), Ratio 1 for FY2009 increases to 4.41 percent. (See Appendix F for more information on the impact of special debt commitments.)

Ratio 2: Not Self-Supporting Debt Service as a Percentage of Budgeted General Revenue

This ratio measures the percentage of the state's general revenue budgeted for debt service. This ratio is similar to Ratio 1 but is more restrictive because the pool of available general revenue in this ratio is limited to budgeted general revenue which is less than all unrestricted general revenue available for debt service. To the extent that the percentage of the budgeted general revenue reserved for debt service increases, the state has less financial flexibility for responding to economic slowdowns, unexpected expenditures or changes in budget priorities for operational or capital expenditures. Historically, Texas' not self-supporting debt-service commitment has been less than 2 percent of expended general revenues as shown in *Figure 3.5*.

Texas expended an average of 1.23 percent of budgeted general revenue for not self-supporting debt service in fiscal years 2002-2008. In fiscal year 2009 this ratio is expected to be 1.42 percent, and based on the amounts in the 2010-11 General Appropriations Bill, the current biennium projections are 1.74 percent for fiscal year 2010 and 2.08 percent for fiscal year 2011 including debt service for authorized and issued, authorized and unissued as well as projected debt (*Figure 3.5*).

Figure 3.5
Ratio 2: Not Self-Supporting Debt Service as a Percentage of Budgeted General Revenue, Fiscal Years 2002 to 2011

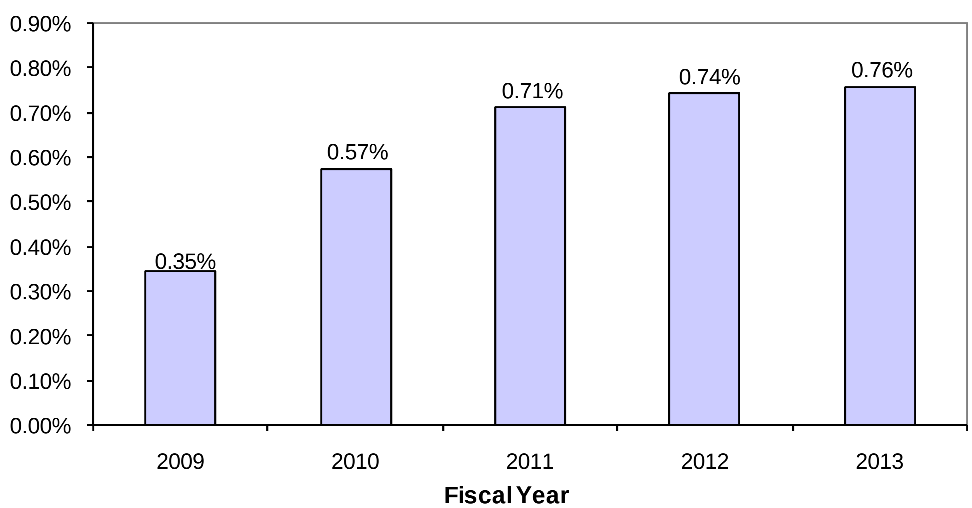


SOURCE: Texas Bond Review Board.

Ratio 3: Not Self-Supporting Debt as a Percentage of Personal Income
Ratio 3 is not self-supporting debt divided by total personal income and is a strong indicator of a governmental borrower's ability to repay debt obligations by transforming personal income into governmental revenues through taxation. This ratio plays an important role in determining the state's credit ratings.

Figure 3.6 shows that Texas' ratio projections range from 0.35 percent in 2009 to 0.76 percent for FY2013. Standard and Poor's considers less than 3 percent for this ratio to be a low debt burden.

Figure 3.6
Ratio 3: Not Self-Supporting Debt as a Percentage of Personal Income, Fiscal Years 2009 to 2013



SOURCE: Texas Bond Review Board.

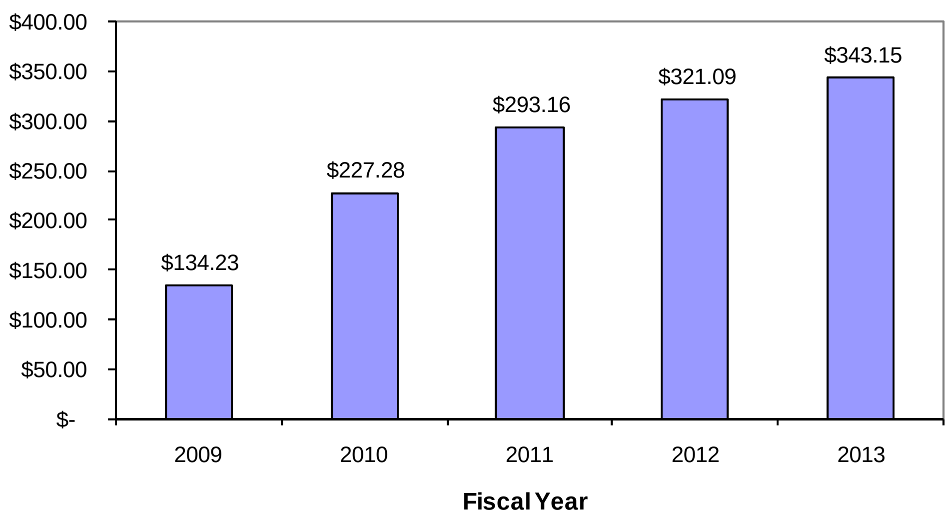
Ratio 4: Not Self-Supporting Debt per Capita

Ratio 4 is the amount of not self-supporting debt divided by the state's population and measures the dollar amount of debt per person. Like Ratio 3, Ratio 4 plays an important role in determining the state's credit rating.

The not self-supporting debt per capita is expected to be $134.23 in fiscal 2009 and is projected to increase to $227.28 and $293.16 in fiscal 2010 and 2011, respectively (*Figure 3.7*). Standard & Poor's considers less than $1,000 of state debt per capita to be low.

Although tax-supported debt per capita and debt as a percent of personal income at the state level are low, it is important to note that Texas' local debt burden is relatively higher than other states. Among the nation's ten most populous states, Texas ranks second in population, tenth in state debt per capita but second in local debt per capita with an overall rank of fifth for total (state and local) debt per capita. Approximately 85 percent of total debt in Texas is held at the local level.

Figure 3.7
Ratio 4: Not Self-Supporting Debt per Capita, Fiscal Years 2009 to 2013



SOURCE: Texas Bond Review Board.

Ratio 5: Rate of Debt Retirement

The rate at which long-term debt is retired measures the extent to which new debt capacity is created for future debt issuance. As stated previously, credit rating agencies review the length of time needed for debt to be retired with the expectation that on average, 25 percent of the principal amount of debt with a 20-year maturity is retired in five years and 50 percent is retired in 10 years.

The focus of this Debt Affordability Study is Texas' not self-supporting debt, 71.7 percent of which will be retired by 2017. This rapid rate of debt retirement occurs primarily because the Texas Public Finance Authority (TPFA), the state agency that issues most of the state's not self-supporting debt, structures debt service for those issuances with level principal payments rather than level debt-service payments. Although annual debt service will be higher in the earlier years for bonds structured with level principal payments, the principal payments are the same throughout the amortization period which results in more rapid principal amortization and lower interest costs than bonds structured with level debt service.

By comparison, a level debt-service payment structure can be easier for budgeting purposes when bond amortization is structured with level debt-service payments for each fiscal period. Level debt service is frequently appropriate for revenue-based financings where project revenues support the debt service such as low-income housing or water utilities. However, level debt service results in a slower repayment of principal in the early years of the debt and thus more interest is paid over the life of the debt than with the level principal amortization structure.

Approximately 35.5 percent of the principal amount of Texas' self-supporting debt is retired in 10 years. The slower rate of retirement for self-supporting debt is due in part to the use of level debt service or other forms of delayed principal repayment as well as the issuance of debt with maturities of 30 years or more to match the useful life of the projects financed such as housing and water development programs.

Chapter 4 - Comparison to Other States

The use of debt affordability studies and debt capacity models is becoming more common, particularly by states with "highest" or "high" credit ratings. Of the seven states that receive triple-A ratings from all three rating agencies, four of them – Georgia, Maryland, North Carolina, and Virginia – use a debt affordability tool. In addition, California, Kentucky, New York, Oregon, Washington and West Virginia use a debt affordability tool. *Figure 4.1* provides a comparison of highly-rated states and those that use debt affordability tools.

