Appendix 7 - Debt Affordability Study

State of Hawaii
Debt Affordability Study

12/13/2016

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DEBT AFFORDABILITY STUDY

I. Summary

A. Goals and Objectives

The Director of Finance has undertaken a Debt Affordability Study (Study) in order to optimize the use of limited debt capacity while meeting public spending goals and to ensure the prudent use of debt and to preserve sufficient future debt capacity. The Study has been prepared by Public Financial Management, Inc. and PFM Financial Advisors LLC on behalf of the State of Hawaii (State) and Department of Budget and Finance (B&F). The Study summarizes and analyzes the current debt outstanding and future capital plans of the State and State Departments as it evolves over time. The Study aims to aid in decision making with respect to the State and State Department multi-year capital plans and to understand trade-offs while evaluating projects and debt alternatives.

The Study seeks to identify affordability metrics to measure debt burden, assess affordability of proposed debt issuances, ensure the State does not over leverage, and assess overall adequacy of revenues to pay for all obligations including pension and other postemployment benefits (OPEB) costs.

B. Scope

On June 26, 2015, Governor David Y. Ige signed Act 149 (15) directing the Director of Finance to submit a debt affordability study to promote both transparency in budget-making and more informed decisions on capital improvement project and debt issuance authorizations. The Director of Finance will submit a debt affordability study to the legislature before the convening of the regular session of each odd-numbered year.

C. Summary of Overall State Debt and State Department Debt Programs

The Department of Budget and Finance plans, monitors and manages the issuance of State bonds. B&F oversees the general management of State debt, including reimbursable and non-reimbursable general obligation (GO) bonds, special assessment bonds, refunding bonds, mortgage credit certificates, short-term loans, certificates of participation (COPs), and municipal lease financings. In addition, B&F has oversight responsibility for revenue bonds and special facility revenue bonds issued by State Departments including the Department of Transportation – Airports, Harbors, and Highways Divisions, University of Hawaii, Hawaiian Home Lands, Department of Business, Economic Development, and Tourism, and Hawaii Housing Finance and Development Corporation.

The Study focuses on each financing program to review outstanding debt, discuss legal limitations, summarize callable bonds, project and analyze multi-year capital plans, and measure affordability based on pertinent metrics and credit and peer considerations.

D. General Assumptions

This Study makes certain assumptions and projections about future financial information and bond issuance timing and amount for the purpose of analyzing debt affordability. In addition, conservative interest rate assumptions were utilized (see **Appendix A** for details). Actual financial information, bond issuance timing and amounts, interest rates, and metrics will vary from projections. In addition, this Study does not take into account potential future refundings that may occur and may reduce annual debt service costs. The credit ratings reflected in this report are as of October 15, 2016. The debt outstanding under each financing program is as of June 30, 2016, with the exception of the programs for Highways Division and B&F, which incorporate recent debt issuances occurring in September and October of 2016, respectively. For the latest credit and financial information, please refer to the State's investor relations website: http://investorrelations.hawaii.gov.

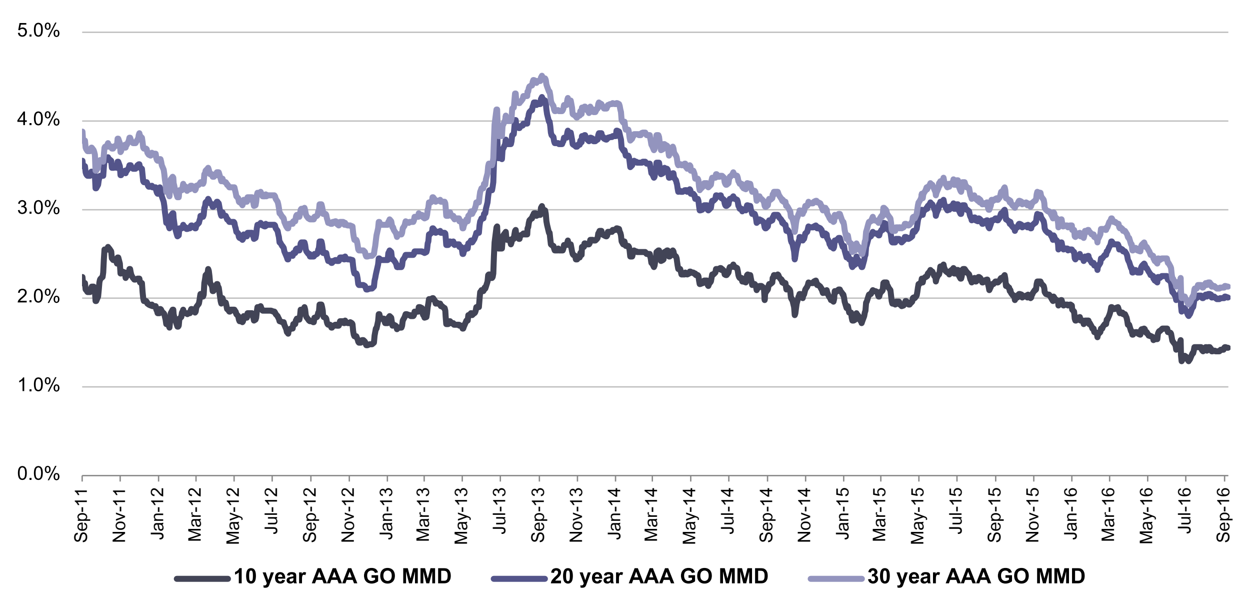
E. Market Conditions

This section highlights the municipal market conditions over the last five years. These factors affect the market for the State's bonds.

Interest Rates

The Thomson Reuters Municipal Market Data (MMD) AAA curve is the benchmark for tax-exempt municipal borrowing rates. The chart below depicts the 10-year, 20-year and 30-year AAA MMD interest rates. Tax-exempt rates are near historically low levels. As reflected below, interest rates have generally declined over the last three years. While economists predicted a rise in rates in 2016 based on strong U.S. economic indicators, concerns over the global economy have resulted in sustained low long-term interest rates.

Historical Tax-Exempt Rates

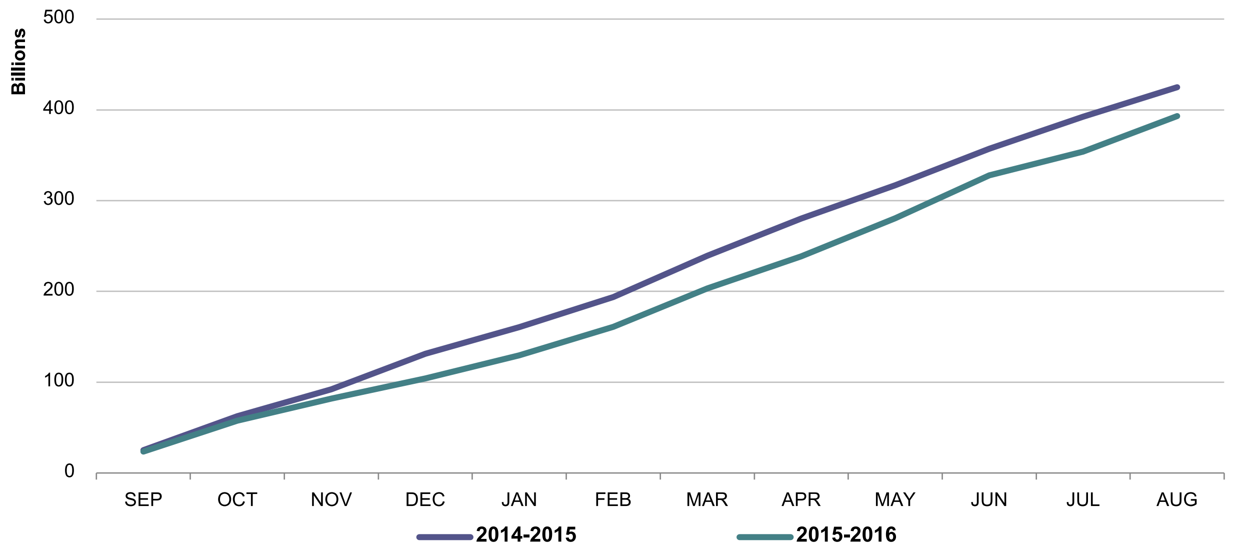


Source: TM3 – Thomson Reuters

Bond Volume

Generally, the rates on municipal bonds relative to other fixed-income investments is a function of supply and demand. A good measure of supply is the amount of new issuance occurring relative to prior years. This, as well as the amount of bonds maturing or being redeemed, determines how many municipal bonds are outstanding at any given time.

Nationwide Cumulative Bond Issuance



Source: Thomson Reuters

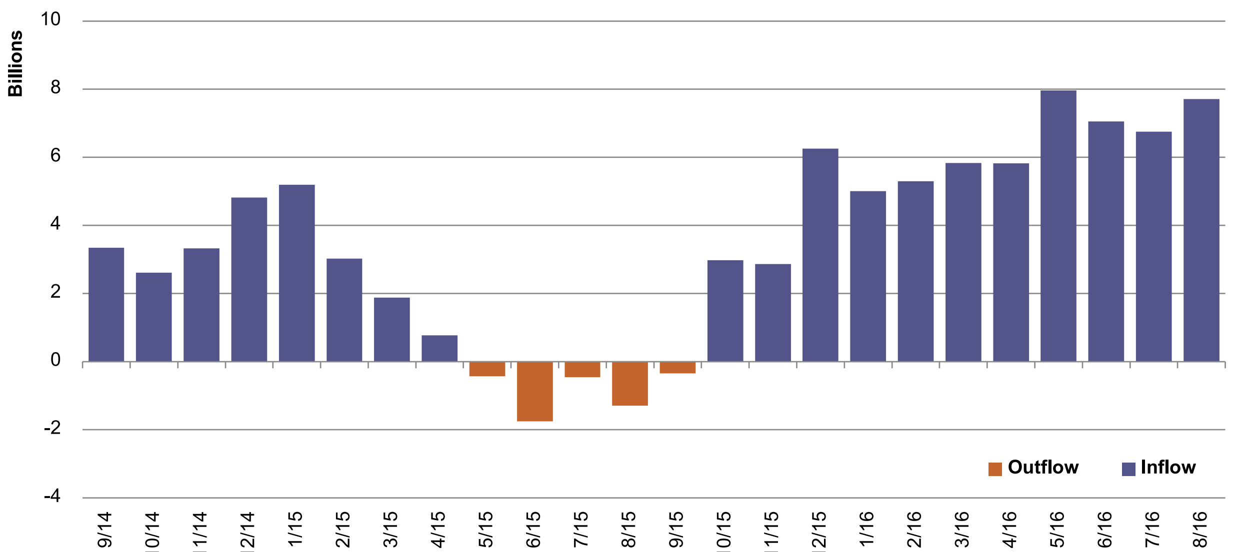
Nationally, municipal bond issuance volume has been lower than prior years. Cumulative bond issuance for a one year period through August 2016 was $31.8 billion or 20.8% lower compared to the same period one year earlier. Bond volume significantly picked up pace in September, though, as many municipal issuers looked to take advantage of the favorable market before the U.S. Presidential election in November.

Municipal Bond Market Monthly Fund Inflows/Outflows

Municipal bond mutual funds specializing in tax advantaged investments represent a significant segment of the investor base for tax-exempt bonds. Asset inflows and outflows of cash for these funds are a good proxy of overall demand for municipal bonds. The middle of calendar year 2015 experienced some outflows, however the trend reversed later in 2015 ending with a net total inflow of $18.72 billion.

Since October 2015, municipal bond funds have experienced consecutive monthly inflows reflecting a healthy demand for municipal bonds. Demand for municipal bonds in 2016 has been very strong with total net inflows of $51.4 billion through August.

Municipal Bond Market Monthly Fund Inflows/Outflows

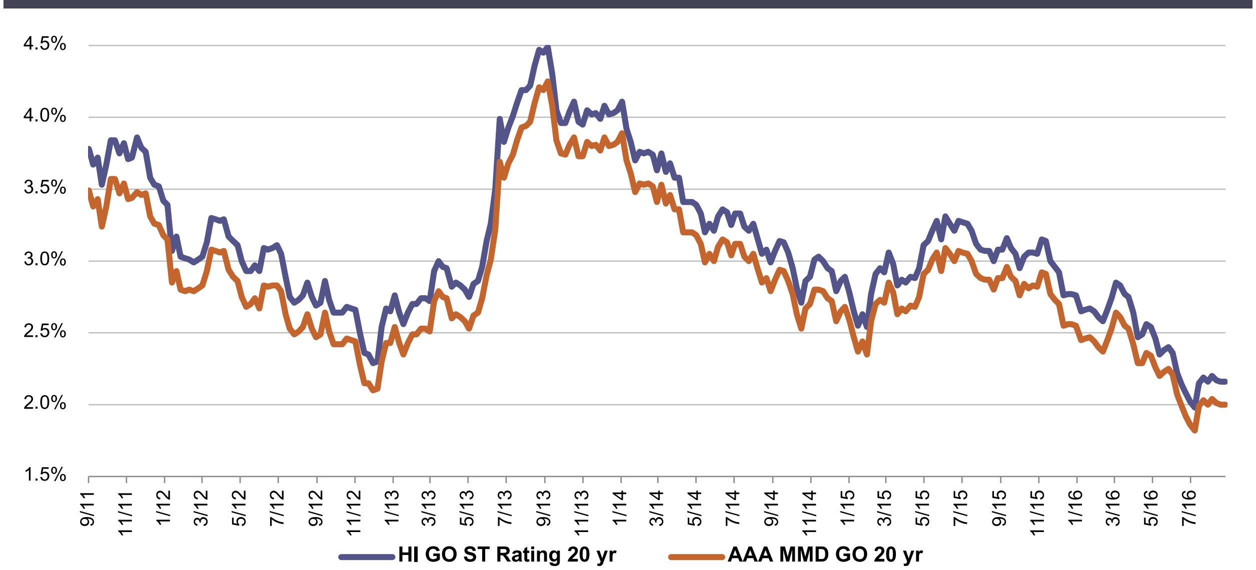


Source: Investment Company Institute

Interest Rates on Hawaii's Bonds

Interest rates on Hawaii's bonds are driven by both State-specific factors such as credit ratings as well as overall market conditions. Given the State's GO credit ratings in the 'AA' category, the State's GO bonds trade close to the AAA benchmark rates. Over the last five years, the State's interest rates have consistently tracked the AAA benchmark.

Historical Hawaii GO 20-Year and AAA MMD GO 20-Year Rates



Source: TM3 – Thomson Reuters

II. The Department of Budget and Finance and General Fund Debt

The Department of Budget and Finance, headed by the Director of Finance, administers the State budget, develops near- and long-term financial plans and strategies for the State, conducts reviews of finances, organization, and operations of each department of the State to ensure appropriate and effective expenditure of public funds and provides programs for the improvement of management and financial management of the various departments and agencies. The issuance of all debt issued by Departments of the State is coordinated with and overseen by the Director of Finance and the Department of Budget and Finance. Non-general fund State financing programs are described in the following sections under applicable Departments.