Figure 4.1
Comparison of Highly-Rated States and Debt Affordability Usage

State	Debt Affordability Study?	Moody's	Standard & Poor's	Fitch
Delaware	No	Aaa	AAA	AAA
Georgia	Yes	Aaa	AAA	AAA
Maryland	Yes	Aaa	AAA	AAA
Missouri	No	Aaa	AAA	AAA
North Carolina	Yes	Aaa	AAA	AAA
Utah	No	Aaa	AAA	AAA
Virginia	Yes	Aaa	AAA	AAA
Minnesota	Yes	Aa1	AAA	AAA
South Carolina	Yes	Aaa	AA+	AAA
Florida	Yes	Aa1	AAA	AA+
Vermont	No	Aaa	AA+	AA+
Nevada	No	Aa1	AA+	AA+
New Mexico	No	Aa1	AA+	Not Rated
Ohio	Yes	Aa1	AA+	AA+
Tennessee	No	Aa1	AA+	AA+
Texas	Yes	Aa1	AA	AA+

SOURCE: Moody's, Standard & Poor's and Fitch 2008 reports.

Moody's *2008 State Debt Medians* report provides a helpful framework to compare Texas' debt burden with other states. This report annually tracks four key debt measures: 1) net tax-supported debt, 2) gross tax-supported debt, 3) net tax-supported debt per capita and 4) net tax-supported debt as a percentage of personal income. The measure of gross tax-supported debt is intended to capture the extent to which a state has indirectly leveraged its resources, providing a more complete view of debt while net debt is only that debt issued for not self-supporting programs. Moody's cites these debt-burden measures as the most commonly used measurements in determining state bond ratings. (The numbers listed throughout this section for Texas are slightly different from the calculations in the DCM due to timing differences for data available to Moody's at the time its report was created.)

Based on the U. S. Census Bureau, of the nation's 10 most populous states, Texas carries a slightly higher debt than the median on Net Tax-Supported Debt but has a lower debt burden than the median for the other three measures of debt burden (*Figure 4.2)*. For net tax-supported debt, Texas ranks fifth with $11.50 billion, compared to the group median of $11.30 billion. For gross tax-supported debt, Texas ranks sixth with $14.80 billion, compared to the group median of $18.65 billion. For net tax-supported debt per capita and net tax-supported debt as a percentage of personal income, Texas is lower than both its peer group and national medians. For net tax-supported debt per capita, Texas ranks tenth with $481, compared to the group median of $960. For net tax-supported debt as a percentage of 2006 personal income, Texas ranks tenth with 1.4 percent, compared to the group median of 2.9 percent (Please note that in *Figure 4.2* and *Figure 4.4* the higher the ranking, the higher the debt burden).

Figure 4.2
State Debt: Texas Compared to Ten Most Populous States, 2008

State	Population	Moody's Credit Rating	Net Tax-Supported Debt (billions)		Gross Tax-Supported Debt (billions)		Net Tax-Supported Debt per Capita		Net Tax-Supported Debt as a % of 2006 personal income	
California	36,756,666	A1	$61.6	1	68.9	1	$1,685	3	4.3	3
Texas	**24,326,974**	**Aa1**	**11.5**	**5**	**14.8**	**6**	**481**	**10**	**1.4**	**10**
New York	19,490,297	Aa3	53.3	2	53.3	2	2,762	1	6.3	1
Florida	18,328,340	Aa1	18.3	4	22.5	5	1,005	5	2.8	6
Illinois	12,901,563	Aa3	25.5	3	25.8	3	1,985	2	5.2	2
Pennsylvania	12,448,279	Aa2	10.8	7	14.8	7	870	8	2.4	8
Ohio	11,485,910	Aa1	11.1	6	11.1	8	966	4	2.9	5
Michigan	10,003,422	Aa3	7.5	10	22.6	4	748	9	2.2	9
Georgia	9,685,744	Aaa	9.1	8	9.1	9	954	6	3.0	4
North Carolina	9,222,414	Aaa	8.1	9	8.1	10	898	7	2.8	7
		Ten Most Populous Mean	**$21.68**		**$25.10**		**$1,235.40**		**3.3%**	
		Ten Most Populous Median	**$11.30**		**$18.65**		**$960.00**		**2.9%**	
					National Mean		**$1,158**		**3.2%**	
					National Median		**$889**		**2.6%**	

SOURCE: Texas Bond Review Board; Moody's Investors Service 2008; U.S. Census Bureau - July 2008.

For comparison purposes, *Figure 4.3* provides selected tax-supported debt measures for all fifty states. Texas' net tax-supported debt as a percent of 2006 personal income (the latest year for which data are available) is 1.4 percent, fortieth among the states and below the national median and mean of 2.6 percent and 3.2 percent, respectively. With net tax-supported debt per capita at $481, Texas ranked thirty-ninth and below the national mean of $1,158 and median of $889.

Texas local governments had $141.39 billion in debt outstanding as of FY2007 (the latest year for which data are available) which represents a 37.8 percent (or $38.79 billion) increase since FY2003. In recent years, the majority of local debt issued has been used for school facilities and equipment including school buses (42.8 percent), followed by general purpose (18.5 percent) and water-related infrastructure (17.9 percent).

Figure 4.3
Selected Debt Measures by State

State	Moody's Rating	Net Tax-Supported Debt as a % of 2006 Personal Income	Rank	Net Tax-Supported Debt Per Capita	Rank
Hawaii	Aa2	9.9%	1	$3,663	3
Massachusetts	Aa2	9.8%	2	4,529	1
New Jersey	Aa3	7.5%	3	3,478	4
Connecticut	Aa3	7.3%	4	3,698	2
New York	Aa3	6.3%	5	2,762	5
Illinois	Aa3	5.2%	6	1,985	7
Delaware	Aaa	5.2%	7	2,002	6
Washington	Aa1	5.1%	8	1,908	8
Oregon	Aa2	5.0%	9	1,636	11
New Mexico	Aa1	4.8%	10	1,429	12
Mississippi	Aa3	4.8%	11	1,283	17
Kentucky	Aa2*	4.7%	12	1,381	14
Rhode lsland	Aa3	4.7%	13	1,766	9
Louisiana	A1	4.3%	14	1,345	15
California	A1	4.3%	15	1,685	10
Wisconsin	Aa3	4.1%	16	1,407	13
West Virginia	Aa3	3.9%	17	1,101	19
Kansas	Aa1*	3.5%	18	1,202	18
South Carolina	Aaa	3.3%	19	966	22
Georgia	Aaa	3.0%	20	954	23
Maryland	Aaa	3.0%	21	1,297	16
Ohio	Aa1	2.9%	22	966	21
North Carolina	Aaa	2.8%	23	898	25
Florida	Aa1	2.8%	24	1,005	20
Alabama	Aa2	2.8%	25	869	28
Alaska	Aa2	2.4%	26	924	24
Pennsylvania	Aa2	2.4%	27	870	27
Minnesota	Aa1	2.3%	28	879	26
Michigan	Aa3	2.2%	29	748	31
Nevada	Aa1	2.0%	30	759	30
Missouri	Aaa	2.1%	31	675	33
Arizona	Aa3*	2.0%	32	630	34
Vermont	Aaa	2.0%	33	707	32
Virginia	Aaa	1.9%	34	764	29
Utah	Aaa	1.9%	35	542	36
Maine	Aa3	1.9%	36	618	35
Arkansas	Aa2	1.7%	37	477	41
Oklahoma	Aa3	1.5%	38	493	38
Indiana	Aa1*	1.5%	39	478	40
TEXAS	**Aa1**	**1.4%**	**40**	**481**	**39**
New Hampshire	Aa2	1.3%	41	499	37
Montana	Aa2	1.2%	42	366	43
Idaho	Aa2*	1.2%	43	354	44
North Dakota	Aa2*	1.1%	44	374	42
South Dakota	NGO**	0.9%	45	302	46
Colorado	NGO**	0.8%	46	315	45
Tennessee	Aa1	0.7%	47	221	47
Iowa	Aa1*	0.3%	48	98	48
Wyoming	NGO**	0.2%	49	91	49
Nebraska	NGO**	0.1%	50	22	50
Mean		**3.2%**		**$1,158**	
Median		**2.6%**		**$889**	

Source: Moody's *2008 State Debt Medians*.
*Issuer Rating (No G.O. Debt).
** No general obligation debt.

It is important to note that states with higher state debt levels may have lower local debt levels and vice-versa. In FY2006 local debt accounted for approximately 85 percent of Texas' total debt burden. (Local debt includes debt issued by cities, counties, school, hospital and special districts.) Among the nation's ten most populous states, Texas ranks 2nd in population, 10th in state debt per capita but 2nd in local debt per capita with an overall rank of 5th for total state and local debt per capita (*Figure 4.4*).

Figure 4.4
Total State and Local Debt Outstanding

	Total State and Local Debt				State Debt				Local Debt			
State	**Population (thousands)**	**Per Capita Rank**	**Amount (millions)**	**Per Capita Amount**	**Per Capita Rank**	**Amount (millions)**	**% of Total Debt**	**Per Capita Amount**	**Per Capita Rank**	**Amount (millions)**	**% of Total Debt**	**Per Capita Amount**
New York	19,306	1	$241,407	$12,504	1	$105,306	43.6%	$5,455	1	$136,101	56.4%	$7,050
Illinois	12,832	2	110,788	8,634	2	53,655	48.4%	4,181	6	57,133	51.6%	4,452
Pennsylvania	12,441	3	106,041	8,524	5	32,121	30.3%	2,582	3	73,920	69.7%	5,942
California	36,458	4	299,535	8,216	3	109,417	36.5%	3,001	4	190,118	63.5%	5,215
Texas	**23,508**	**5**	**165,571**	**7,043**	**10**	**24,501**	**14.8%**	**1,042**	**2**	**141,070**	**85.2%**	**6,001**
Michigan	10,096	6	70,826	7,015	4	28,986	40.9%	2,871	7	41,840	59.1%	4,144
Florida	18,090	7	119,674	6,615	8	29,312	24.5%	1,620	5	90,362	75.5%	4,995
Ohio	11,478	8	63,658	5,546	6	24,713	38.8%	2,153	8	38,945	61.2%	3,393
North Carolina	8,857	9	43,937	4,961	7	17,749	40.4%	2,004	10	26,188	59.6%	2,957
Georgia	9,364	10	42,086	4,494	9	10,493	24.9%	1,121	9	31,593	75.1%	3,374
MEAN			**126,352**	**7,355**		**43,625**	**34.3%**	**2,603**		**82,727**	**65.7%**	**4,752**

Note: Detail may not add to total due to rounding.
Source: U.S. Census Bureau, *State and Local Government Finances by Level of Government and by State: 2005-2006*, the most recent data available.

Chapter 5 - Conclusion

The 80th Legislature (2007) mandated the Texas Bond Review Board in consultation with the Legislative Budget Board to prepare annually the state's Debt Affordability Study (DAS). The DAS and its Debt Capacity Model provide the state's policymakers, leadership and credit rating agencies with a comprehensive tool to evaluate current and proposed debt levels.

Statute requires the DAS to include a target and cap for Ratio 1, both of which can be adjusted as requested or as directed by the Legislature. Since Texas has historically appropriated less than 2 percent of its unrestricted general revenue for not self-supporting debt service, this study utilizes 2 percent as the target ratio and 3 percent for the maximum (or cap) ratio in its analysis of the key ratio, Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue (Ratio 1).

The 80th Legislature authorized more than $9.75 billion in additional general obligation debt that was approved by the voters at the November 2007 general election. Of the $9.75 billion, $9.25 billion may be considered not self-supporting. Based on existing and the new authorizations, approximately $7.61 billion in new, not self-supporting debt is expected to be issued between fiscal years 2009 to 2013. *Figure 5.1* illustrates the impact on the state's debt-service capacity for both current and projected debt as measured by Ratios 1-5.

Figure 5.1
Summary of Ratios 1 – 5

Fiscal Year	2009	2010	2011	2012	2013
RATIO 1: Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue					
Authorized and Issued	1.34%	1.14%	1.08%	0.96%	0.85%
plus Authorized and Unissued	1.57%	1.71%	2.05%	2.23%	2.35%
plus Projected	1.58%	1.98%	2.47%	2.64%	2.74%
Additional Debt-Service Capacity					
Target (2%)	$ 152,714,941	$ 8,192,618	$ (170,372,283)	$ (239,705,590)	$ (289,291,836)
Cap (3%)	$ 512,922,104	$ 367,007,015	$ 190,939,022	$ 135,131,594	$ 102,459,330
RATIO 2: Not Self-Supporting Debt Service as a Percentage of Budgeted General Revenue					
	1.42%	1.74%	2.08%		
RATIO 3: Not Self-Supporting Debt as a Percentage of Personal Income					
	0.35%	0.57%	0.71%	0.74%	0.76%
RATIO 4: Not Self-Supporting Debt Per Capita					
	$134.23	$227.28	$293.16	$321.09	$343.15
RATIO 5: Rate of Retirement (Fiscal Years 2008 - 2017)					
Self-Supporting Debt:	35.52%				
Not Self-Supporting Debt:	71.67%				

SOURCE: Texas Bond Review Board.

Appendix A - Methodology and Revenue Forecasting

The core of the Debt Affordability Study is the Debt Capacity Model (DCM) which uses revenue and debt information to calculate the five debt ratios described in the study. This financial model provides a platform for economic sensitivity analyses by considering the state's financial condition, economic and demographic trends and outstanding debt levels. Local debt was omitted from the analysis in the DCM.

Economic Assumptions

The DCM contains three separate scenarios of general revenue available for not self-supporting debt service to show the effect of economic factors on additional debt capacity. The model uses information and projections for FY2009 to 2018 for general revenues, personal income and population changes. Scenario A (base scenario) uses a 10-year average for general revenues available for not self-supporting debt service (i.e., 3.11 percent growth from FY2009-2018), a 10-year annual average for personal income (i.e., 6.20 percent growth from FY2009-2018) and a 10-year annual average for population change (i.e., 1.96 percent growth from FY2009-2018). All the figures listed in this report are based on Scenario A.

As described in *Figure A1*, Scenario B (positive scenario) reflects a 0.5 percent increase in available general revenues over the base scenario. Total personal income and population change are based on the highest annual growth in the 10-year period (FY2009-2018). Scenario C (negative scenario) assumes a 0.5 percent decrease relative to the base scenario in general revenues available for not self-supporting debt service. Total personal income and population changes are based on the lowest rates in the 10-year period (FY2009-2018).

Figure A1
Growth Rates of Economic Factors Used in the Debt Capacity Model

Economic Factor	Base Scenario (A)	Positive Scenario (B)	Negative Scenario (C)
Revenues Available for Debt Service, percent	3.11	3.61	2.61
Total Personal Income, percent	6.20	8.03	4.16
Population Change, percent	1.96	2.15	1.76

SOURCE: Texas Bond Review Board.

Revenues Available for Not Self-Supporting Debt Service

Because a revenue forecast was required to determine the ratios calculated in the DCM, Table 11 from the *Texas Comptroller of Public Accounts 2008 Cash Report* was recreated and matched at the revenue object code level. The Comptroller's January 2009 biennial revenue estimate was used for FY2009-2011. In general, estimates for FY2012 and beyond were based on the estimated average annual growth rate for each revenue object from 2005 through 2011.

Some exceptions to this method must be noted. Sales tax growth is set at 5.2 percent annually after fiscal year 2011. Motor sales taxes are projected to grow at the combined rate of inflation and population. Cigarette tax revenues were adjusted to reflect the irregular collections cycle. Revenues from the natural gas tax and oil production tax were estimated using the Comptroller's winter of 2008-09 forecast for natural gas and oil price and production.

The revenue forecast does not include tax revenue deposited to the Property Tax Relief Fund because those revenues are statutorily dedicated. The estimate does not assume that the repeal of the federal estate tax will be allowed to expire; as a result, no state inheritance tax revenue is included after 2009.

Any number of various scenarios can be created by simply varying the forecast assumptions in the DCM. The model can be rerun at any time when the Comptroller's office issues new revenue updates.

Appendix B - Texas' Debt Overview

Currently, seventeen state agencies and institutions of higher education in Texas have authority to issue debt (*Figure B1*). As the state's debt oversight agency, the Texas Bond Review Board approves all state debt issues and lease purchases that have an initial principal amount greater than $250,000 or a term longer than five years unless a state bond issue is specifically exempt. The Texas Public Finance Authority (TPFA) is authorized to issue debt on behalf of seventeen state agencies and three universities as well as for specific projects as authorized by the legislature. TPFA thus issues a significant portion of the state's not self-supporting debt payable from general revenue and administers the state's Master Lease Purchase Program (MLPP).

Figure B1
State Debt Issuers

Texas Public Finance Authority	Texas Tech University System
Texas Department of Transportation	The University of North Texas System
Texas Water Development Board	Texas State Affordable Housing Corporation
Texas Veterans Land Board (General Land Office)	Texas Higher Education Coordinating Board
The Texas A&M University System	The University of Texas System
Texas Department of Housing and Community Affairs	University of Houston System
Office of Economic Development and Tourism	Texas Woman's University
Texas State Technical College System	Texas Agricultural Finance Authority
Texas State University System	

SOURCE: Texas Bond Review Board.

Types of Debt Used by the State of Texas

Municipal bonds are interest-bearing certificates issued by a governmental entity as evidence that a debt obligation exists, and they specify the bond's maturity date, interest rate, repayment (amortization) schedule and the revenue source pledged to make debt-service payments. Interest earnings on municipal bonds are typically exempt from federal income taxes, and investors will therefore accept lower interest rates than the rates for taxable bonds such as corporate bonds and U.S. Treasury bonds. Federal tax law limits the issuance, investment and use of proceeds of tax-exempt bonds.