It is important to note that the State has unique characteristics as compared to the other 49 U.S. states by virtue of its location in the Pacific Ocean. Because the State is not physically connected to any other state, it is dependent on air and sea transportation to bring goods and people to and from the islands.

The State has a large military presence as a result of its strategic location. This results in sizeable federal spending in the State which is a significant component of the State economy, particularly in relation to its size and population. Compared to most other states, Hawaii's scenic location promotes tourism and is a source of considerable economic activity and revenues for the State. The State is highly dependent on overnight visitors' spending.

Additionally, the State of Hawaii's general fund supports several functions that are typically supported by regional and local governments in other states across the nation. These additional responsibilities include GO bond funding for the K-12 education system, the hospital system, and the jail and penitentiary system. The combination of these economic characteristics that drive the State's revenues in combination with the State's expanded support of more commonly regional/local obligations make the State of Hawaii particularly unique and it is challenging to compare the State against other states. While these programs contribute to the overall debt levels of the State, they are essential to the long-term viability of the State and the welfare of the population. Major State general fund tax revenues include general excise and use tax, income taxes, transient accommodations tax, and other taxes.

B&F administers the issuance of general fund supported debt including GO bonds. Although GO bonds are the primary financing program, B&F also issues COPs and enters into financing agreements such a capital leases, as required. All GO bonds are secured by the full faith and credit of the State, and the State must take action to ensure that sufficient revenues will be raised and provided from time to time for the purpose of payment of principal and interest on GO bonds. The State also issues reimbursable GO bonds on behalf of other Departments, and debt service on these bonds is payable by the beneficiary Department from revenues or user taxes, or both, derived from the public undertaking or improvements that were financed by such GO bonds. COPs and capital leases are payable from any lawfully available funds of the State including the general fund and are subject to legislative appropriation.

A. Debt Profile

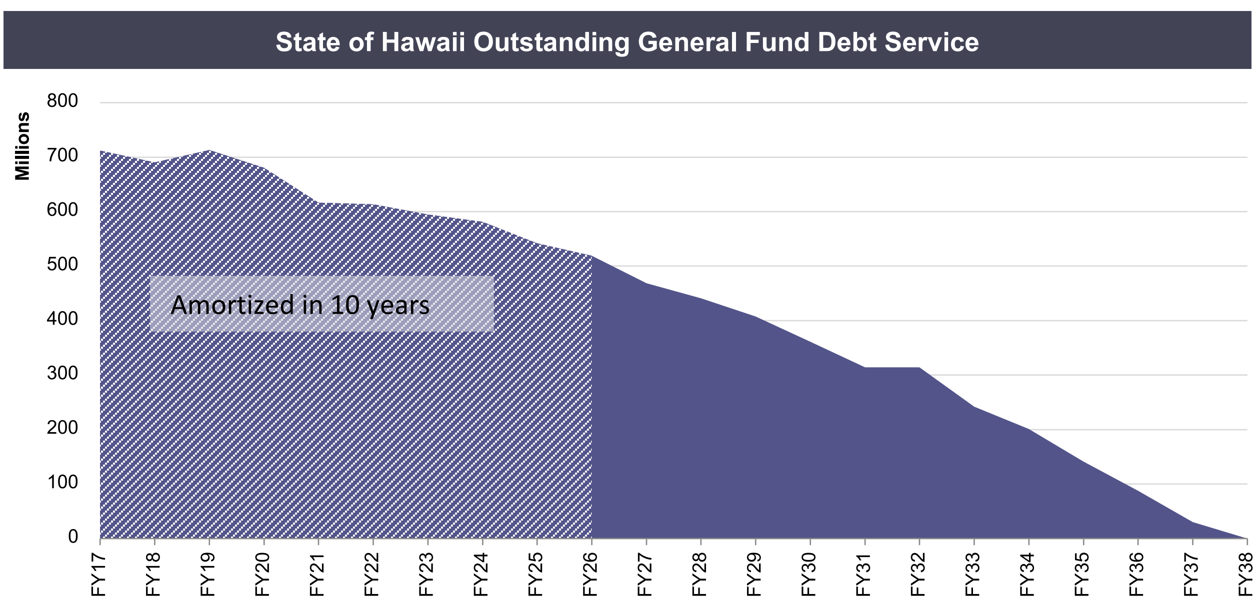
The State currently has 40 series of GO bonds outstanding with a total par amount of $6.57 billion. In addition to GO debt, the State also has COPs and capital leases outstanding in the amount of $15.2 million and $54.5 million respectively, which are payable from the general fund and account for less than 1% of the portfolio. A detailed list of all outstanding series supported by the general fund is included in **Appendix B**.

Summary of General Fund Supported Debt as of October 14, 2016			
GENERAL FUND SUPPORTED DEBT	**OUTSTANDING**		
Figures in thousands	Reimbursable	Non-Reimbursable	Total
General Obligation Bonds	$30,536*	$6,538,099	$6,568,635
Certificates of Participation	NA	$15,200	$15,200
Capital Lease	NA	$54,472	$54,656
TOTAL GENERAL FUND SUPPORTED DEBT	**$30,536**	**$6,607,771**	**$6,638,491**

*As of July 1, 2016

B. Debt Service Chart

Per the Hawaii Constitution, the State is required to structure all GO bonds with annual level principal payments or annual level debt service payments resulting in an overall tapering amortization schedule as seen below. With the State's conservative GO debt structure, the State's debt service amortization is rapid. Over 62% of principal is repaid within ten years. The chart below reflects the State's annual general fund debt service.



C. Credit Ratings

Credit ratings provide an independent opinion regarding the State's ability and willingness to meet its financial commitments. Credit ratings issued by the bond rating agencies are a major factor in determining the cost of borrowed funds in the municipal bond market and are one of the tools used by investors when purchasing municipal obligations. Moody's Investors Service (Moody's), Standard & Poor's (S&P), and Fitch Ratings (Fitch) assign ratings to the State's GO bonds and general fund COPs. As reflected in the table below, the State maintains strong ratings with recent upgrades from Moody's and S&P (September 2016). The State strives to obtain the highest possible credit ratings in order to minimize interest costs while maintaining future flexibility.

State of Hawaii				
		Moody's	**S&P**	**Fitch**
General Obligation	Rating	Aa1	AA+	AA
	Outlook	Stable	Stable	Stable
Certificates of Participation	Rating	Aa2	AA	AA-
	Outlook	Stable	Stable	Stable

The rationale for the State's credit rating upgrades are the State's strengthening economic outlook and fiscal position, restoration and maintenance of sizable reserves bolstered by a newly adopted formal reserve policy (unassigned general fund balance of at least 5% and an emergency and budget reserve fund balance of at least 10% of revenues) and demonstrated commitment to managing its long-term liabilities including pension and OPEB. Additional credit strengths include strong financial governance characterized by multi-year planning, quarterly consensus revenue forecasting, strong executive power to reduce spending, historical fiscal conservatism, low unemployment rates, healthy tourism growth, stable military presence, strong liquidity position, rapid amortization of debt, and a conservative all-fixed-rate debt profile.

Credit challenges include vulnerability to tourism, high debt per capita, debt-to-personal income and debt service ratios, and high pension and OPEB liabilities.

The State's GO ratings are largely driven by outside forces. Economic performance continues to be a major driver of the credit picture for the State. Prioritization of funding pension and OPEB liabilities and continued sound financial management will contribute to addressing ratings analysts' cited concerns. Although the State's debt levels are among the highest in the nation, additional credit factors including fiscal conservatism and proactive financial management boost the State's credit quality. In addition, this Study promotes a systematic approach towards prudent use of debt further supporting sound financial management.

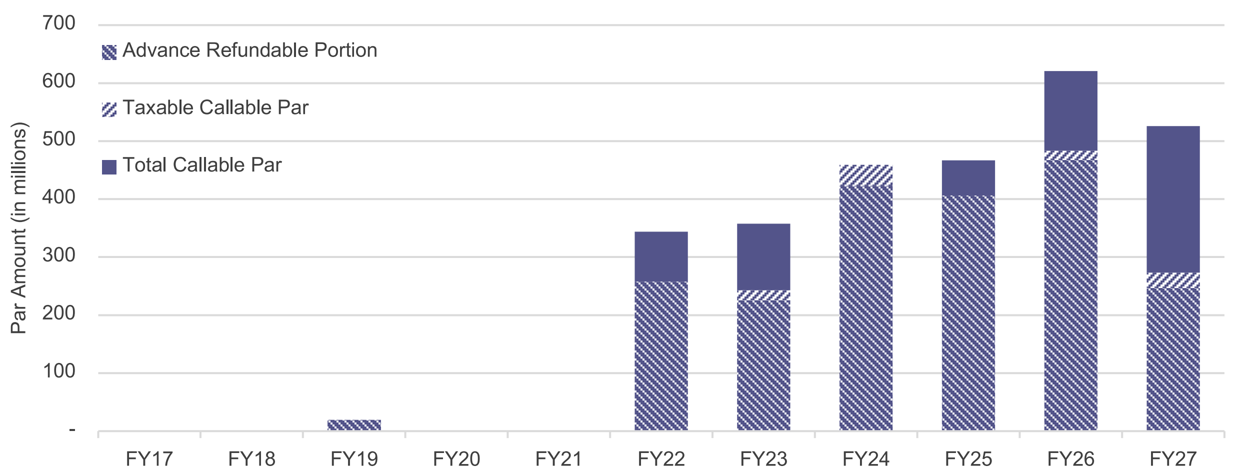
D. Schedule of Callable Bonds

The State monitors its debt portfolio for refunding opportunities and from time to time, the State executes refundings, both current and advance, based on market conditions and other factors. Over the last five fiscal years, the State issued \$2.2 billion in refunding bonds for total nominal savings of over \$272 million and present value savings of $228 million. In October 2016, the State issued another $382 million in refunding bonds for additional savings of $26.9 million, or $23.1 million in present value terms.

The chart below provides a summary of outstanding GO callable par amounts along with their eligibility to be advance refunded. The State's total outstanding GO callable par is about $2.8 billion. The State has no currently callable par outstanding. Approximately $2.05 billion of callable par is advance refundable and the remaining bonds are callable beginning in FY2022. As indicated in the chart, the callable par amounts also include certain portions of taxable bonds that are callable without the make-whole-call (MWC) premium that is typically associated with taxable bonds.

In addition to GO bonds, the State has $15.2 million COPs outstanding all of which are currently callable. Pursuant to the criteria outlined in its Debt Management Policy, the State may pursue opportunities to refund callable bonds.

Schedule of Callable GO Bonds

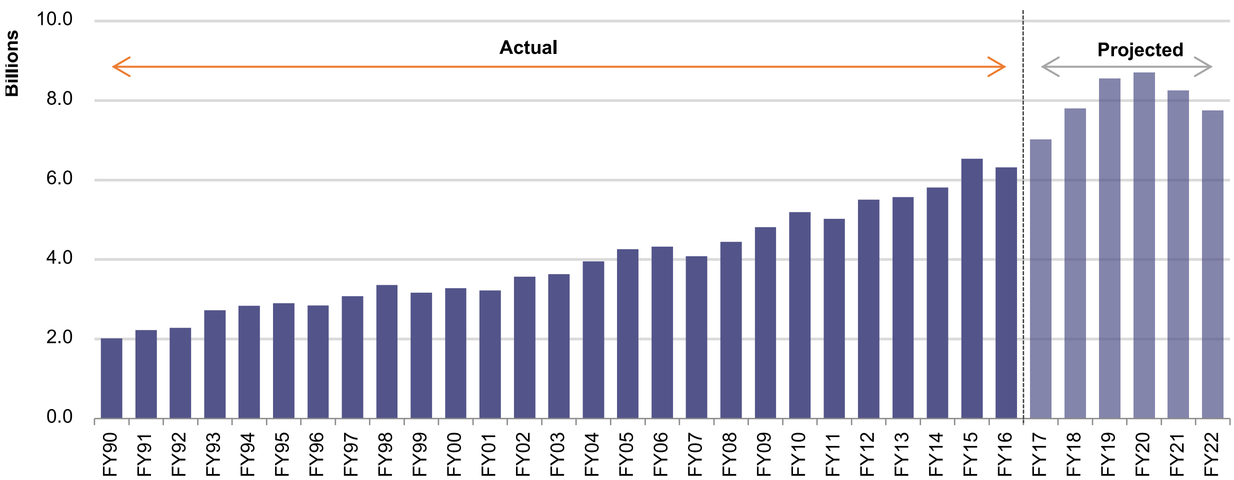


E. Multi-Year Program Anticipated/Intended Debt Issuance

Existing Debt and Anticipated Issuance

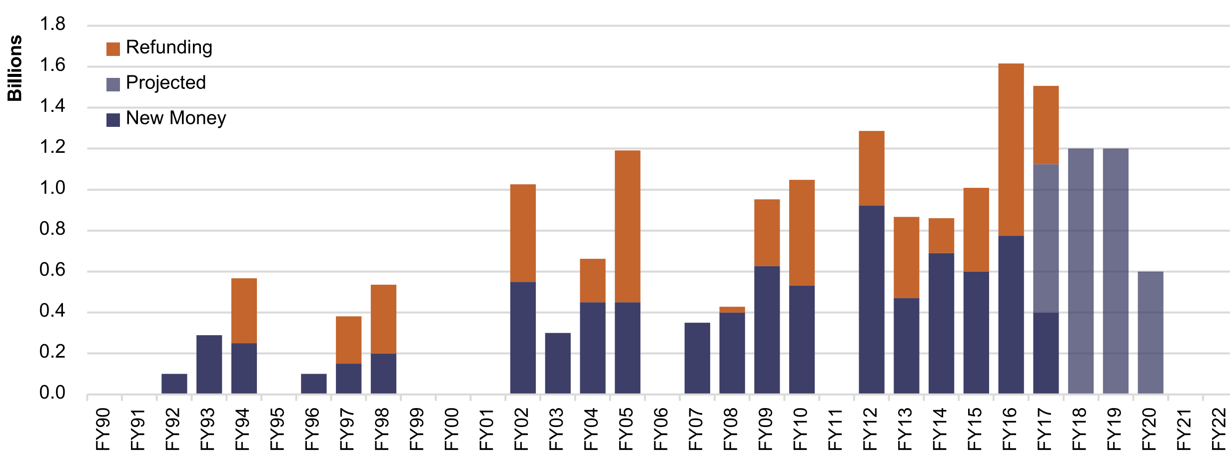
The State's annual issuance, and by relation the amount of GO debt outstanding, has increased significantly since 1990; more rapidly so in recent years. New money issuance in the last five fiscal years totaled $3.5 billion including $775 million in FY2016. The amount of debt supported by the general fund increased by 27% during the period. The State issued $400 million in new money bonds and about $382 million in refunding bonds in October 2016 and plans to issue an additional $725 million new money before fiscal year end in June 2017.

Current and Projected Outstanding General Obligation Bonds



The State tentatively plans to issue about $3.725 billion in new money GO bonds over its six year planning horizon through FY2022. The planned GO bonds are anticipated to fund infrastructure projects throughout the State. The State paid more principal than what was issued from FY2015 to FY2016 and outstanding GO debt dropped from $6.53 billion to $6.32 billion; previously, the State's GO debt had increased every year since FY2011.

Bond Issuance – Historical and Projected



Unissued but Authorized Debt

The total amount of authorized but unissued State GO bonds as of August 31, 2016 is $3,289,381,131. This amount does not take into account the most recent issuance of GO bonds in October 2016.

F. Measuring Debt Burden

Debt ratios form the basis for peer comparison and allow the State to measure and track its debt burden over time. It is important to note that the State is unique in that it funds capital needs that are more typically funded by local municipal entities (as described previously). As such, the State's debt burden metrics are higher in comparison to medians and peers. The State's affordability metrics over the past five years are provided below. In addition, the State is projected to issue $3.725 billion in GO Bonds through FY2022 and the projected impact to affordability metrics is reflected in the table as well.

Historical and Projected (six-years) Metrics

AFFORDABILITY METRICS	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	8.6%	10.2%	11.1%	12.3%	11.3%	11.0%	11.0%	11.1%	11.9%	12.3%	11.6%	11.5%
Pension pay-go to annual revenues	8.3%	8.1%	6.3%	7.5%	5.8%	8.6%	8.5%	8.6%	8.3%	8.1%	8.0%	-
OPEB pay-go to annual revenues	4.7%	4.4%	4.1%	6.0%	5.9%	7.5%	10.3%	11.0%	11.1%	11.0%	11.0%	-
All annual obligations to annual revenues	21.5%	22.7%	21.5%	25.8%	23.0%	27.2%	29.8%	30.6%	31.3%	31.4%	30.6%	11.5%
Annual debt service to annual appropriations	10.2%	11.7%	13.8%	13.7%	12.9%	11.9%	11.9%	12.0%	12.9%	13.3%	12.5%	12.4%
Pension pay-go to annual appropriations	9.8%	9.3%	7.9%	8.4%	6.7%	9.3%	9.2%	9.3%	9.0%	8.8%	8.6%	-
OPEB pay-go to annual appropriations	5.5%	5.0%	5.1%	6.7%	6.7%	8.1%	11.1%	11.8%	11.9%	11.9%	11.9%	-
All annual obligations to annual appropriations	25.6%	26.0%	26.8%	28.8%	26.2%	29.4%	32.2%	33.1%	33.8%	33.9%	33.1%	12.4%
Debt per capita	$3,734	$4,043	$4,037	$4,169	$4,614	$4,721	$5,152	$5,641	$6,098	$6,135	$5,778	$5,391
Debt per capita (Adjusted)	$2,296	$2,481	$2,475	$2,552	$2,811	$2,874	$3,133	$3,426	$3,701	$3,722	$3,506	$3,270
Pension UAAL per capita	$5,947	$6,093	$6,065	$6,064	$6,154	$6,201	$6,238	$6,266	$6,281	$6,285	$6,273	$6,245
OPEB UAAL per capita	$10,216	$8,449	$8,357	$5,191	$5,150	$6,305	$6,489	$6,624	$6,701	$6,712	$6,714	$6,703
Debt as a % of state GDP	7.5%	7.9%	7.7%	7.8%	8.4%	8.3%	8.8%	9.4%	9.8%	9.5%	8.7%	7.8%
Debt as a % of state GDP (Adjusted)	4.6%	4.8%	4.7%	4.8%	5.1%	5.1%	5.4%	5.7%	5.9%	5.8%	5.2%	4.7%
Pension UAAL as a % of state GDP	11.9%	11.9%	11.6%	11.4%	11.2%	11.0%	10.7%	10.4%	10.1%	9.7%	9.4%	9.0%
OPEB UAAL as a % of state GDP	20.4%	16.5%	16.0%	9.8%	9.4%	11.1%	11.1%	11.0%	10.8%	10.4%	10.1%	9.7%
Debt as a % of personal income	8.8%	9.2%	9.1%	9.2%	9.8%	9.7%	10.2%	10.7%	11.1%	10.8%	9.8%	8.8%
Debt as a % of personal income (Adjusted)	5.4%	5.7%	5.6%	5.7%	6.0%	5.9%	6.2%	6.5%	6.7%	6.5%	5.9%	5.4%
Pension UAAL as a % of personal income	14.1%	13.9%	13.7%	13.4%	13.1%	12.7%	12.3%	11.9%	11.4%	11.0%	10.6%	10.2%
OPEB UAAL as a % of personal income	24.2%	19.3%	18.8%	11.5%	11.0%	12.9%	12.8%	12.6%	12.2%	11.8%	11.4%	11.0%
Pension UAAL as a % of total GF revenues	165.5%	159.2%	146.9%	152.7%	146.2%	141.5%	137.1%	132.4%	127.7%	123.1%	118.8%	114.3%
OPEB UAAL as % of total GF revenues	284.2%	220.7%	202.4%	130.7%	122.4%	143.9%	142.6%	140.0%	136.2%	131.5%	127.1%	122.7%
Liquidity – days' cash on hand	52 days	79 days	15 days	24 days	48 days	64 days	39 days	51 days	68 days	91 days	124 days	-

Note: Projected metrics assume issuance of $3.725 billion of additional GO bonds during the projection period (see anticipated debt above)

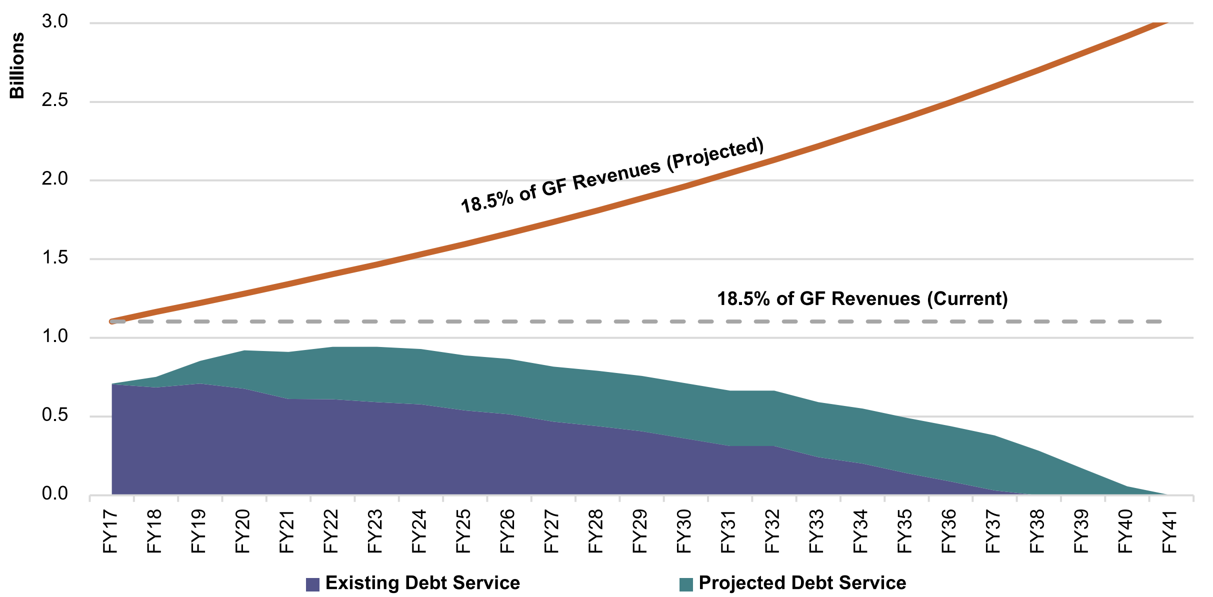
FY2022 pension/OPEB contributions not available

Relevant Affordability Metrics

The table above offers several metrics to measure debt burden and evaluate affordability. Many of the metrics are used for peer/median comparison which constitutes an alternate method to measure debt level and affordability. Some of the most relevant metrics are discussed below.

Constitutional Debt Limit for GO Bonds (Per Constitutional Calculation): The State's constitution limits maximum annual debt service on aggregate outstanding GO bonds to 18.5% of the average of general fund revenues for the three preceding years. Current projection of the State's future GO debt reflects significant capacity under the 18.5% ceiling (orange line in the chart below). Projected debt service is estimated to reach a maximum of 13.1% of projected general fund revenues (average for three preceding years) in FY2019.

State of Hawaii Constitutional Debt Limit for GO Bonds



Annual debt service payments to annual revenues or Annual debt service payments to annual appropriations: Both of these ratios indicate the percentage of the State's general fund budget that is dedicated to fixed costs such as debt service payments. It is a measure of financial flexibility available within the State's general fund. For FY2016, an estimated 11.0% of general fund revenue was utilized to service debt, up from 8.6% in FY2011. Similarly, debt service payments account for 11.9% of FY2016 general fund expenditures, up from 10.2% in FY2011. Hence, a greater portion is being allocated to debt service which may limit the State's flexibility and ability to make budgetary adjustments when required.

The general fund's contribution towards pension and OPEB are also categorized as fixed costs. Accounting for these contributions, approximately 27.2% of the State's general fund revenue for FY2016 supports fixed costs, up from 21.5% in FY2011. As the State ramps up its OPEB contributions to 100% of the annual required contribution (ARC), fixed costs are projected to increase to 31.4% in FY2020. It should be noted, however, that the State's proactive funding of OPEB is viewed favorably as a prudent financial measure. Many states across the nation are still evaluating potential strategies to address significant OPEB liabilities.

Debt as a percentage of State GDP: This ratio is a measure of financial leverage provided by the State's economy and its ability to repay debt based on the goods and services produced in its economy. Debt-to-GDP is 8.3% for FY2016 which is higher than other states primarily due to State funding of K-12 education that is normally funded at the local level in other states. As B&F executes its borrowing program over the next few years, debt levels are projected to peak at 9.8% of GDP in FY2019.

Although not direct debt, the unfunded actuarial accrued liability (UAAL) for pension and OPEB are mandatory long-term obligations, and as such get treated akin to debt for financial analysis. The pension UAAL and OPEB UAAL, each, account for about 11.0% of the estimated 2016 state GDP. The OPEB UAAL was as high as 20.4% of state GDP in FY2011. Recent pension and OPEB reforms adopted by the State made a significant impact in addressing these unfunded liabilities, and the positive impact of these proactive actions is visible in the ratios already which otherwise tend to escalate rather quickly. This proactive funding of retirement liabilities contributed to the increase in fixed costs in the last few years as discussed above but is part of the State's overall strategy towards reducing these long-term obligations.

Debt as a percentage of personal income: Total personal income for a state provides the basis for evaluating its revenue generating ability. The debt-to-personal income metric measures a state's ability to continually generate sufficient revenues to repay debt. For FY2016, B&F's debt-to-personal income ratio is 9.7% and is projected to increase to 11.1% by FY2019. Pension and OPEB UAAL each account for just below 13% of the estimated FY2016 personal income.

Debt per capita: This ratio is a measure of the debt burden shared by each resident of a state on average. Since it accounts for all residents with no specificity for age, income or employment, the ratio is not as efficient in measuring ability to repay debt but is still meaningful for peer comparison. The State's debt per capita is $4,721 for FY2016. It is projected to increase to about $6,135 per capita by the end of this decade for the same reasons cited above. On a per capita basis, pension and OPEB UAAL add another $6,200 to $6,300, each, to B&F's obligations.

With respect to leverage, the State's levels are in the highest category under all three rating agency methodologies. S&P's U.S. States Rating Methodology contains one particular overriding factor impacting state ratings relevant to the State's debt affordability discussion: "High level of expected future debt/liabilities." In the methodology, the following metrics are evaluated with an upper limit as designated in the table below. To the extent the majority of the State's debt ratios are above the upper limit, S&P may lower the indicative credit rating one notch.

DEBT RATIOS	S&P DEBT BURDEN SCORING RANGE				Upper limit for override
Score	1	2	3	4	
Tax-Supported Debt Per Capita	Below $500 (Low)	$500 - $2,000 (Moderate)	$2,000 - $3,500 (Moderately high)	Above $3,500 (High)	$4,667
Tax-Supported Debt/Personal Income	Below 2% (Low)	2% - 4% (Moderate)	4% - 7% (Moderately high)	Above 7% (High)	9.3%
Tax-Supported Debt Service As A % Of General Government Spending	Below 2% (Low)	2% - 6% (Moderate)	6% - 10% (Moderately high)	Above 10% (High)	13.3%
Tax-Supported Debt Service As A % Of Gross State Product	Below 2% (Low)	2% - 4% (Moderate)	4% - 7% (Moderately high)	Above 7% (High)	9.3%
Debt Amortization (10-year)	80% - 100% (Very Rapid)	60% - 80% (Rapid)	40% - 60% (Average)	Less than 40% (Slow)	26.7%

As reflected below, the State is already at the highest level of debt according to the scoring range under all ratios except debt amortization. Tax-supported debt per capita and tax-supported debt to personal income already exceed S&P's upper limit. By FY2018, three of the five metrics exceed the upper limit and may result in a negative notching factor. As such, the State needs to carefully monitor its debt issuances in relation to potential credit impact which may lead to borrowing cost increases. It is important to note that debt burden is one of several evaluation factors which determine the State's ratings and a holistic review will take into account other pertinent criteria besides leverage.