General obligation (GO) bonds are legally secured by a constitutional pledge of the first monies coming into the state treasury that are not otherwise constitutionally dedicated for another purpose. GO bonds must be approved by a two-thirds vote of both houses of the legislature and by a majority of the voters. After this approval bonds may be issued in installments as determined by the issuing agency or institution. GO bonds are issued for general government functions such as prisons, mental health facilities and parks.

Revenue bonds are legally secured by a specific revenue source(s) and do not require voter approval. Revenue bonds are typically issued for enterprise activities such as utilities, airports and toll roads. Lease Revenue or Annual Appropriation Bonds are also revenue bonds.

Commercial Paper (CP) can be secured by the state's general obligation pledge or by a specified revenue source. Maturity for CP ranges from 1 to 270 days. As the CP matures, it can be either paid off (refunded) or reissued ("rolled over") at a new interest rate. Because of the shorter maturity, the interest rate on CP is usually considerably lower than long-term interest rates.

Tax and Revenue Anticipation Notes (TRANs) are issued by the Texas Comptroller of Public Accounts, Treasury Operations to address cash-flow shortages caused by the mismatch in the timing of revenues and expenditures in the General Revenue Fund. TRANs must be repaid by the end of the biennium in which they are used, but are usually repaid by the end of each fiscal year. TRANs are repaid with tax receipts and other revenues in the General Revenue Fund and must be approved by the Cash Management Committee that is comprised of the Governor, Lieutenant Governor, Comptroller of Public Accounts and Speaker of the House as a non-voting member.

Master Lease Purchase Program (MLPP) is a lease revenue-financing program established in 1992 primarily to finance capital equipment for state agencies as authorized by the Texas Government Code, §1232.103. The MLPP may also be used to finance other types of projects that have been specifically authorized by the legislature and approved by the TPFA Board. The financing vehicle for the MLPP program is a tax-exempt, revenue commercial paper program.

General Revenue Effect – Self-Supporting vs. Not Self-Supporting Debt
Self-supporting debt is repaid with revenues other than general revenue and can be issued as either general obligation debt or revenue debt. Examples of self-supporting debt include GO bonds issued by the Texas Water Development Board that are repaid from loans made to communities for water and wastewater projects.

Not self-supporting debt is intended to be repaid with state general revenue and can be issued as either general obligation debt or revenue debt. Examples of not self-supporting general obligation debt include: HEF Bonds, Texas Water Development Board Economically Distressed Areas Program, State Participation and Water Conservation bonds and certain TPFA bonds. Not self-supporting revenue bonds include bonds issued for TPFA's Master Lease Purchase Program, the Military Facilities Commission, Parks and Wildlife Improvement and certain TPFA bonds.

Refunding bonds are issued to refinance existing bonds. They may be issued to obtain lower interest rates, change bond covenants or change repayment schedules (i.e., "restructure" the bonds). For tax-exempt bonds issued after 1986, federal tax law places no limit on the number of current refundings for an issue but allows only one advance refunding.

Debt Issued by Universities
Under Chapter 55 of the Texas Education Code, universities may issue revenue bonds or notes to finance permanent improvements for their institution(s). All universities have established system-wide revenue financing ("Revenue Financing System") programs that pledge all system-wide revenue except legislative appropriations to the repayment of the revenue notes and bonds.

Tuition revenue bonds (TRB) – In addition to the general bonding authority in Chapter 55 of the Texas Education Code, the legislature periodically authorizes TRBs for specific institutions for specific projects or purposes. TRBs are revenue bonds issued by the institution, equally secured by and payable from the same pledge for the institution's other revenue bonds. However, historically the legislature has appropriated general revenue to the institution to offset all or a portion of the debt service on the bonds. For the purposes of the DAS, TRBs are considered self-supporting debt.

PUF/HEF – The University of Texas and Texas A&M University Systems may issue obligations backed by income of the Permanent University Fund (PUF) in accordance with the Texas

Constitution, Art. VII, Section 18. The state's other institutions may issue Higher Education Fund (HEF) bonds in accordance with the Texas Constitution, Art. VII, Section 17.

Constitutional Limit on Debt Payable from General Revenue Funds
Article III, Section 49-j of the Texas Constitution prohibits the legislature from authorizing additional state debt if the annual debt service in any fiscal year on state debt payable from the General Revenue Fund exceeds 5 percent of the average of unrestricted general revenue from the preceding three fiscal years. The Constitution also stipulates that state debt payable from the General Revenue Fund does not include debt that, although backed by the full faith and credit of the state, is reasonably expected to be paid from other revenue sources and is not expected to create a general revenue draw.

As of August 31, 2008 the Constitutional Debt Limit percentage for outstanding not self-supporting debt was 1.30 percent and 4.09 percent including both outstanding and authorized but unissued not self-supporting debt.

Bond Issuance Process
The state's bond issuance process is initiated with the legislature's authorization of projects or programs and the authorization to issue bonds through statute or the General Appropriations Act. General obligation bonds must be approved by a two-thirds vote of both houses of the legislature and by a majority of the voters. The state issuer then develops the capital project and obtains necessary approval(s) from its board including preliminary authorization of the project, the financing mechanism (CP, lease-purchase or long-term debt), par amount, method of sale, finance team and any parameters deemed necessary by the issuer's governing board.

The financing team typically includes:

1) bond counsel to analyze legal and tax issues and prepare legal and tax opinions;
2) financial advisor to assist with structuring the bond issue, selecting the method of sale, obtaining bond rating and/or credit enhancement and negotiating the sale with the underwriter(s) or conducting the competitive bid process;
3) underwriter(s) to act as a dealer that purchases the new issue of municipal securities for resale to investors; and
4) disclosure counsel to advise on continuing disclosure requirements.

Once the issuer and the finance team have structured the transaction and prepared the legal documents, the issuer must obtain Bond Review Board approval unless the transaction is an exempt issue. Upon evaluation of issuance and finance costs, the agency approves the maximum par amount, cost of issuance and underwriter's spread per $1,000 for the bond issuance.

The issuer will then proceed with the bond sale as a competitive, negotiated or private placement sale. After the sale of bonds, the Office of the Attorney General issues an opinion on the legality of the bond issuance and approves the bond issue before delivery. The Texas Comptroller of Public Accounts then registers the bonds and records the sale after which the issue is uncontestable.

Appendix C - Credit Ratings

The three major credit rating agencies for state debt are Moody's Investors Service (Moody's), Standard & Poor's (S&P) and Fitch Ratings (Fitch). Their ratings have a significant impact on interest rates for a given issue and thus the cost of the financing. *Figure C1* provides a summary of the investment grade ratings scale by each agency.

Figure C1
Investment Grade Bond Ratings by Rating Agency

Rating	Moody's	S & P	Fitch
Highest	Aaa	AAA	AAA
High	Aa1 Aa2 Aa3	AA+ AA AA-	AA+ AA AA-
Medium	A1 A2 A3	A+ A A-	A+ A A-
Lower medium	Baa1 Baa2 Baa3	BBB+ BBB BBB-	BBB+ BBB BBB-

SOURCE: Moody's; S&P and Fitch.

Appendix D – Texas' Debt Outstanding

Figure D1
Total Debt Outstanding, Fiscal Year 2008

Bond and Debt Type	8/31/2008
General Obligation Bonds	
Veterans' Land and Housing Bonds	$1,832,472
Water Development Bonds	$803,385
Economic Development Bank Bonds	$45,000
Park Development Bonds	$0
College Student Loan Bonds	$727,343
Texas Agricultural Finance Authority	$25,000
Texas Mobility Fund Bonds	$4,955,850
Texas Public Finance Authority - TMVRLF	$49,595
Total - Self-Supporting	**$8,438,645**
Higher Education Constitutional Bonds	$51,605
Texas Public Finance Authority Bonds	$1,850,644
Park Development Bonds	$15,164
Agriculture Water Conservation Bonds	$2,575
Water Development Bonds - EDAP	$172,495
Water Development Bonds - State Participation	$140,130
Water Development Bonds - WIF	$106,120
Total - Not Self-Supporting	**$2,338,733**
Total - General Obligation Bonds	**$10,777,378**
Non-General Obligation Bonds	
PUF - The Texas A&M University System	$434,630
PUF - The University of Texas System	$1,318,980
College and University Revenue Bonds	$7,585,293
Texas Dept. of Housing and Community Affairs Bonds	$2,783,482
Texas State Affordable Housing Corporation	$696,136
Texas Small Business I.D.C. Bonds	$99,335
Economic Development Program	$6,407
Texas Water Resources Finance Authority Bonds	$10,740
College Student Loan Bonds	$0
Texas Department of Transportation Bonds - CTTS	$2,563,947
Texas Workers' Compensation Fund Bonds	$0
Veterans' Financial Assistance Bonds	$23,987
TPFA Charter School Finance Corporation*	$10,145
Texas Workforce Commission Unemployment Comp. Bonds	$0
State Highway Fund	$3,076,660
Water Development Board Bonds - State Revolving Fund	$1,357,383
Total - Self-Supporting	**$19,967,125**
Texas Public Finance Authority Bonds	$321,470
TPFA Master Lease Purchase Program	$122,440
Texas Military Facilities Commission Bonds	$18,555
Parks and Wildlife Improvement Bonds	$46,895
Total - Not Self-Supporting	**$509,360**
Total - Non-General Obligation Bonds	**$20,476,485**
Total - Debt Outstanding	**$31,253,863**

* Includes only debt authorized by the Bond Review Board.
SOURCE: Adapted from the 2008 Annual Report of the Texas Bond Review Board.