DEBT RATIOS	S&P Upper limit	HAWAII PROJECTED GO DEBT BURDEN						
		FY16 (Est.)	FY17	FY18	FY19	FY20	FY21	FY22
Tax-Supported Debt Per Capita	$4,667	$4,721	$5,152	$5,641	$6,098	$6,135	$5,778	$5,391
Tax-Supported Debt/Personal Income	9.3%	9.70%	10.17%	10.70%	11.11%	10.77%	9.79%	8.82%
Tax-Supported Debt Service As A % Of General Government Spending	13.3%	12.03%	11.89%	11.99%	12.87%	13.25%	12.54%	12.45%
Tax-Supported Debt Service As A % Of Gross State Product	9.3%	8.34%	8.82%	9.35%	9.78%	9.51%	8.65%	7.80%
Debt Amortization (10-year)	26.7%	61.9%	61.6%	59.7%	58.6%	59.9%	63.5%	67.6%

Median Comparisons

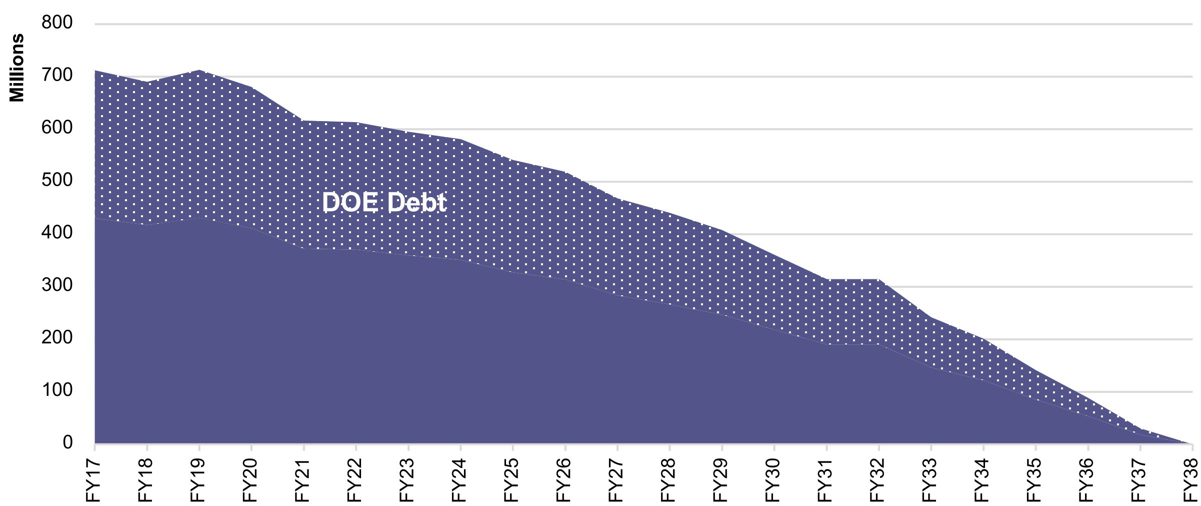
Moody's publishes an annual Debt Median Report including debt ratios for all 50 States and the sector means and medians. The report provides a broader perspective on debt levels and affordability basis through the comparison of Hawaii's debt burden to other states across the country. The following table summarizes the State's GO debt metrics alongside Moody's 2015 medians. The 50-state FY2015 median for debt as percentage of personal income and debt as a percentage of state GDP is 2.5% and 2.2%, respectively. On a per capita basis, the 50-state median is $1,025. As discussed previously, the State's general fund supports significant capital needs for local municipalities in contrast to other states in the nation. As such, the State's general fund supported debt metrics are considerably higher than these states medians and are approaching some of the highest debt levels seen among states (rank in the top 5).

DEBT METRICS	MOODY'S STATES SECTOR DEBT REPORT			STATE OF HAWAII	
FY2015	Median	Average	Max	Actual	Adjusted*
Debt Service Ratio	4.3%	4.7%	14.3%	11.4%	6.9%
Debt as a % of State GDP	2.2%	2.7%	8.8%	8.5%	5.2%
Debt as a % of Personal Income	2.5%	3.0%	9.9%	9.9%	6.0%
Debt per Capita	$1,025	$1,431	$6,155	$4,635	$2,832

**Adjusted for debt incurred for K-12 school system. According to Moody's, Debt Service Ratio is annual debt service as a % of revenues*

Unlike other states, Hawaii has the responsibility for funding the K-12 school system, hospital system, and penitentiary capital needs which contributes to the State's high debt levels. To account for this unique situation and aid a more accurate comparison with State medians, the affordability metrics table above also presents Hawaii's debt metrics as adjusted for the largest of these obligations: Department of Education (DOE) K-12 related obligations. The adjusted debt ratios remain high when benchmarked against states' medians. With the modified metrics, the State still ranks among the top 10 states with the highest debt levels. Note that the size and purpose of debt programs vary greatly for each state since they are driven by several different factors and the resulting medians should be viewed as such. The following graph reflects the estimated DOE related debt service in relation to the State's overall GO debt portfolio.

GO Debt Service: DOE Debt Service Breakout



Note: DOE debt service estimated 39.53% of total GO debt service

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

The State has planned significant debt issuances of $3.725 billion during the multi-year plan. With the additional debt issuances, the State is projected to remain well below the constitutional debt limit based on current revenue projections. Taking into account the projected GO bond issuances, general fund revenues would have to decline by more than 14% from their current levels or 33% from their projected levels, in the year of peak debt service, before the debt limit is breached. Barring any extraordinary events, legal restrictions are unlikely to hinder the State's GO borrowing capacity.

From a broader affordability perspective, projected revenues are sufficient to cover existing and projected debt service and anticipated pension and OPEB contributions. It is important to note that as the State makes progress towards reaching 100% of its ARC for OPEB, a larger share of the State's operating budget will be associated with fixed costs. As per projections, an additional 3.6% of general fund revenues is projected to be designated to OPEB through FY2019 to cover the additional contributions. This increase in fixed cost may limit the State's financial flexibility, particularly its ability to devote resources towards debt service among other operational needs and constraints. That being said, the State's conservative projections reflect sufficient revenues to cover debt service and retirement contributions.

From a credit perspective, the State is at the highest level of debt burden under the rating agency methodologies. The State's affordability metrics for general fund debt as evaluated on the basis of economic factors (debt-to-personal income, debt-to-GDP and debt-per-capita) are among the highest in the nation. Given the unique nature of the State's responsibilities, the State will remain at the high end of the debt burden spectrum and there is limited comparability to other states. It is important to note, however, that the increasing historical trend for many of the State's affordability metrics indicates that borrowing has outpaced economic growth in the State. According to S&P's U.S. States Rating Methodology, the State's projected debt burden may reach beyond the upper limit boundaries and may support a negative credit notching factor in FY2018. Given the State's desire to obtain the highest possible credit ratings, the State should continue to monitor its debt levels to avoid negative rating pressure: debt service as a percentage of total expenditures should remain below 13% and debt service as a percentage of state GDP should remain below 9%. While these targets provide guidelines for maintaining leverage metrics, debt burden alone will not determine the State's credit rating. Several other factors including economic conditions, governance, and financial management contribute to the credit perspective.

As reflected in the analysis above, the State is able to afford the planned additional debt issuances based on projections. As long as new issuances keep pace with economic expansion and revenue growth, debt affordability concerns are mitigated. However, in the near-to-medium term, it will be crucial to maintain contingency in the budget to absorb projected as well as unanticipated increases in general fund expenditures in order to ensure balanced operations. Given the known increased OPEB costs in the near-term, prioritizing essential capital projects and evaluating projects that can be deferred until the full budgetary impact of OPEB costs are absorbed will preserve financial capacity and flexibility during the projection period.

III. Department of Transportation – Airports

The Department of Transportation (DOT) maintains and operates the transportation facilities of the State and are carried out through three primary divisions: Airports, Harbors and Highways. The Department of Transportation, Airports Division (DOT-Airports) supervises and controls all State airways and State owned or managed airports and other air navigation facilities with the exception of private federal facilities. Nearly all non-military passenger traffic throughout Hawaii passes through the Airports System. The primary airports are Honolulu International (on the Island of Oahu), Kahului (on the Island of Maui), Hilo International and Kona International (both on the Island of Hawaii), and Lihue (on the Island of Kauai).

Airports system revenues consist of operating revenues which include aeronautical revenues (landing fees, premises charges, and airports system support charges) and non-aeronautical revenues (concession fees including duty-free, retail, and food and beverage revenues as well as parking revenues and revenues from rental car operations). Non-operating revenues include interest income, federal operating grants, passenger facility charges, and rental customer facility charges.

DOT-Airports' primary financing program consists of airport system revenue bonds secured by net available revenue. Net available revenue represents, generally, total operating revenues less total operating expenses excluding depreciation. DOT-Airports also issues COPs and enters into financing agreements such as loans and leases, as required. The COPs are also secured by the same net revenues however their claim is subordinated to revenue bonds. The rates and charges prescribed by the DOT-Airports on participating airlines are determined by a residual hybrid rate-setting methodology. Under this methodology, the airlines are charged landing fees to allow DOT-Airports to fully recover operating and capital costs associated with the airfield facilities (runways, taxiways, and other facilities), net of any grant reimbursements. Costs associated with the terminal facilities are recovered through aeronautical rentals, premises charges, and airline system support charges to the airlines under the Airline Lease Extension Agreement. This provides DOT-Airports the flexibility to set rates such that it is fully compensated for all operating expenses including debt service.

As such, DOT-Airports benefits from relative financial stability in the fact that as operating costs and debt service increase, there is a corresponding increase in operating revenues sufficient to cover the increase in costs. However, as debt service costs increase, the cost to the airlines to operate at the airports will also increase which could eventually lead to airlines reducing service, particularly if those costs are greater than at other U.S. airports. This risk is mitigated by the high level of demand to, from, and in-between the islands, and the lack of alternative options for such travel, but airlines will generally deploy resources to their most profitable routes. As such, airline costs are an important measure of the ability of DOT-Airports to afford new debt.

DOT-Airports is also planning to issue Customer Facility Charge (CFC) revenue bonds payable from charges imposed on customers that rent automobiles from rental car companies located at the airports and other revenues related to the rental car facilities.

DOT-Airports also issues special facility revenue bonds payable from revenues collected from airlines. Given the payment source of special facility revenue bonds, these bonds have been excluded from DOT-Airports' affordability discussion.

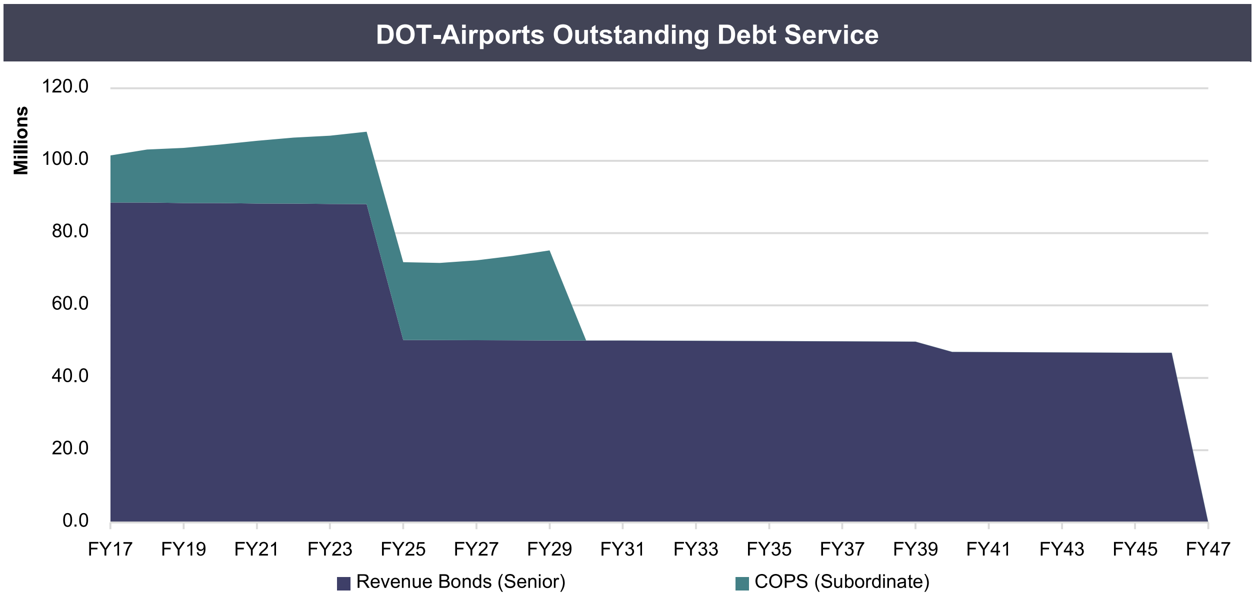
A. Debt Profile

DOT-Airports currently has five series of senior lien general airport revenue bonds outstanding for a total par amount of $1.05 billion and two series of subordinate lien COPs outstanding for a total par amount of $175.8 million dollars. The COPs were issued to fund energy conservation projects and in addition to being secured by a subordinate lien on the net revenues of the airport system they are also secured by the improvements funded by these COPs. Energy savings generated from the projects are sufficient to cover debt service related to the COPs. In addition, DOT-Airports has a $34.9 million EB-5 Loan outstanding.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
Senior Lien Revenue Bonds							
Series 2010A	Tax-Exempt	478,980,000	4/7/10	7/1/39	477,460,000	7/1/2020	468,455,000
Series 2010B	AMT	166,000,000	4/7/10	7/1/20	103,800,000	-	-
Series 2011	AMT	300,885,000	10/4/11	7/1/24	226,530,000	7/1/2021	102,785,000
Series 2015A	AMT	235,135,000	11/18/15	7/1/45	235,135,000	7/1/2025	235,135,000
Series 2015B	Tax-Exempt	9,125,000	11/18/15	7/1/45	9,125,000	7/1/2025	9,125,000
Sub-Total	-	-	-	-	1,052,050,000	-	815,500,000
Subordinate Lien Certificates of Participation							
Series 2013	Tax-Exempt	167,740,000	12/19/13	8/1/28	167,740,000	8/1/2023	98,215,000
Series 2016	Tax-Exempt	8,057,000	4/13/16	8/1/25	8,057,000	-	-
Sub-Total	-	-	-	-	175,797,000	-	98,292,000
EB-5 Loan							
2015 Draw	-	34,910,142	8/27/2014	8/27/19	34,910,142	-	-
Total	-	-	-	-	1,262,757,142	-	913,715,000

B. Debt Service Chart

DOT-Airports' debt service profile is slightly front-loaded. Approximately 38% of revenue bond principal is paid down over the next ten years. Total annual debt service is approximately $105 million per year through 2024 and then drops to approximately $73 million per year through 2029. After 2029, debt service decreases to $50 million per year.



C. Credit Ratings

DOT-Airports maintains strong credit ratings. Additionally, Fitch has assigned a positive outlook based on continued strong financial metrics in the midst of funding a large capital program.

Department of Transportation Airports				
		Moody's	S&P	Fitch
Revenue Bonds	Rating	A1	A+	A
	Outlook	Stable	Stable	Positive
Certificates of Participation	Rating	A2	A	A-
	Outlook	Stable	Stable	Positive

Credit strengths include air service area demand, monopolistic position, stable enplanement growth, low cost per enplanement, low debt burden and high liquidity position.

Credit challenges include large capital improvement program, projected deterioration of financial metrics (coverage and unrestricted cash), and exposure to volatility of tourism industry.

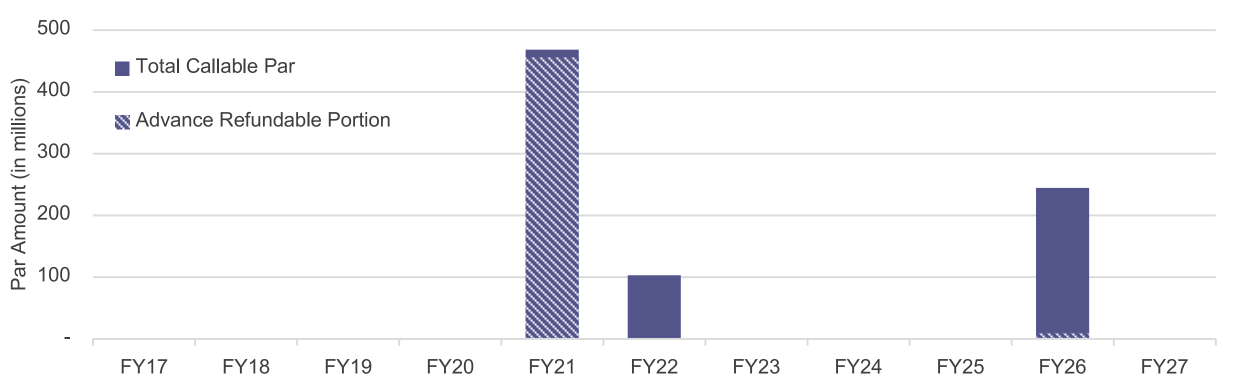
D. Schedule of Callable Bonds

The following chart provides a summary of callable DOT-Airport revenue bonds and par amounts along with their eligibility to be advance refunded. Among DOT-Airports' total revenue bonds portfolio, about $815.5 million represents bonds that are callable before their maturity. Although there are no bonds that are currently callable, about $465 million of the callable par is advance refundable today (the advance refundable portion of Series 2010A). The remaining callable par can be refunded on call dates beginning in FY2021. Since the earliest call date is FY2021, advance refunding of any eligible bonds will have to be structured with an escrow to that call date. Depending on the interest rate environment, long escrow periods may result in significant negative arbitrage making an advance refunding less economical.

In addition to revenue bonds, $98.2 million of DOT-Airports' outstanding COPs are callable in August 2023.

Pursuant to the criteria outlined in its Debt Management Policy, DOT-Airports may pursue opportunities to refund callable bonds.

Schedule of Callable Senior Lien Airport Revenue Bonds

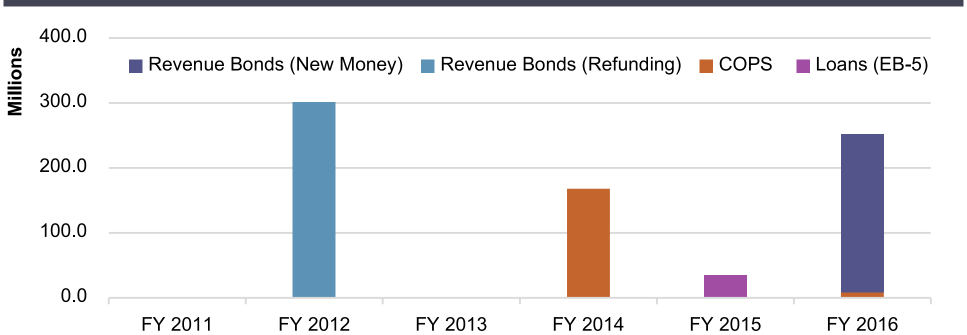


E. Multi-Year Program Anticipated/Intended Debt Issuance

Existing Debt

DOT-Airports currently has $1.05 billion of outstanding revenue bonds as reflected above. DOT-Airports' most recent Series 2015A Bonds were issued to fund capital projects. Prior to that, the Series 2011 bonds refunded prior bonds for debt service savings. In addition, DOT-Airports also issued Series 2013 COPs and privately placed Series 2016 COPs in relation to energy savings projects.

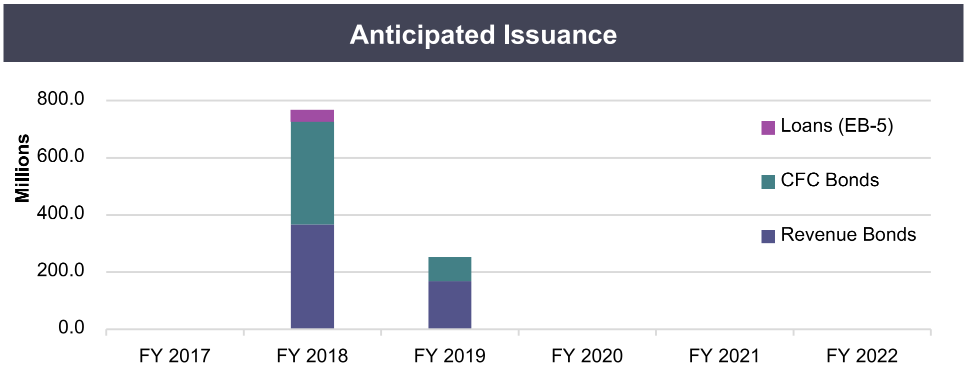
Historical Issuance



Anticipated Debt

As DOT-Airports makes progress on its capital program, it is anticipated that new debt will need to be issued to fund components of the program. DOT-Airports plans to issue approximately $535 million in revenue bonds over the next five years. In addition, DOT-Airports plans to issue approximately $445 million in CFC revenue bonds to support its consolidated rental car facility projects.

The CFC revenue bonds will be issued under a separate Master Trust Indenture and will be secured by a pledge of CFC revenues and other payments related to rental car activity at the Airports. The CFC revenue bonds will not have a pledge of general airport revenues.



Unissued but Authorized Debt

DOT-Airports has a total of $907 million in unissued but authorized revenue bonds and CFC bonds.

F. Measuring Debt Burden

Current Year and Projected (six-years) Metrics

AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	26.7%	26.6%	25.5%	26.5%	26.3%	25.5%	24.2%
Annual debt service to annual appropriations	26.5%	27.0%	26.2%	27.3%	23.2%	26.3%	24.7%
Senior Lien debt service coverage	1.10x	1.24x	1.32x	1.30x	1.29x	1.32x	1.30x
Fully diluted debt service overage	1.00x	1.08x	1.13x	1.13x	1.12x	1.13x	1.10x
Senior Lien debt service coverage (Adjusted Net Revenues)	1.39x	1.50x	1.60x	1.60x	1.61x	1.64x	1.63x
Fully diluted debt service coverage (Adjusted Net Revenues)	1.26x	1.31x	1.37x	1.39x	1.39x	1.41x	1.38x
Cost per Enplanement	9.40	10.03	10.16	11.35	11.98	12.61	12.59
Debt per Enplanement	61.4	58.0	78.1	83.6	75.2	71.1	66.8
Liquidity – days' cash on hand	763 days	-	-	-	-	-	-

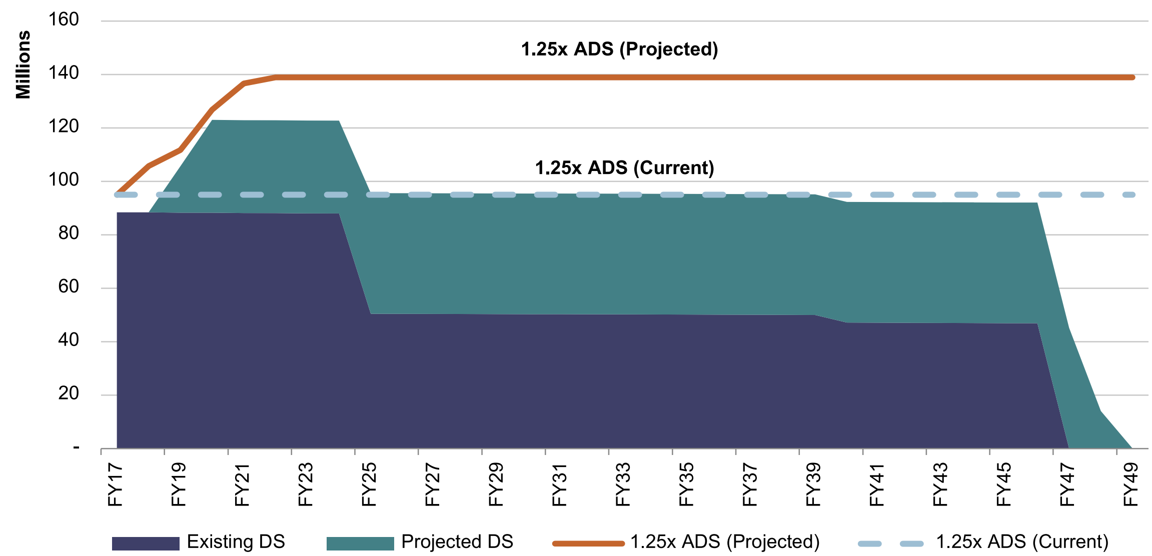
Note: Projected metrics assume issuance of $535 million of additional revenue bonds during the projection period (see anticipated debt above); Projected liquidity not available for FY2017-2022

Relevant Affordability Metrics

1. Certificate Limitations: The Certificate of the Director of Transportation dated May 1, 1969 contains a rate covenant relating to DOT-Airports' revenue bond debt. DOT-Airports shall impose rates and charges, which together with unencumbered funds on deposit in the Airport Revenue Fund at the end of the fiscal year certified as Revenues, will be sufficient to yield net revenues and taxes at least equal to 1.25 times debt service on all revenue bonds (as indicated by the orange line in the chart).

   DOT-Airports plans to issue approximately $535 million in revenue bonds to support capital projects. Any additional bonds are subject to an additional bonds test (ABT) wherein pledged revenues based on most recent audited fiscal year must be at least 1.25 times annual debt service on outstanding debt for the year as well as projected pledged revenues as estimated by a consulting engineer over three year period after close of construction must be at least 1.25 times annual debt service on all bonds then outstanding including the additional bonds. As reflected in the following chart, revenues are projected to be at least equal to 1.25 times debt service on all current and future bonds, meeting rate covenant and ABT requirements.

Debt Limit on Airport Revenue Bonds



As previously described, DOT-Airports employs a residual hybrid rate-setting methodology: essentially, the airlines fully compensate DOT-Airports for any operating expenses including debt service. Due to cost recovery mechanisms in place, DOT-Airports is projected to have sufficient revenues to meet the indenture limitations for planned debt issuances.

As discussed in the Anticipated Debt section above, DOT-Airports also plans to issue CFC revenue bonds. Once the CFC revenue bonds are issued, future iterations of this Study will take into account the specific indenture limitations related to the CFC revenue bonds.

2. Annual debt service payments to annual revenues and Annual debt service payments to annual appropriations: Annual debt service is projected to be consistently, approximately 24% to 27% of annual revenues. Annual debt service is projected to be approximately 23% up to 27% of annual expenditures.

3. Debt service coverage: Debt service coverage is equal to net revenues, as defined in the Certificate, divided by principal and interest requirements for the fiscal year. Due to DOT-Airports' hybrid rate setting methodology, revenues are projected to be sufficient to meet existing and projected debt service requirements on all debt as well as pay projected operating expenses.

4. Liquidity – days' cash on hand: Days' cash-on-hand, a measure of liquidity, is unrestricted cash and investments plus discretionary reserves, divided by operating and maintenance expenditures and multiplied by 365. DOT-Airports anticipates maintaining current levels of unrestricted cash and investments which provide strong days' cash on hand. For FY2016, DOT-Airports is estimated to

maintain 763 days' cash on hand providing significant liquidity for budgetary fluctuations in future fiscal years.

5. Cost per enplanement: Cost per enplaned passenger (CPE) is airline-derived revenues (airline payments for the use of airport facilities in accordance with the adopted rates and charges methodology) divided by enplaned passengers. CPE is projected to increase as DOT-Airports funds capital projects and layers on additional debt service. However, DOT-Airports' CPE levels remain competitive.

6. Debt per enplanement: Debt per enplaned passenger (DPE) is total debt divided by total enplaned passengers. DPE is projected to increase in the near-term as DOT-Airports funds capital projects and layers on additional debt service.

Peer/Median Comparisons

It is important to note that DOT-Airports is relatively unique in that it is a system of airports rather than a single airport. As such, it is challenging to evaluate DOT-Airports among peer airports. Using Fitch's Analytic Comparative Tool (FACT) for U.S. Airports for FY2014, DOT-Airports compares favorably to the operational and financial medians reflected below.

DEBT AND OPERATING METRICS	DOT Airports FY2016	DOT Airports FY2014	FITCH AIRPORTS SECTOR FY2014 MEDIANS				
			All	Large Hub	Regional O&D	AA-Rated	A-Rated
Fitch Rating	**A+**	**A+**					
Enplanements	**17,130**	**16,295**	3,990	18,126	2,879	17,535	3,990
Largest Carrier Share	**52%**	**51%**	41%	48%	39%	28%	43%
O&D	**86%**	**86%**	95%	72%	97%	75%	95%
CPE	**9.40**	**8.96**	8.63	10.49	8.22	9.95	8.48
Days' Cash on Hand	**763**	**842**					
Total Debt Service Coverage Ratio(x)	**1.39**	**1.63**	1.61	1.93	2.28	1.93	1.54
Net Debt/Cash Flow After Debt Service	**5.06**	**4.38**	4.71	6.03	2.69	6.03	4.44
Debt/O&D Enplanement	**71**	**72**	85	150	65	150	85
Debt/Enplanement	**61**	**62**	77	113	62	113	76

Fitch Analytic Comparative Tool for U.S. Airports FY2014. FY2016 data from DOT-Airports.

DOT-Airports' total debt service coverage is slightly lower than the median for large hub airports and AA-rated airports; however, DOT-Airports' hybrid rate setting methodology should support sufficient coverage. Debt per enplanement is very low for DOT-Airports but this is expected to increase as DOT-Airports layers on additional debt reaching a projected $83.6 in FY2019. CPE while in line with sector medians, is higher than Fitch's cited peers, Broward County, Greater Orlando Aviation Authority and San Diego and is projected to increase to higher levels with the addition of new revenue bond debt. DOT-Airports must carefully balance the need to fund infrastructure with maintaining CPE levels so as to attract service. Given DOT-Airports' monopolistic position in the service area and strong tourism levels, rising CPE is less of a concern than for other airports with competitive airports nearby.

DEBT AND OPERATING METRICS	DOT Airports FY2016	DOT Airports FY2014	PEERS			
			Broward County	Greater Orlando	Alaska	San Diego
Fitch Rating	A+	A+	A	AA-	A+	A+
Enplanements	17,130	16,295	12,025	17,535	3,044	4,104
Largest Carrier Share	52%	51%	20%	28%	58%	42%
O&D	86%	86%	92%	95%	100%	90%
CPE	9.40	8.96	4.52	4.59	10.87	7.17
Days' Cash on Hand	763	842	330	688	452	221
Total Debt Service Coverage Ratio(x)	1.39	1.63	1.24	1.93	1.23	1.49
Net Debt/Cash Flow After Debt Service	5.06	4.38	10.17	2.41	7.46	5.25
Debt/O&D Enplanement	71	72	142	58	165	98
Debt/Enplanement	61	62	123	55	165	88

Fitch Analytic Comparative Tool for U.S. Airports FY2014. FY2016 data from DOT-Airports.

Moody's also publishes US Airport Medians, and sector medians for FY2014 are presented below. DOT-Airports' liquidity is very strong and compares favorably to all medians. Total and net coverage levels are lower than medians but as discussed, this is less of a concern given DOT-Airports' ability to raise rates.

DEBT AND OPERATING METRICS	DOT Airports FY2016	DOT Airports FY2014	MOODY'S AIRPORTS SECTOR FY2014 MEDIANS		
			All	Hub	O&D
Moody's	A1	A1			
Enplanements	17,130	16,295	2,501	21,977	1,878
Largest Carrier Share	52%	52%	41%	67%	39%
O&D	86%	86%	96%	53%	97%
CPE	9.40	8.96	8.42	10.42	8.34
Days' Cash on Hand	763	843	560	492	563
Total Debt Service Coverage (x)	1.39	1.63	1.72	1.54	1.72
Net Debt Service Coverage (x)	1.26	1.22	1.53	1.39	1.57
Debt/O&D Enplanement	71	72	76	194	67
Debt/Enplanement	61	62	70	121	66

Moody's Investor Service: US Airport Medians Fiscal 2014. FY2016 data from DOT-Airports.