Appendix E - Debt Capacity Model (DCM) Ratios

The information presented in Appendix E focuses on existing and projected debt issuances for not self-supporting debt. Existing debt consists of both authorized and issued as well as authorized and unissued debt with a line item for each in the Ratio analyses.

Figure E1 illustrates Ratio 1 (Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue) assuming current and projected debt levels for FY2009-2013. As discussed in Chapter 3, if no new debt is added to the existing or projected issuances, not self-supporting debt service as a percentage of unrestricted general revenue will be less than 3 percent - ranging from 1.58 percent in FY2009 to a high of 2.74 percent in FY2013.

The report uses 2 percent as the target and 3 percent as the cap for Ratio 1. At these levels, state debt will remain below the Constitutional Debt Limit of 5 percent. If these guidelines are maintained and all projected debt as scheduled is issued, the 2 percent target for Ratio 1 would be exceeded in FY2011. Under the proposed 3 percent cap, an additional debt-service capacity of $512.9 million and $102.5 million would be available in FY2009 and FY2013, respectively.

Figure E1
Ratio 1: Not Self-Supporting Debt Service as a Percentage of Unrestricted General Revenue, Fiscal Years 2009 to 2013

Fiscal Year	2009	2010	2011	2012	2013
Projected Unrestricted General Revenue	$ 35,066,160,705	$ 35,711,929,034	$ 37,615,301,765	$ 39,123,924,417	$ 40,786,123,461
Not Self-Supporting					
Authorized and Issued Debt	$ 481,351,418	$ 407,491,302	$ 391,481,415	$ 358,244,206	$ 334,344,697
Authorized and Unissued Debt	$ 82,959,841	$ 205,076,642	$ 347,687,772	$ 476,376,793	$ 585,334,753
Projected Debt	$ 3,388,125	$ 96,868,231	$ 153,825,706	$ 154,758,959	$ 153,114,717
Total Debt Service	$ 567,699,384	$ 709,436,175	$ 892,994,893	$ 989,379,958	$ 1,072,794,167
Debt Service as a Percentage of Unrestricted General Revenue					
Authorized and Issued Debt	1.34%	1.14%	1.08%	0.96%	0.85%
plus Authorized and Unissued Debt	1.57%	1.71%	2.05%	2.23%	2.35%
plus Projected	1.58%	1.98%	2.47%	2.64%	2.74%
Additional Debt-service Capacity					
Target (2.0%)	$ 152,714,941	$ 8,192,618	$ (170,372,283)	$ (239,705,590)	$ (289,291,836)
Cap (3.0%)	$ 512,922,104	$ 367,007,015	$ 190,939,022	$ 135,131,594	$ 102,459,330

SOURCE: Texas Bond Review Board.

The DCM provides policymakers with the ability to review the impact on the state's finances of a state-bond financed project or projects of any size. *Figure E2* shows the impact of new, not self-supporting debt authorizations on Ratio 1. The first scenario assumes a $20 million project, and the second scenario assumes a $250 million project. For purposes of this analysis, the debt was assumed to be issued in September of 2009 with first debt-service payments in February 2010. The examples also assume a 20-year repayment term with 6 percent interest and level principal payments.

Figure E2
Impact of Additional Debt on Ratio 1

Fiscal Year	2009	2010	2011	2012	2013
Debt Service as a Percent of Unrestricted General Revenue					
Actual	1.58%	1.98%	2.47%	2.64%	2.74%
With $20M Project	1.58%	1.98%	2.48%	2.64%	2.74%
With $250M Project	1.58%	2.04%	2.53%	2.70%	2.79%
Additional Debt-Service Capacity					
Target (2.0%)					
Actual	$ 152,714,941	$ 8,192,618	$ (170,372,283)	$ (239,705,590)	$ (289,291,836)
With $20M Project	$ 152,714,941	$ 6,457,618	$ (172,109,183)	$ (241,442,990)	$ (291,027,636)
With $250M Project	$ 152,714,941	$ (13,502,382)	$ (192,065,583)	$ (261,398,690)	$ (310,983,936)
Cap (3.0%)					
Actual	$ 512,922,104	$ 367,007,015	$ 190,939,022	$ 135,131,594	$ 102,459,330
With $20M Project	$ 512,922,104	$ 365,272,015	$ 189,202,122	$ 133,394,194	$ 100,723,530
With $250M Project	$ 512,922,104	$ 345,312,015	$ 169,245,722	$ 113,438,494	$ 80,767,230

SOURCE: Texas Bond Review Board.

The $20 million bond issuance has a small impact on the annual debt-service capacity – approximately 0.01 percent over the five-year period. Debt service for this project reduces annual debt-service capacity by the amount of debt service for the $20 million project each year.

The $250 million authorization for a group of projects would lessen annual debt-service capacity by $21.7 million in each fiscal year beginning in 2010, and Ratio 1 would rise from 2.04 percent in FY2010 to 2.79 percent in FY2013. Ratio 2 (Not Self-Supporting Debt Service as a Percentage of Budgeted General Revenue) would increase slightly from 1.98 percent to 2.04 percent in FY2010.

Figure E3 illustrates Ratio 3 (Not Self-Supporting Debt as a Percentage of Personal Income) for FY2009-2013. For this time period Texas will maintain a percentage of not self-supporting debt to personal income from 0.35 percent in FY2009 to 0.76 percent in FY2013. This percentage increases by 117 percent over the five-year period due to projected debt issuances during the period for existing authority and new debt authorized by the 80th Legislature and approved by the voters in November 2007. Even at 0.76 percent, the rating agencies consider the percentage to be low.

Figure E3
Ratio 3: Not Self-Supporting Debt as a Percentage of Personal Income, Fiscal Years 2009 to 2013

Fiscal Year	2009	2010	2011	2012	2013
Not Self-Supporting Debt					
Beginning Outstanding	$ 2,829,137,545	$ 3,316,916,042	$ 5,735,783,502	$ 7,557,481,404	$ 8,451,313,438
Planned Issuances	858,035,376	2,798,001,000	2,300,600,000	1,415,000,000	1,327,550,000
Retirements - Existing Debt	341,296,879	280,220,953	277,687,244	257,359,410	245,485,663
Retirements - New Debt	28,960,000	98,912,587	201,214,854	263,808,556	318,896,631
Ending Outstanding	$ 3,316,916,042	$ 5,735,783,502	$ 7,557,481,404	$ 8,451,313,438	$ 9,214,481,144
Total Personal Income	$ 960,417,088,927	$ 1,000,392,113,650	$ 1,064,080,970,891	$ 1,138,290,313,623	$ 1,216,491,311,995
Not Self-Supporting Debt as a Percentage of Personal Income	0.35%	0.57%	0.71%	0.74%	0.76%

SOURCE: Texas Bond Review Board and Comptroller of Public Accounts.

The $250 million example mentioned in Ratio 1 also impacts Ratio 3. If the $250 million group of projects is authorized and debt issued in September 2010, the not self-supporting debt as a percentage of personal income would increase from 0.57 percent to 0.60 percent in FY2010 and from 0.76 percent to 0.78 percent in FY2013.

Figure E4 illustrates Ratio 4 (Not Self-Supporting Debt per Capita). For FY2009-2013, Texas will have a low debt per capita, ranging from $134.23 in 2009 to $343.15 in FY2013. The $250 million group of projects impacts Ratio 4; in FY2010 debt per capita would rise to $237.18 and by FY2013, increase to $352.46.

Figure E4
Ratio 4: Not Self-Supporting Debt per Capita, Fiscal Years 2009 to 2013

Fiscal Year	2009	2010	2011	2012	2013
Not Self-Supporting Debt Outstanding	$ 3,316,916,042	$ 5,735,783,502	$ 7,557,481,404	$ 8,451,313,438	$ 9,214,481,144
Projected Population	24,710,400	25,236,935	25,779,289	26,321,086	26,852,281
Not Self-Supporting Debt Per Capita	$ 134.23	$ 227.28	$ 293.16	$ 321.09	$ 343.15
Ratio 4 with $250.0 million project	$ 134.23	$ 237.18	$ 302.86	$ 330.58	$ 352.46

SOURCE: Texas Bond Review Board and Comptroller of Public Accounts.