DEBT AND OPERATING METRICS	DOT Airports FY2016	DOT Airports FY2014	MOODY'S AIRPORTS SECTOR FY2014 MEDIANS			
			AA Rated	A1 Rated	A2 Rated	A1 Rated (AA Market)
Moody's	A1	A1				
Enplanements	17,130	16,295	164,640	5,294	3,279	19,970
Largest Carrier Share	52%	52%	30%	41%	41%	44%
O&D	86%	86%	91%	93%	95%	81%
CPE	9.40	8.96	6.50	8.98	7.94	11.05
Days' Cash on Hand	763	843	688	583	557	617
Total Debt Service Coverage (x)	1.39	1.63	2.88	1.73	1.70	1.56
Net Debt Service Coverage (x)	1.26	1.22	1.45	1.71	1.27	1.36
Debt/O&D Enplanement	71	72	110	105	54	212
Debt/Enplanement	61	62	55	90	53	145

Moody's Investor Service: US Airport Medians Fiscal 2014. FY2016 data from DOT-Airports.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

As DOT-Airports evaluates funding of significant capital improvements, affordability for DOT-Airports can be assessed by several factors including debt service coverage, liquidity and cash balances, cost per enplanement and debt per enplanement. Often times assessing whether an airport is over-leveraged is difficult because of the cost recovery mechanisms in place through the airline and/or rental car agreements.

Enplanements grew by 2.7% from FY2015 to FY2016. DOT-Airports' enplanement forecast conservatively assumes 1.4% to 1.5% growth in annual enplanements during the projection period. Continued progress on DOT-Airports' Capital Improvement Plan (CIP) combined with sustained strong and stable operational and financial metrics support DOT-Airports' credit and overall affordability. The projected financial metrics are subject to enplanement volatility due to unforeseen economic events. Cost mitigation and delayed CIP contingency plans are flexibility measures that may be utilized to support strong metrics despite enplanement volatility throughout the projection period. DOT-Airports' residual hybrid rate-setting methodology provides sufficient revenues to cover increased debt service costs. Projections reflect higher but still competitive CPE and DPE levels, strong maintenance of liquidity, and ultimately, sufficient revenues to pay existing and projected debt service.

IV. Department of Transportation – Harbors

The Department of Transportation, Harbors Division (DOT-Harbors) controls and manages harbors, harbors and waterfront improvements, docks, ports, wharves, quays, bulkheads and landings owned or controlled by the State.

The Harbor System is comprised of ten harbors. DOT-Harbors operates as a landlord port. DOT-Harbors derives its revenues from three major sources: services revenues, rental income and other operating revenue. Services revenues are derived from tariffs assessed on the activities of ships and handling of cargo and include wharfage charges, dockage fees, port entry fees, demurrage, mooring charges and fees for other services. Rental income includes charges for wharf space and land, storage, pipeline usage and automobile parking space. DOT-Harbors operated for many years without any increase in tariffs. More recently, DOT-Harbors has adopted scheduled multi-year tariff increases with consultation and concurrence from primary harbor system users. DOT-Harbors is currently completing the processes required by Hawaii statutory law to allow it to increase tariff rates and charges for maritime-related uses of DOT-Harbors facilities.

DOT-Harbors' primary financing program consists of harbor revenue bonds secured by net available revenue. Net available revenue represents generally, total operating and non-operating revenues (including but not limited to rates and charges assessed in relation with the services provided) deposited into the Harbor Special Fund after payment of any operating costs. DOT-Harbors has the flexibility to adjust the rates and charges prescribed for the services and facilities to ensure sufficiency of revenues. In certain cases, B&F may issue GO bonds on behalf of DOT-Harbors repayment of which is entirely the responsibility of DOT-Harbors. Repayment of reimbursable GO bonds is subordinate to payment on DOT-Harbors' revenue bonds.

A. Debt Profile

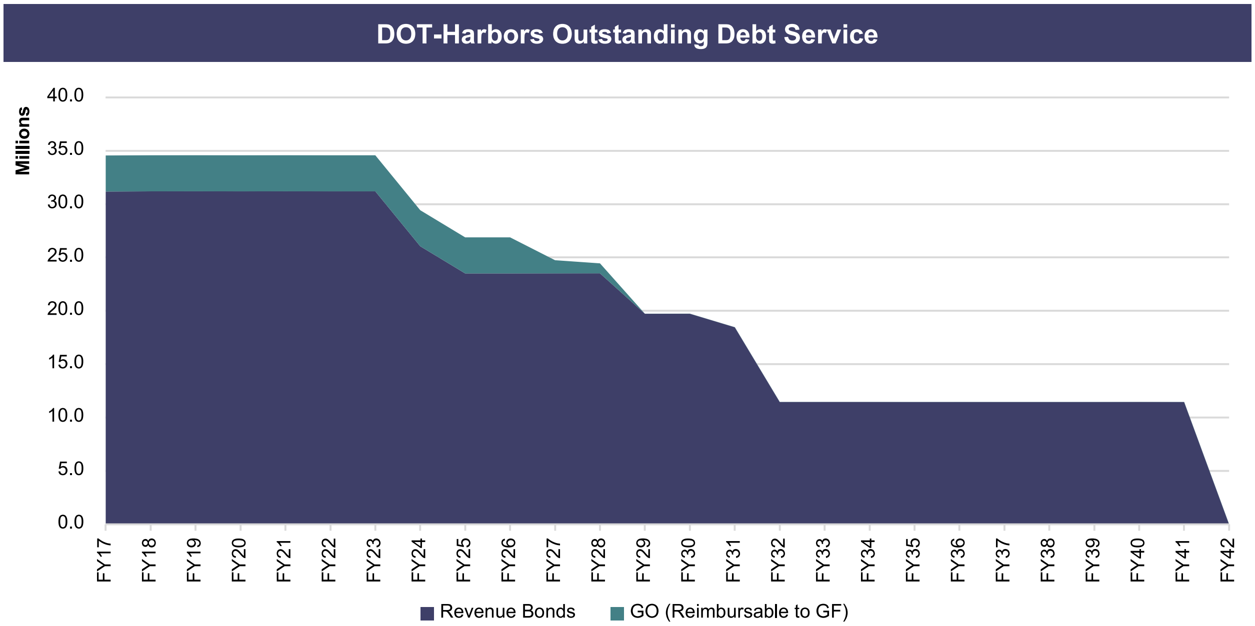
DOT-Harbors currently has six series of harbor revenue bonds outstanding for a total par amount of $323.37 million. In addition, DOT-Harbors supports $27.4 million in reimbursable GO bonds.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
			Revenue Bonds				
Series 2004B	AMT	46,300,000	6/10/04	1/1/24	16,195,000	Current	16,195,000
Series 2006A	AMT	96,570,000	7/12/06	1/1/31	71,625,000	Current	71,625,000
Series 2007A	AMT	51,645,000	8/28/07	7/1/27	34,000,000	7/1/2017	22,315,000
Series 2010A	Tax-Exempt[1]	164,275,000	11/30/10	7/1/40	158,470,000	7/1/2020	140,395,000
Series 2010B	AMT	37,115,000	11/30/10	7/1/21	21,470,000	7/1/2020	4,785,000
Series 2013A[2]	AMT	23,615,000	8/2/13	7/1/29	21,610,000	7/1/2019	13,405,000
Sub-Total	-	-	-	-	**323,370,000**	-	**268,720,000**
			GO Bonds (Reimbursable)				
GO Bonds	Tax-Exempt	-	-	-	27,399,721	-	-
Total	-	-	-	-	**350,769,721**	-	**268,720,000**

[1] Series 2010A Revenue Bonds were private activity bonds issued under the American Recovery and Reinvestment Act. [2] Series 2013A Revenue Bonds were privately placed.

B. Debt Service Chart

DOT-Harbors' debt service is front-loaded. Debt service is approximately $34.6 million through FY2023, decreases through FY2031, and levels off at $11.6 million through FY2041. DOT-Harbors has moderate debt amortization with 51% of revenue bond principal paid over the next ten years.



C. Credit Ratings

DOT-Harbors maintains strong ratings as reflected in the table below.

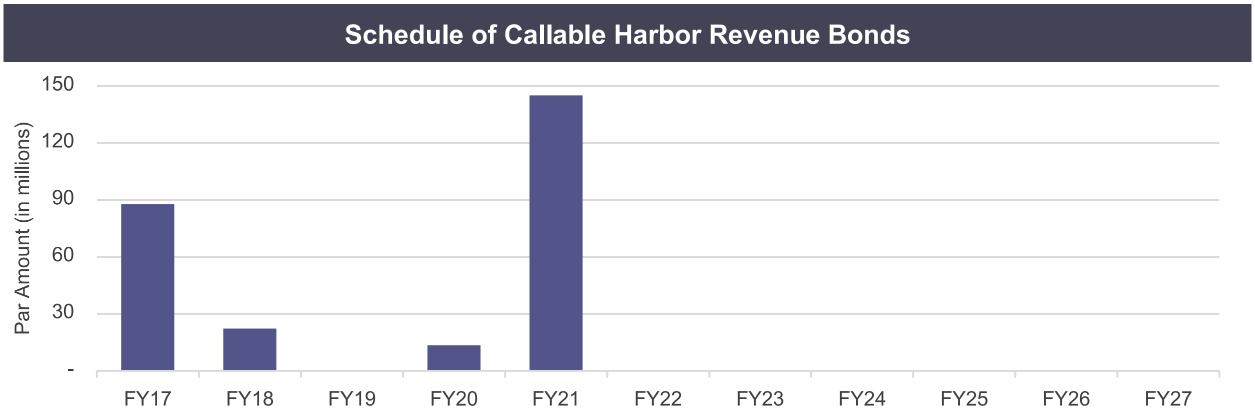
Department of Transportation Harbors				
		Moody's	S&P	Fitch
Revenue Bonds	Rating	A2	A+	A+
	Outlook	Stable	Stable	Stable

Credit strengths include monopolistic position and essentiality to Hawaii's economy, scheduled tariff increases, conservative debt structure, very high liquidity position, and strong debt service coverage levels.

Credit challenges include a sizable capital program and the projected impact on financial metrics including debt service coverage.

D. Schedule of Callable Bonds

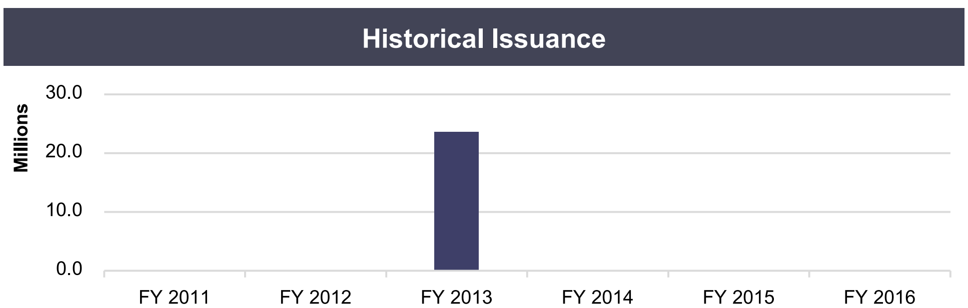
The following chart provides a summary of callable harbor revenue bonds and par amounts. DOT-Harbors has approximately $268.72 million in callable par outstanding. Approximately $87.8 million is currently callable as reflected in FY2017 in the chart (Series 2004B and Series 2006A). Approximately $145.2 million is callable in FY2021 (Series 2010). No part of the callable par amount is advance refundable and as such there are no advance refunding opportunities available to DOT-Harbors at this time. Pursuant to the criteria outlined in its Debt Management Policy, DOT-Harbors may pursue opportunities to refund callable bonds.



E. Multi-Year Program Anticipated/Intended Debt Issuance

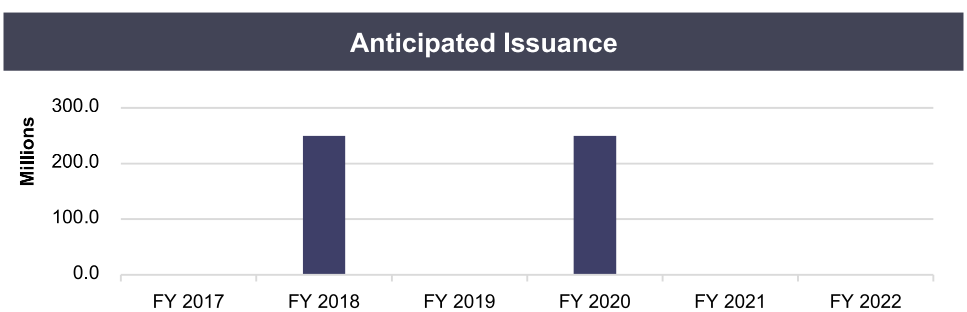
Existing Debt

In the past five years, DOT-Harbors has issued one series of bonds: Series 2013A which was a private placement refunding issuance. DOT-Harbors has not issued new money bonds since 2010 as a result of limited debt-financed CIP needs.



Anticipated Debt

While DOT-Harbors anticipates significant cash-funding of its CIP, $500 million of revenue bond proceeds ($250 million in FY2018 and $250 million in FY2020) are projected to be a source of funding for its CIP.



Unissued but Authorized Debt

DOT-Harbors has $607.7 million in unissued but authorized revenue bonds.

F. Measuring Debt Burden

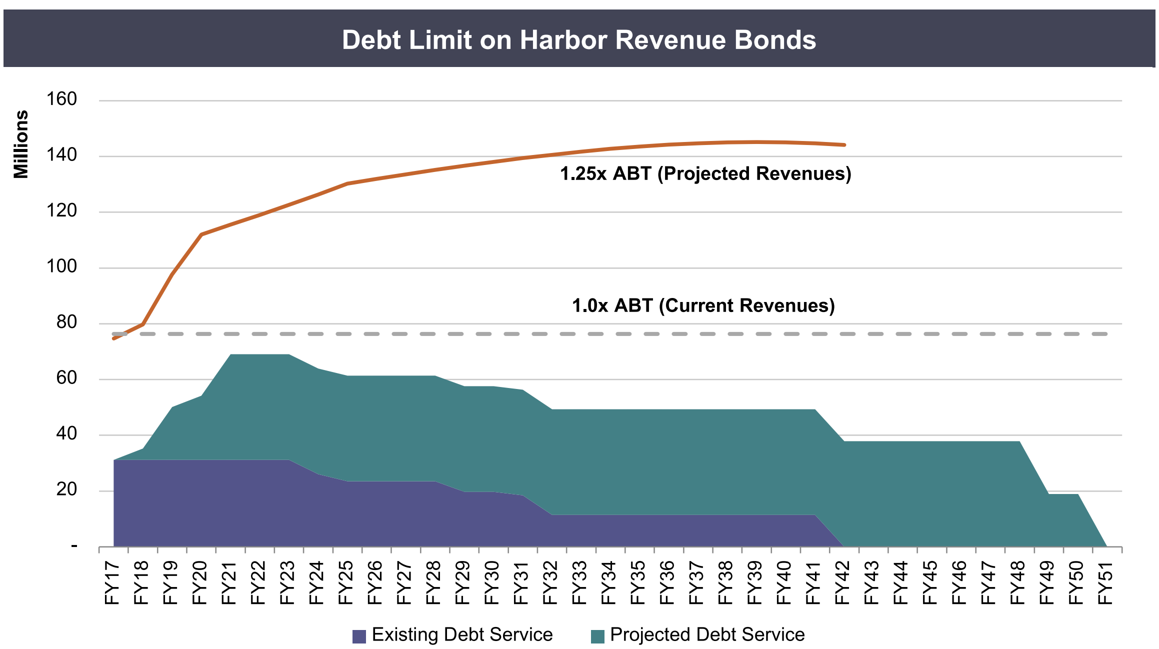
Current Year and Projected (six-years) Metrics

AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	27.3%	23.8%	22.8%	27.8%	28.6%	34.6%	33.2%
Annual debt service to annual appropriations	40.8%	35.4%	37.3%	42.9%	43.3%	47.8%	46.4%
Debt service coverage	2.45x	2.64x	2.96x	2.42x	2.32x	1.89x	1.95x
Debt service coverage (Adjusted net revenues)	2.99x	3.20x	3.46x	2.79x	2.66x	2.15x	2.22x
Debt to operating revenues	2.77x	2.30x	3.34x	2.83x	3.84x	3.56x	3.29x
Liquidity – days' cash on hand	1,660 days	1,001 days	956 days	816 days	744 days	591 days	486 days

Note: Projected metrics assume issuance of $500 million of additional revenue bonds during the projection period (see anticipated debt above)

Relevant Affordability Metrics

1. <u>Bond Certificate Limitations:</u> As per the Bond Certificate of the Director of Transportation dated March 1, 1997, the DOT-Harbors' revenue bonds are subject to a rate covenant that requires setting appropriate rates, rents, fees, and charges so as to always remain self-supporting, i.e. be sufficient to cover all of DOT-Harbor's obligations including but not limited to operating expenses and debt service on outstanding revenue and reimbursable GO bonds. In other words, DOT-Harbors is required to maintain one times coverage on revenue bonds from net revenues of the system before adjustments.



Net revenues when adjusted for balances available in the reserve and contingency are subject to a higher rate covenant of 1.25 times aggregate debt service. Over and above that, should DOT-Harbors want to issue additional senior lien debt, the Certificate dictates a twofold ABT test of at least one times coverage on all anticipated debt based on historical net revenues (gray dotted line in the adjoining chart) and 1.25 times coverage after inclusion of any projected increases in most recent year's net revenues (orange line in the chart).

With plans to issue an additional $500 million in revenue bonds, DOT-Harbors is projected to maintain very strong debt service coverage levels. Historical revenues, even before incorporating projected increases, provide coverage of over 1.0 times and projected revenues provide a coverage much greater than 1.25 times projected debt service in fulfillment of the ABT test.

2. Annual debt service payments to annual revenues and annual debt service payments to annual appropriations: Over the projection period, annual debt service to annual revenues ranges between 22% and 35% (FY2021). Over the projection period, annual debt service to annual appropriations ranges between 35% and 48% (FY2021). This is a reflection of increased debt service and its increasing share of DOT-Harbors' operating budget.

3. Debt service coverage: Debt service coverage is net revenues, as defined in the Certificate, divided by principal and interest requirements for the fiscal year. Over the projection period, debt service coverage (based on adjusted net revenues) is projected to remain strong – not dipping below 2.0 times.

4. Debt to operating revenue: The debt to operating revenues ratio is calculated by dividing total outstanding debt by total annual operating revenues and is a measure of leverage. DOT-Harbors' leverage ratio for FY2016 is 2.8 times and has moderated significantly over the last five years due to healthy increases in operating revenues over the period. It is projected to increase to 3.8 times by FY2020 as DOT-Harbors implements it capital projects but will likely moderate thereafter. Such modulations in leverage ratio are not uncommon among infrequent issuers like DOT-Harbors that access markets after long intervals.

5. Liquidity – days' cash on hand: Days' cash on hand, a measure of liquidity, is unrestricted cash and investments plus discretionary reserves, divided by operating and maintenance expenditures and multiplied by 365. DOT-Harbors' planned use of cash on hand to fund capital projects significantly reduces available liquidity over the next six years. That being said, at the end of the projection period DOT-Harbors' liquidity is still strong at 486 days' cash on hand.

Peer/Median Comparisons

Utilizing FACT for U.S. Ports for FY2015, we compare DOT-Harbors against Fitch rated primary seaports sector medians, Harbor Department of Los Angeles, Port of Long Beach, Virginia Port Authority, and San Diego Unified Port District. As reflected in the following table, DOT-Harbors' liquidity is extremely strong in comparison to the primary seaports sector median and DOT-Harbors' peers. Even with the planned utilization of cash on hand for capital projects, DOT-Harbors' projected 486 days' cash on hand is in line with the sector median and higher than its A+ rated peers.

DEBT AND OPERATING METRICS	DOT Harbors FY2016	DOT Harbors FY2015	FITCH SEAPORTS FY2015 MEDIANS		
			Primary Seaports	AA Rated	A Rated
Fitch Rating	**A+**	**A+**			
Days' Cash on Hand	**1,660**	**1,595**	413	782	374
Total Debt Service Coverage (x)	**2.99**	**2.68**	2.13	2.83	2.13
Net Debt/Cashflow after debt service	**1.6**	**1.6**	5.14	2.23	2.00
Minimum Annual Guarantees as a % of Operating Revenues	**0%**	**0%**	67%	74%	58%

Fitch Analytic Comparative Tool for U.S. Ports for FY2015. FY2016 data from DOT-Harbors.

DEBT AND OPERATING METRICS	DOT Harbors FY2016	DOT Harbors FY2015	PEERS			
			Harbor Dept. of Los Angeles	Port of Long Beach	Virginia Port Authority	San Diego Unified Port District
Fitch Rating	**A+**	**A+**	AA	AA	A+	A+
FY Cargo TEU	**0.4%**	**2.9%**	0.6%	2.4%	5.7%	2.7%
FY Cargo Tons	**2.1%**	**0.9%**	0.3%	-1.1%	-0.6%	-0.7%
FY Cruise Passengers	**0.6%**	**-3.3%**	-2.8%			-14.3%
Days' Cash on Hand	**1,660**	**1,595**	688	875	110	374
Total Debt Service Coverage (x)	**2.99**	**2.68**	3.23	2.43	1.30	3.99
Net Debt/Cashflow after debt service	**1.6**	**1.6**	2.40	2.00	5.80	-1.30
Minimum Annual Guarantees as a % of Operating Revenues	**0%**	**0%**	67%	81%	45%	50%

Fitch Analytic Comparative Tool for U.S. Ports for FY2015. FY2016 data from DOT-Harbors.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

In the midst of the DOT-Harbors' modernization plan, DOT-Harbors is planning to utilize cash on hand to initially fund major capital project needs, reducing negative arbitrage, and supporting just-in-time financing. Over the projection period, approximately $500 million in revenue bonds will be issued to reimburse DOT-Harbors for capital projects funded with cash. As reflected in the affordability metrics above, DOT-Harbors is projected to maintain sufficient revenues to support the additional projected debt service. While cash on hand is anticipated to decrease to fund capital projects, bond proceeds are anticipated to reimburse prior costs. After reimbursement of costs, DOT-Harbors' projected liquidity (as measured by days' cash on hand) is anticipated to remain high (around the 1,000 days' level). While the financial projections are dependent on volume/traffic as well as assumed tariff increases, DOT-Harbors' significant liquidity can help mitigate budgetary fluctuations. DOT-Harbors' projected revenues are sufficient to cover existing and projected revenue bond debt service.

V. Department of Transportation – Highways

The Department of Transportation, Highways Division (DOT- Highways) supervises the management and maintenance of the State Highway System and the location, design and construction of new highways roads and facilities. The State imposes taxes, fees, and charges relating to the operation and use of motor vehicles on the public highways of the State and these funds are deposited into the State Highway Fund. The major revenue sources of the State Highway Fund include highway fuel license taxes, vehicle registration fees, vehicle weight taxes, and rental motor vehicle, tour vehicle and car-sharing vehicle surcharge taxes.

DOT-Highways' primary financing program consists of highway revenue bonds. These revenue bonds are secured by a gross pledge of revenues in the State Highway Fund, including but not limited to highway fuel license taxes, registration fees, weight taxes rates and rental motor vehicle taxes. The flow of funds requires payment of debt service before operations and maintenance. With legislative approval, DOT-Highways has the flexibility to adjust the rates and allocation of the fees and taxes prescribed to ensure sufficiency of revenues. In certain cases, B&F may issue GO bonds on behalf of DOT-Highways, repayment of which is entirely the responsibility of DOT-Highways. Repayment of reimbursable GO bonds is subordinate to payment on DOT-Highways' revenue bonds. DOT-Highways also issues COPs and Lease Purchase Agreements payable from funds appropriated for DOT-Highways.

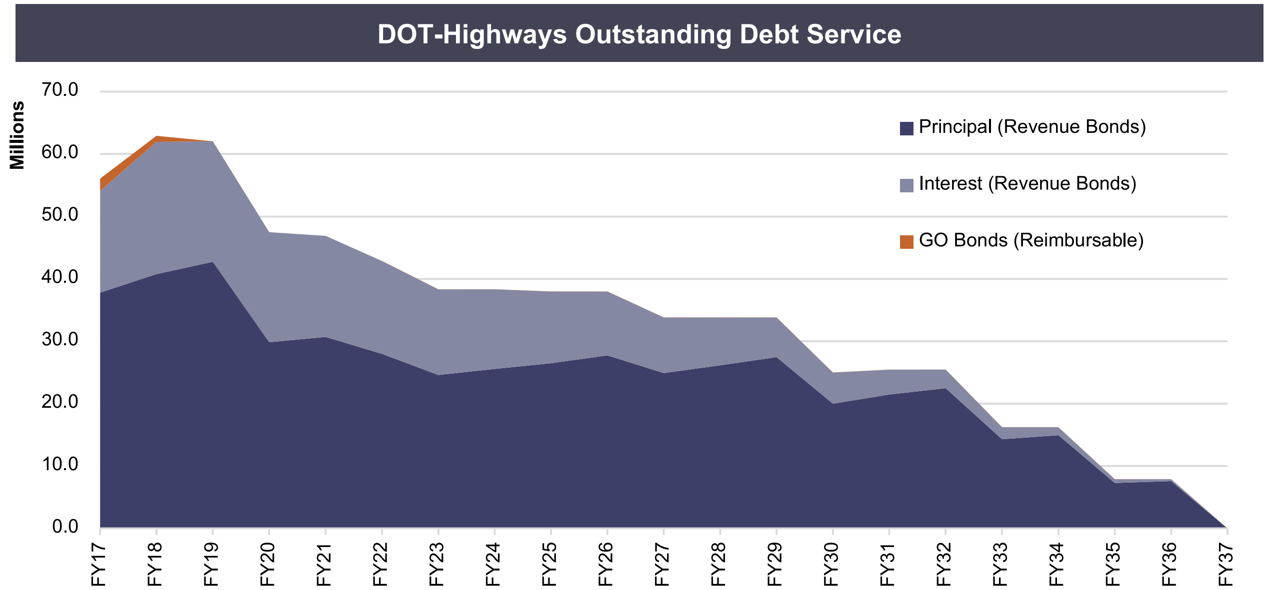
A. Debt Profile

DOT-Highways currently has ten series of highway revenue bonds outstanding for a total outstanding par of $500.8 million. In addition DOT-Highways is also responsible for payment of its share of reimbursable GO debt which is outstanding in the amount of $2.9 million. DOT-Highways' most recent revenue bond issuance consists of Series 2016A issued to fund capital projects and Series 2016B issued to refund bonds for savings.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
			Revenue Bonds				
Series 1998	Tax-Exempt	94,920,000	7/21/98	7/1/18	27,580,000	-	-
Series 2005B	Tax-Exempt	123,915,000	3/15/05	7/1/21	27,630,000	-	-
Series 2008	Tax-Exempt	125,175,000	12/17/08	1/1/29	22,735,000	1/1/2019	6,115,000
Series 2011A	Tax-Exempt	112,270,000	12/15/11	1/1/32	56,640,000	1/1/2022	26,825,000
Series 2011B	Tax-Exempt	5,095,000	12/15/11	1/1/23	5,095,000	1/1/2022	5,095,000
Series 2014A	Tax-Exempt	103,375,000	8/14/14	1/1/34	97,585,000	7/1/2024	64,305,000
Series 2014B	Tax-Exempt	32,285,000	8/14/14	1/1/26	32,285,000	7/1/2024	7,735,000
Series 2014C	Taxable	28,020,000	8/14/14	1/1/18	26,750,000	-	-
Series 2016A	Tax-Exempt	103,395,000	9/8/16	1/1/36	103,395,000	7/1/2026	63,520,000
Series 2016B	Tax-Exempt	101,090,000	9/8/16	1/1/30	101,090,000	7/1/2026	52,080,000
Sub-Total	-	-	-	-	**500,785,000**	-	**225,675,000**
			GO Bonds (Reimbursable)				
GO Bonds	Tax-Exempt	-	-	-	2,875,456	-	-
Total	-	-	-	-	**503,660,456**	-	**225,675,000**

B. Debt Service Chart

DOT-Highways' aggregate debt service structure is tapering with gradually declining debt service payments over time. DOT-Highways structures series with level debt service with the exception of refunding bonds which are structured to generate level savings. The principal amortization of revenue bonds is fairly rapid with 63% of debt being amortized over the next ten years.



C. Credit Ratings

The DOT-Highways' revenue bonds carry strong credit ratings in the 'AA' category from all three rating agencies.

Department of Transportation Highways				
		Moody's	S&P	Fitch
Revenue Bonds	Rating	Aa2	AA+	AA
	Outlook	Stable	Stable	Stable

Credit strengths include strong senior lien debt service coverage, 100% fixed-rate debt portfolio, strong additional bonds test that provides bondholders protection against overleveraging in the future, diverse and robust economy with strong demographics and a healthy rental car market, and prudent management.