The $250 million project was structured with level debt service over the 20-year term and does not impact Ratio 5 (rate of debt retirement). For FY2008-2017, the not self-supporting debt issued for the $250 million project is retired at a rate of 71.7 percent.

Appendix F - Debt Capacity Model Ratios and Special Debt Commitments

Two distinct versions of Ratio 1: Not Self-Supported Debt Service as a Percentage of Unrestricted Revenue have been computed. The first considers only debt service for not self-supporting debt for which the state is legally obligated. The second shows the impact of special debt commitments on the DCM ratios. Although not legal obligations of the state, these commitments require debt service appropriated from general revenue. They include tuition revenue bonds for higher education and the Existing Debt Allotment (EDA) and Instructional Facilities Allotment (IFA) for public schools. The following tables illustrate the impact of these special debt commitments and provide policymakers with metrics to review not only the impact of not self-supporting debt for which the state is legally obligated, but also the impact of related debt-service obligations that are paid with general revenue.

Description of Special Debt Commitments

Three special debt-service commitments are either reimbursed by, or receive a contribution from the state. These obligations include:

Tuition Revenue Bonds (TRBs) TRBs are revenue bonds issued by the individual higher education institutions, systems or the Texas Public Finance Authority (on behalf of certain institutions) for new building construction or renovation. All college and university revenue bonds are equally secured by, and payable from a pledge of all or a portion of certain "revenue funds" as defined in the Texas Education Code, Chapter 55. Though legally secured through an institution's tuition and fee revenue, historically the state has used general revenue to reimburse the universities for debt service for these bonds. House Bill 153 passed during the 79th Legislature's Third Called Session (2005) authorized $1.8 billion for TRBs, and debt service was appropriated during the 80th Legislative Session.

Existing Debt Allotment (EDA) In 1999, the legislature added Subchapter B to Chapter 46 of the Texas Education Code to create the Existing Debt Allotment (EDA). The EDA is similar to the Instructional Facilities Allotment (IFA) program in that it provides tax-rate equalization for local debt-service taxes. The original qualification for EDA eligibility was debt "for which the district levied and collected taxes in the 1998–99 school year." In addition, EDA must be used for debt that is not receiving IFA funds. In the initial biennium of operation, the EDA was limited to $0.12 per $100 of valuation but was raised in 2001 to the current level of $0.29 per $100 of valuation.

EDA funding is shared between state and local resources. State assistance is based on the lesser of actual debt service or the tax-rate limit established by the restructured school financing efforts of the 79th Legislature. The EDA program operates without applications and has no award cycles. Instead, the program is based on a statutory definition of eligible debt, presently determined by the first payment of debt service in accordance with Texas Education Code §46.033. Refunding bonds as defined by Texas Education Code §46.007 are also eligible for EDA assistance. Only general obligation debt is eligible for the program. The projects originally financed by the debt do not impact eligibility since no restriction to instructional facilities existed.

Instructional Facilities Allotment (IFA) The Instructional Facilities Allotment (IFA) program was authorized in House Bill 1 by the 75th Legislature (1997). The provisions that authorize the IFA program are incorporated into the Texas Education Code as Chapter 46. The IFA program became effective on September 1, 1997 and provides assistance to school districts in making debt-service payments on qualifying bonds and lease-purchase agreements. Districts must make application to the Texas Education Agency (TEA) to receive assistance. Bond or lease-purchase proceeds must be used for the construction or renovation of an instructional facility. A maximum allotment is determined based upon the lesser of annual debt-service payments or $250 per student in average daily attendance (ADA).

Figure F1 shows the expected annual debt-service payments to be made for TRBs, EDA and IFA assuming no further statutory changes are made to EDA eligibility or new grants are made to IFA appropriations.

Figure F1
Annual Debt-Service Payments for Special Debt Commitments, Fiscal Years 2009 to 2013

Commitment	2009	2010	2011	2012	2013
Existing Tuition Revenue Bonds	$ 271,223,163	$ 273,163,709	$ 267,768,008	$ 267,676,647	$ 267,939,556
New Tuition Revenue Bonds	$ 75,343,530	$ 47,846,289	$ 51,211,613	$ 83,120,000	$ 83,122,800
Existing Debt Allotment	$ 346,346,844	$ 294,357,177	$ 305,774,731	$ 323,767,500	$ 324,026,606
Instructional Facilities Allotment	$ 328,860,241	$ 309,578,138	$ 303,932,990	$ 296,938,400	$ 286,187,843
Annual Payments Total	**$ 1,021,773,778**	**$ 924,945,313**	**$ 928,687,342**	**$ 971,502,547**	**$ 961,276,805**

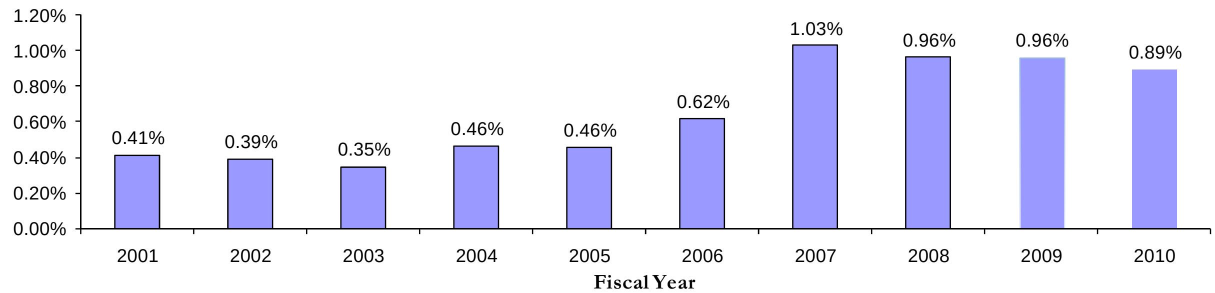
SOURCE: Texas Bond Review Board and Legislative Budget Board.

The Texas Legislature has two options if it wishes to assess the impact of these special debt commitments on the DCM's five debt ratios. As shown in the main text of this report, the first option is to add these items to the total sum of not self-supporting debt service. This method is useful if the object is to assess overall general revenue-supported debt commitments in a comprehensive manner. *Figure 3.4* demonstrates the impact of the special debt commitments on Ratio 1. It should be noted that TRBs are classified as self-supporting revenue debt. Although TRBs, EDA and IFA are paid from general revenue, these commitments do not count against the Constitutional Debt Limit.

The second option is to establish a Ratio 1 target and cap specifically for special debt commitments. TRBs provide a good example of how to employ this method, and the following paragraphs describe this option. Appropriated debt-service levels for TRBs have historically remained at less than 0.62 percent of available unrestricted general revenue and usually have been less than 0.50 percent.

The 80th Legislature appropriated debt service for both the TRBs authorized by House Bill 153 from the 79th Legislature's Third Called Session (2005) as well as a few additional projects. *Figure F2* illustrates the impact of the new authorizations on already-existing debt service. As a result of the new authorizations, historical TRB debt service as a percentage of unrestricted general revenue increased from 0.62 percent in FY2006 to 1.03 percent, 0.96 percent, 0.96 percent and 0.89 percent for FY2007-2010, respectively.

Figure F2
Tuition Revenue Bond Payments as a Percentage of Unrestricted General Revenue, Fiscal Years 2001 to 2010



SOURCE: Texas Bond Review Board.

Historically, the state has used between 0.5 percent and 1 percent of unrestricted revenues for TRB debt service. If these target and cap guidelines assumed for Ratio 1 were applied to TRB debt service today, the state's capacity to handle additional debt service would be significantly reduced, as shown in *Figure F3*.

Figure F3
Tuition Revenue Bond Payments with Debt-Service Capacity Guidelines, Fiscal Years 2009 to 2013

	2009	2010	2011	2012	2013
Debt-Service Commitments					
Existing Tuition Revenue Bonds	$ 271,223,163	$ 273,163,709	$ 267,768,008	$ 267,676,647	$ 267,939,556
New Tuition Revenue Bonds	$ 75,343,530	$ 47,846,289	$ 51,211,613	$ 83,120,000	$ 83,122,800
Total Debt-Service Payments	**$ 346,566,693**	**$ 321,009,998**	**$ 318,979,621**	**$ 350,796,647**	**$ 351,062,356**
TRB Annual Debt Service as a Percentage of Unrestricted General Revenue					
	0.96%	0.89%	0.88%	0.94%	0.90%
Additional Annual Debt-Service Capacity					
Target (0.5%)	(166,463,112)	(141,602,800)	(138,323,968)	(163,378,055)	(155,186,773)
Cap (1.0%)	13,640,470	37,804,399	42,331,684	24,040,537	40,688,810

SOURCE: Texas Bond Review Board.

Ratio 1 of the DCM can be used to provide various scenarios to assess the impact of increasing or decreasing the debt-service capacity for one or a group of special debt commitment items for which the annual debt service is paid from unrestricted general revenue.

Appendix G - Texas' Debt Issuance Policies and Interest Management Agreement Policies

Introduction

The 77th Legislature, Regular Session (2001) passed House Bill 2190 that amended the Texas Government Code Chapter 1231 to require the Texas Bond Review Board to develop and adopt debt issuance guidelines and policies for state issuers to ensure that state debt is prudently managed.

The following policies were created by the Bond Review Board pursuant to the requirements of HB 2190 to standardize the issuance and management of debt issued by the state. The primary objective of the guidelines is to establish conditions for the use of debt and to create procedures and policies that minimize the state's debt service and issuance costs, retain the highest possible credit rating and maintain full and complete financial disclosure and reporting. The policies apply to all debt issued by the state, including leases and any other forms of indebtedness. However, all state issuers, regardless of the type of debt issued are strongly encouraged to develop, maintain and annually review their own debt policies based on their unique goals and programs.

Regularly updated debt policies are an important tool to ensure the best use of the state's limited resources to provide services to the citizens of Texas and to maintain sound financial management practices. These policies are guidelines for general use and allow flexibility for issuers to be able to respond to changing economic conditions.

The 80th Legislature (2007) passed Senate Bill 1332 that further amended Texas Government Code Chapter 1231 to require the Board to adopt a state policy related to the risks and effects of the execution of interest rate management (derivative) agreements. The primary objective of these policies is to establish conditions for the use of swaps and to create procedures and policies that encourage an optimum balance between risk and reward, provide credit protection and maintain full and complete financial disclosure and reporting. Another objective of these swap policies is to stimulate discussion and broaden appreciation of the issues involved in the use of swaps. The adopted policies may be found on the Bond Review Board's website.

Creditworthiness Objectives

Policy 1: Credit Ratings

The state seeks to maintain the highest possible credit ratings for all categories of short- and long-term General Obligation debt that can be achieved without compromising delivery of basic services and programs and achievement of adopted policy objectives.

The state recognizes that external economic, natural or other events may affect the creditworthiness of its debt from time to time. Nevertheless, the executive and legislative branches of state government are committed to ensuring that actions within their control are prudent and necessary to maintain the creditworthiness objectives of the state.

Policy 2: Financial Disclosure

The state is committed to full and complete financial disclosure and to cooperating fully with rating agencies, institutional and individual investors, state departments and agencies, other levels of government and the general public to share clear, comprehensible and accurate financial information. The state is committed to meeting secondary disclosure requirements on a timely and comprehensive basis.

Official statements accompanying debt issues, Comprehensive Annual Financial Reports and continuing disclosure statements will strive to meet the minimum standards (to the extent applicable to each debt issue) promulgated by regulatory bodies and professional organizations such as the Securities and Exchange Commission (SEC), Municipal Securities Rulemaking Board (MSRB), the Governmental Accounting Standards Board (GASB) and follow Generally Accepted Accounting Principles (GAAP).

The state Comptroller of Public Accounts, in conjunction with individual issuers shall be responsible for ongoing disclosure to established state and national information repositories and for maintaining compliance with disclosure standards promulgated by national regulatory bodies.

Policy 3: Capital Planning

To enhance creditworthiness and prudent financial management, the state will prepare a systematic capital plan and conduct long-term financial planning. This planning process will involve the co-operation and coordination of data and information among all state agencies and oversight bodies including the Bond Review Board and the Legislative Budget Board. The result of the planning process will be a Comprehensive Capital Expenditures Plan prepared by the Bond Review Board and submitted to the state leadership, pursuant to Senate Bill 1, Article 9, Section 6.38, 77th Regular Session, 2001. This plan will be updated and adjusted periodically as necessary. The plan will be implemented via the adoption of biennial capital budget items through the Legislative Appropriations Request process.

Policy 4: Debt Limits

The state will keep outstanding debt within the limits prescribed by the state's constitution, specifically Article 3, Section 49-j and at levels consistent with its creditworthiness objectives.

Purposes and Uses of Debt

Policy 5: Capital Financing

Debt will be issued for a capital project when it is an appropriate means to achieve a fair allocation of costs between current and future beneficiaries or in the case of emergency. Debt should not be issued to finance operating costs except in the case of short-term borrowing to meet cash flow needs.

Policy 6: Asset Life

The state should consider long-term financing for the acquisition, maintenance, replacement or expansion of physical assets (including land) only if they have a useful life of at least five years. Debt should be used only to finance capital projects except in case of emergency. State debt should not be issued for periods exceeding the useful life or average useful lives of the project or projects to be financed except in the case of an emergency or when it is appropriate to achieve a fair allocation of costs between current and future beneficiaries.

Debt Standards and Structure

Policy 7: Length of Debt

Debt will be structured for the shortest period consistent with a fair allocation of costs to current and future beneficiaries or users and within applicable federal tax law.

Policy 8: Debt Structure
Debt should be structured to achieve the lowest possible net cost to the state or state issuer, given market conditions, the nature of the capital project and the nature and type of security provided. Moreover, to the extent possible, the state issuer will design the repayment of its overall debt so as to recapture rapidly its credit capacity or the state's credit capacity for future use.

Policy 9: Level Principal Debt Service
A level principal repayment structure should be considered for use for bonds repaid from general revenues of the state. This structure results in 50 percent of the debt being repaid in 10 years (if financed for a 20-year term) and creates future capacity for debt service on additional bond issues. A level debt-service structure should be reserved for bonds repaid from a dedicated revenue stream if necessary or appropriate.

Policy 10: Backloading: "Backloading" of debt-service costs will be considered only: (1) when natural disasters or extraordinary or unanticipated external factors make the short-term cost of the debt prohibitive; (2) when the benefits derived from the debt issuance can clearly be demonstrated to be greater in the future than in the present; (3) when such structuring is beneficial to the issuer's overall amortization schedule; or (4) when such structuring will allow debt service to more closely match project revenues during the early years of the project's operation.

Policy 11: Variable Rate Debt
A state issuer may choose to issue securities that pay a rate of interest that varies according to a pre-determined formula or results from a periodic remarketing of the securities, consistent with state law and covenants of pre-existing bonds.

Variable-rate debt should be converted to fixed-rate debt as necessary to maintain the creditworthiness objectives of the state, to meet particular needs of a financing program or to lock in low fixed-interest rates when advantageous. An issuer should take into account the amount of time that variable-rate debt has been outstanding when determining the final maturity of the fixed-rate debt.

Policy 12: Subordinate Debt
A state issuer should issue subordinate debt only if it is financially beneficial as defined by the issuer or consistent with creditworthiness objectives.

Policy 13: Derivatives
State issuers should consider the use of derivative products when products meet the specific needs of a financing program or provide a demonstrated economic benefit to the state that outweighs the costs and risks of the transaction. Appropriate public finance professionals, including financial advisors and legal counsel should be retained to ensure that the state receives fair market value for the transaction.

Policy 14: Refundings
State issuers should perform periodic reviews of all outstanding debt to determine refunding opportunities. Refunding should be considered (within federal tax law constraints) when there is a net economic benefit of the refunding or the refunding is necessary to eliminate restrictive covenants essential to operations and management.

Advance refundings for economic savings should be undertaken when a net present value savings of at least 3 percent of the refunded debt can be achieved. Current refundings that produce a positive net present value savings may also be considered. Refundings with no savings or negative savings should not be considered unless there is a compelling public policy objective such as restructuring to eliminate restrictive bond covenants or to provide additional financial flexibility.

Policy 15: BANs
Use of bond anticipation notes (BANs) will be undertaken only if the transaction costs plus interest on the debt are less than the cost of internal financing or available cash is insufficient to meet working capital requirements.

Policy 16: COPs
Lease Transactions Involving Certificates of Participation (COPs) or Participation Interests (PIs) – The Bond Review Board discourages the use of COPs or PIs in lease with option to purchase (LWOP) transactions. LWOP transactions utilizing COPs and PIs often require higher interest rates and are considerably more complex to structure and document with commensurately higher legal costs than lease-revenue bond issues. In addition, to protect the state's credit ratings should it later become desirable to exit the LWOP, such transactions require expensive credit enhancement. Consequently, unless a unique situation justifies the issuance of COPs or PIs in an LWOP transaction, the Bond Review Board does not consider such transactions to be the most cost-effective means of financing and recommends issuers utilize lease-revenue bond financings as an alternative.

Policy 17: Credit Enhancements
Credit enhancement (letters of credit, bond insurance, etc.) may be used but only when net debt service on the bonds is reduced by more than the costs of the enhancement.

Debt Administration and Process
Policy 18: Investment of Bond Proceeds
Bond proceeds should be invested as part of an investment schedule that reflects the anticipated need to draw down funds for project purposes. Through careful matching of investment maturity dates, a state issuer can maximize its return while ensuring the necessary cash flow. Investments will be consistent with those authorized by existing state law, federal tax law and by the issuer's investment policies.

Policy 19: Competitive Sale
Bids should be awarded on a true interest cost basis (TIC), provided other bidding requirements are satisfied. For instance, a position in which the issuer deems all bids received to be unsatisfactory, the issuer may elect to sell subsequently through a negotiated sale in accordance with its standard procedures.

Policy 20: Negotiated Sale
Negotiated sales of debt should be considered in the following circumstances: (1) when the complexity of the issue requires specialized expertise; (2) when the negotiated sale would result in substantial savings in time or money; or (3) when market conditions are unusually volatile or uncertain.

Policy 21: Underwriters
For all negotiated sales, underwriters should be required to demonstrate sufficient capitalization and experience related to the debt issuance and should be able to show minority and women participation within their firms.

Policy 22: HUB Participation
Issuers are required to make a good faith effort to achieve 33 percent participation by HUB firms in the underwriting and issuance of debt. Issuers should also encourage underwriters to make similar good faith efforts and include HUB participation in syndicates for competitive sales.

Policy 23: Bond Counsel
State issuers should retain outside bond counsel for all bond transactions where necessary to market the bonds. Bonds issued by the state issuers should include a written opinion by bond counsel affirming that the state issuer is authorized to issue the debt, that the state issuer has met all state constitutional and statutory requirements necessary for issuance and that the issue is tax-exempt, if applicable.

Policy 24: Financial Advisor
State issuers should consider retaining an external financial advisor if the issuer does not possess the expertise for the transaction being considered. The use of a financial advisor for a particular bond sale should be at the discretion of the issuer on a case-by-case basis.

Policy 25: Compensation for Services
Compensation for bond counsel, underwriters' counsel, financial advisors and other services should be reasonable based on the level of services rendered, desired qualifications, expertise, industry standards and complexity of the issue.

Policy 26: RFP/RFQ Process
State issuers shall make all final determinations of selection for legal and other services in accordance with Chapter 1201, Texas Government Code. The determination will be made following an independent review of responses to requests for proposals (RFPs) or requests for qualifications (RFQs). The RFPs and RFQs should be reviewed by at least the issuer's financial professional charged with debt oversight and/or the agency's financial advisor.

Policy 27: Arbitrage Compliance
State issuers shall maintain a system of record keeping and reporting to meet the arbitrage rebate compliance requirements of federal tax code.

Policy 28: Intergenerational Housing
Housing developments that commingle age-restricted units and family units must meet the definition of intergenerational housing and abide by the Board's policy.

Policy 29: Property Tax Exemption
The Bond Review Board will approve applications for the issuance of bonds to finance multifamily housing revenue developments for which the organization is designated a Community Housing Development Organization (CHDO) and qualifies for 100 percent property exemption under Section 11.182 of the Texas Tax Code. These qualifications only apply if the application includes a payment in lieu of taxes (PILOT payment) in an amount equal to 50 percent of the property taxes

that would have been imposed by the applicable school district for the tax year for which the exemption applies. Payments must be made payable to the Texas Comptroller of Public Accounts and submitted to the Comptroller by February 1 of the year following approval of the project.

Appendix H - Constitutional Debt Limit

Article III, Section 49-j of the Texas Constitution prohibits the legislature from authorizing additional state debt if the annual debt service in any fiscal year on state debt payable from the General Revenue Fund exceeds five percent of the average of unrestricted general revenue from the preceding three fiscal years. The Constitution also stipulates that state debt payable from the General Revenue Fund does not include debt that, although backed by the full faith and credit of the state, is reasonably expected to be paid from other revenue sources and is not expected to create a general revenue draw.

The Constitutional Debt Limit (CDL) is calculated by dividing the sum of actual annual debt service for issued not self-supporting debt and an estimate of debt service for authorized but unissued not self-supporting debt by the average of unrestricted general revenue from the preceding three fiscal years. The Constitution prohibits the legislature from authorizing additional state debt if this calculation yields a percentage greater than five percent.

Four main factors impact the CDL percentage. The first and most apparent is the level of not self-supporting debt service. Assuming all other variables are held constant, the percentage of not self-supporting debt service to unrestricted general revenue varies directly with amounts paid for debt service.

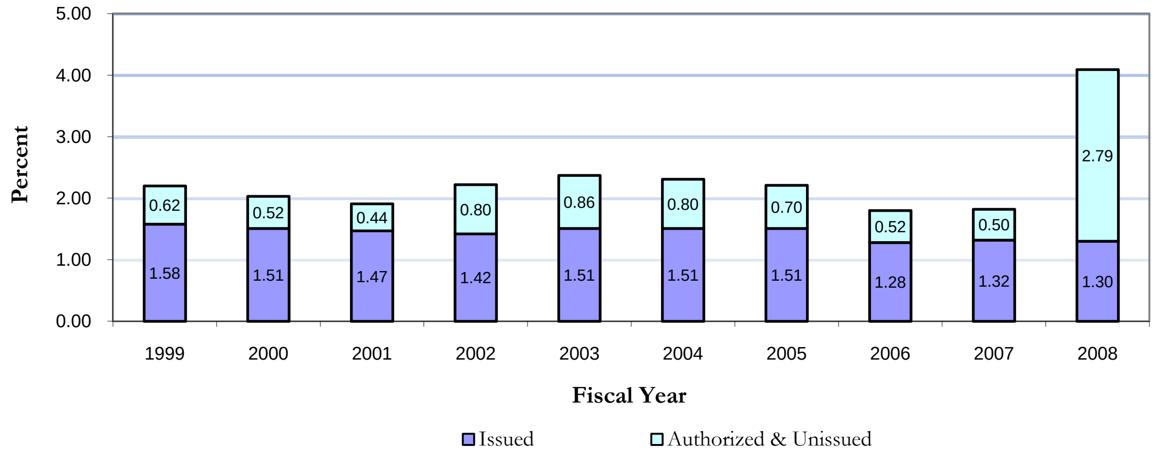
The second factor is unrestricted general revenue. As unrestricted general revenue increases, the CDL percentage decreases, and conversely, as unrestricted general revenue decreases, the ratio increases. Because the calculation uses the average of unrestricted general revenue over the previous three years, the impact of a substantial change in unrestricted general revenue for one year is diminished.

The third factor is the estimate of debt service for the authorized but unissued not self-supporting debt. This estimate is obtained by using an assumed rate of interest based on rates in the debt markets at the time calculation is made. Debt-service amounts vary directly with interest rates, and a conservative rate of 6 percent was used for projected debt service.

The impact of the fourth factor can be determined by legislative action. The Constitution provides that debt service for not self-supporting debt reasonably expected to be paid from other revenue sources and not expected to create a general revenue draw is excluded from the CDL calculation. Thus not self-supporting debt is excluded from the CDL percentage if it becomes self-supporting through legislative action that provides debt-service support from an adequate revenue stream. For example, without a stated revenue stream for debt service, the $5 billion transportation authorization approved by the 80th Legislature and later by voters in the November 2007 general election is defined as not self-supporting debt but would be reclassified to self-supporting if legislative action provided it with a dedicated revenue stream for debt service.

Figure H1 shows the CDL percentages from FY1999-2008. For FY2008 the CDL percentage was 1.30 for issued debt but reached a new high of 4.09 when authorized but unissued debt is included.

Figure H1
Constitutional Debt Limit as a Percentage of Unrestricted General Revenue



SOURCE: Texas Bond Review Board.

Constitutional Debt Limit Percentage and Ratio 1

Ratio 1 in the Debt Capacity Model resembles the CDL percentage, but the latter includes certain items that are not included in Ratio 1. The major difference is the way in which debt service for the Higher Education Fund (HEF) bonds is calculated. Because HEF bonds are only supported by an appropriation from general revenue, the CDL percentage calculation requires that the maximum amount of debt service available for these bonds is included, but in practice less than a quarter of that debt service is actually required.

Another difference in the CDL percentage calculation is the omission of certain debt service for the Water Development Board, Economically Distressed Areas Program (EDAP) bonds. Proceeds from the sale of the EDAP bonds are used to make loans or grants to local governments or other political subdivisions of the state for projects involving water conservation, transportation, storage and treatment. Up to 90 percent of the bonds can be used for grants, and at least 10 percent must be used to make loans. For purposes of the CDL calculation, the debt service on the 10 percent used for loans is assumed to be repaid to the state and is thus omitted from the CDL calculation.

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