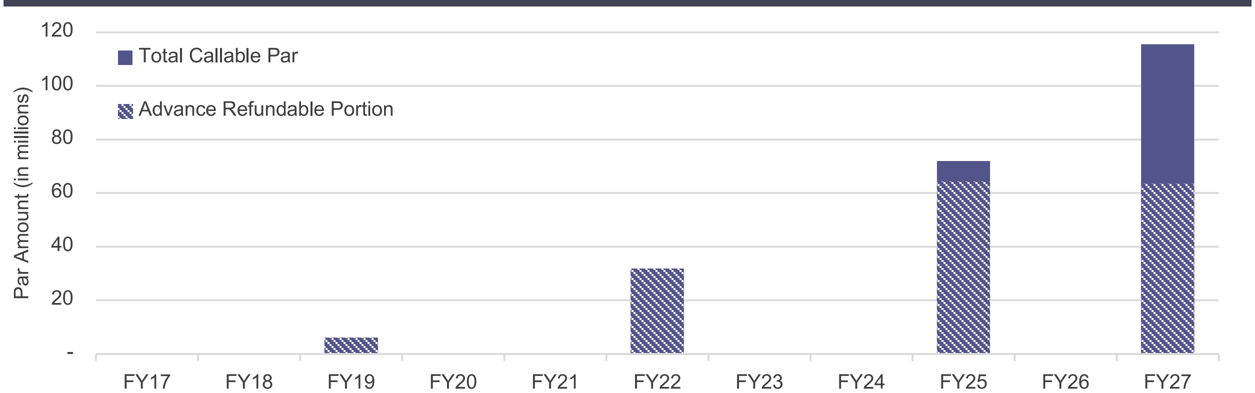
Credit challenges include volatility of pledged revenues either driven by economic considerations or by transfers from the highway fund to the general fund, as had occurred in the past, although none are anticipated at this time.

Per the indenture, DOT-Highways funds a debt service reserve sized at one-half of maximum annual debt service for its revenue bonds. However, DOT-Highways through supplemental indenture may eliminate the debt service reserve fund requirement pending consent of 100% of bondholders. Rating agencies are aware of the potential change and have not indicated any potential impact to DOT-Highways' credit ratings given their methodologies placing minimal value in reserve funds for special tax credits like DOT-Highways.

D. Schedule of Callable Bonds

The following chart provides a summary of callable highway revenue bonds and par amounts along with their eligibility to be advance refunded. DOT-Highways issued the Series 2016B revenue refunding bonds in September 2016 to advance refund portions of the outstanding Series 2008 and Series 2011A revenue bonds for economic savings. Of the $500.8 million in highway revenue bonds outstanding after the refunding, about $225.7 million represents callable par than can be refunded before its scheduled maturity date. DOT-Highways does not have any currently callable bonds. An aggregate $165.9 million of the outstanding callable par is advance refundable. These advance refundable bonds have call dates in FY2019, FY2022, FY2025, and FY2027. Pursuant to the criteria outlined in its Debt Management Policy, DOT-Highways may pursue opportunities to refund callable bonds.

Schedule of Callable Highway Revenue Bonds

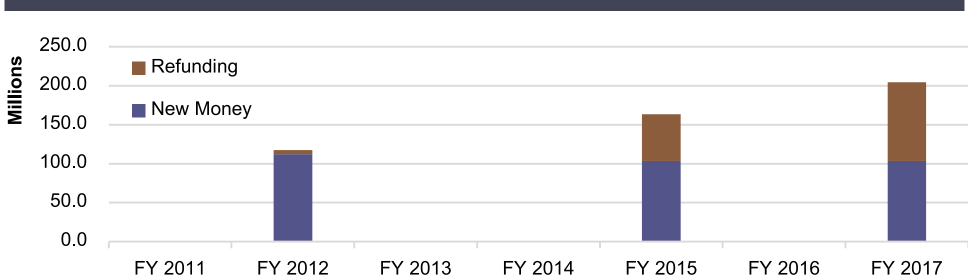


E. Multi-Year Program Anticipated/Intended Debt Issuance

Existing Debt

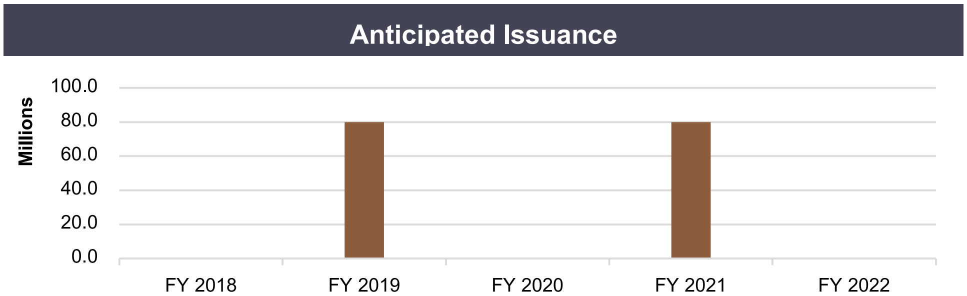
DOT-Highways has accessed capital markets for both new money and refunding bonds every two to three years in the past with the latest issuance in September 2016. New money issuance has consistently been in the range of $100 million to $115 million with the latest issuance par of $103.4 million.

Historical Issuance



Anticipated Debt

Consistent with the historical trend, DOT-Highways anticipates additional new money issuances for capital projects in FY2019 and FY2021 in the par amount of about $80 million in each of those years.



Unissued but Authorized Debt

DOT-Highways has $970.5 million authorized but unissued revenue bonds.

F. Measuring Debt Burden

Current Year and Projected (six-years) Metrics

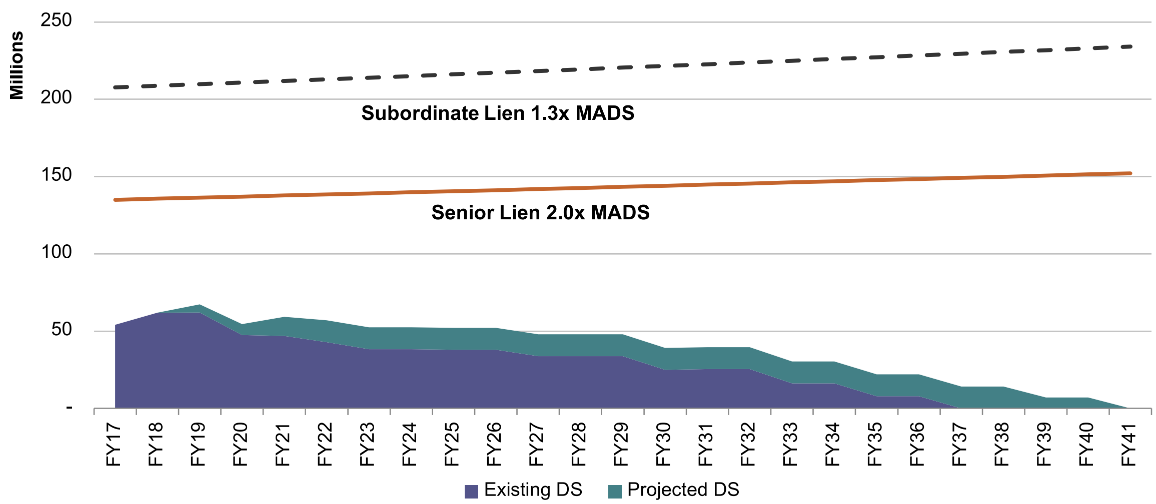
AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	21.4%	20.7%	23.1%	24.6%	19.8%	21.4%	20.5%
Annual debt service to annual appropriations	24.2%	22.2%	24.9%	26.1%	22.3%	23.7%	23.0%
Debt service coverage (Gross)	4.87x	5.02x	4.40x	4.07x	5.05x	4.67x	4.88x
Debt service coverage (Net)	1.53x	1.34x	1.32x	1.24x	1.56x	1.46x	1.53x
Liquidity – days' cash on hand	333 days	292 days	305 days	304 days	302 days	300 days	303 days

Note: Projected metrics assume issuance of $160 million of additional revenue bonds (see anticipated debt above)

Relevant Affordability Metrics

1. Master Certificate Limitations: As per the Master Certificate of the Director of Transportation dated August 1, 1993, DOT-Highways' revenue bonds are subject to a rate covenant that requires setting appropriate rates, rentals, fees, and charges so as to generate sufficient revenues to cover all of DOT-Highway' obligations including but not limited to operating expenses and debt service on outstanding bonds. In other words the DOT-Highways is required to maintain one times coverage on revenue bonds. Over and above that, should the DOT-Highways want to issue additional senior lien debt, the Certificate dictates an ABT test of 2.0 times coverage (orange line in the chart) on projected maximum annual debt service (MADS) payment from pledged revenues for any twelve consecutive calendar month period out of the last eighteen consecutive calendar month preceding the date of issuance. If DOT-Highways were to issue new bonds on a subordinated lien to currently outstanding debt which are all senior lien bonds, the ABT requirement is slightly less stringent at 1.3 times MADS (black line in the chart).

Debt Limit on Highway Revenue Bonds



As reflected in the chart, there is significant capacity under senior lien ABT limitations and DOT-Highways can fund its projected capital needs within indenture limits. Although DOT-Highways has sufficient senior lien capacity and does not intend to leverage the subordinate lien at this time, that option is also available to DOT-Highways and provides additional borrowing capacity. These legal limits are based on gross revenues before payment of operating expenses which is typical for state highway DOTs.

2. Annual debt service payments to annual revenues or annual debt service payments to annual appropriations: These ratios measure the financial flexibility available to DOT-Highways by analyzing the fixed costs embedded in the budget. Debt service which is a fixed cost accounts for at most 25% of revenues or 26% of expenditures over the next five years. This affords DOT-Highways flexibility to make budgetary adjustments, if required. These metrics include the impact of DOT-Highways planned new issuances and the relatively stable trend indicates that borrowings are proportionate with revenue growth.

3. Gross debt service coverage: Gross debt service coverage is computed based on gross pledged revenues before payment of any operating expenses. Based on conservative revenue estimates for FY2016, the coverage on revenue bonds was very strong at 4.9 times. Assuming a modest 0.5% annual increase in revenues over the next five years, the coverage including new debt issuance is expected to remain over 4.0 times, well above the 2.0 times ABT requirement discussed above. It should be noted that while there is capacity to increase leverage based on indenture limitations and affordability considerations, lower coverage levels may result in credit implications.

4. Net debt service coverage: Legally, debt service is payable before operating expenses reflecting the strength of the gross revenue pledge. However, it is important to evaluate debt service coverage based on net revenues (after operating expenses) as a measure of self-sustainability and overall affordability. Net debt service coverage is based on net revenues which are available

for debt service after payment of necessary operating costs. With conservative revenues projections, net debt service on existing and projected bonds is expected to be in the range of 1.2 times to 1.5 times. As reflected in the metrics, net revenues are sufficient to pay projected debt service and operating expenses; however, there is limited flexibility should revenues come in significantly lower than anticipated or expenses higher than expected.

5. Liquidity – days' cash on hand: DOT-Highways' liquidity levels are strong with about 300 days' cash on hand projected over the next five years.

Peer Comparisons

We compare DOT-Highways against other similarly rated state transportation agencies across the nation, namely, Arizona Transportation Board, Missouri Highways and Transportation Commission, Kansas DOT, Oregon DOT and Nevada DOT. As reflected in the table below, the gross coverage of MADS maintained by DOT-Highways on its senior lien bonds is in line with peers in the sector.

DEBT METRICS FY2015/FY2016	DOT-Highways	STATE DEPARTMENT OF TRANSPORTATION PEERS				
		Arizona	Missouri	Kansas	Oregon	Nevada
Lien	**Senior**	Subordinate	Third	Senior	Subordinate	Senior
Credit Ratings	**Aa2/AA+/AA**	Aa2/AA+/--	Aa1/AA/AA-	Aa2/AAA/AA+	Aa2/AA+/AA	Aa2 / AAA / AA+
Par Outstanding	**$500.8 million**	$1.2 billion	$317 million	$2.06 billion	$830 million	$640 million
Additional Bonds Test	**2x MADS**	3x MADS	2x MADS	3x MADS	3x MADS	3x MADS
Gross Coverage	**4.87x**	4.08x	4.59x	5.61x	3.70x	3.99x
Debt Service to OpEx*	**21.3%**	12.8%	14.3%	9.9%	15.0%	7.8%

Source: Audit Reports and Continuing Disclosure Reports for FY2015 and FY2016 **Operating Expenditures*

Despite much lower coverage levels, Oregon DOT and Nevada DOT have been able to achieve the same or higher ratings than DOT-Highways on account of their stricter ABT covenant at 3.0 times MADS. Since DOT-Highways projects coverage levels, including new money issuances, to stay above 4.0x, there is potential for achieving higher ratings similar to peers by modifying the legal covenant for ABT while still maintaining capacity for additional bonds over and above what is currently planned.

DOT-Highways' debt service as a percentage of operating expenditures is high at 21% compared with peer agencies which maintain metrics in the 7% to 15% range.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

Based on the affordability metrics, DOT-Highways is projected to fund its projected capital needs while maintaining strong coverage levels. For DOT-Highways along with its state transportation agency peers, debt service coverage is a critical affordability metric. DOT-Highways' gross coverage levels are projected to remain strong. When taking into account operational needs, net coverage is projected to be stable at or above 1.2 times. With a short debt service profile, DOT-Highways has significant capacity on the back-end to accommodate the projected new money issuances during the projection period, if required. DOT-Highways' projected revenues are sufficient to cover existing and projected revenue bond debt service.

VI. University of Hawaii

The State of Hawaii University System (UH) is a multi-institutional system comprised of a major research university (the University of Hawaii at Manoa), two baccalaureate campuses (Hilo and West Oahu), seven community colleges (Hawaii Honolulu, Kapiolani, Kauai, Leeward, Maui, and Windward) and nine educational centers distributed across the State. UH is the sole public higher education system within the State and, therefore, has a unique competitive position and value in Hawaii. Furthermore, the UH system is the only truly integrated higher education system in the country that seamlessly arranges its universities and community colleges into one system. Other public higher education systems in the country are typically separate and distinct systems defined by the type of system (community colleges, junior colleges and universities).

In addition to being an integrated higher education system, the UH system distinguishes itself through its Hawaiian, Asian and Pacific orientation and its position as one of the world's foremost multicultural centers for global and indigenous studies. Students are members of a population in which no one ethnic group constitutes a majority, and the educational experience is enriched by the diversity of cultures represented. UH's fall 2015 enrollment totaled 55,756 (90% undergraduate and 10% graduate students). Hawaii residents comprised 85% of all enrolled students, nearly 11% were from the U.S. mainland, and the remaining 4% of students were international students from over 100 countries.

Major UH operating revenue sources include State operating support, net tuition and fee revenue, and federal funding of research. UH also receives significant State capital support. Net tuition revenue has increased steadily over the past five years as a result of tuition increases and enrollment increases during the recession. Enrollment has stabilized and UH plans to maintain tuition levels to support affordability for students. As such, net tuition revenue growth is projected to be limited over the projection period.

UH's primary financing program consists of university revenue bonds which are generally secured by income derived by UH from its ownership and management of the Network including housing and auxiliary activities and moneys in any special fund or revolving fund, which include tuition and fees. Certain revenue bonds series are additionally secured by other revenues such as cigarette tax revenues or appropriations from the Hawaii Tobacco Settlement Special Fund.

In certain cases, B&F may issue reimbursable GO bonds on behalf of UH, repayment of which is entirely the responsibility of UH. Repayment of reimbursable GO bonds is subordinate to payment of UH's revenue bonds. As described above, UH receives significant operating and capital support from the State's general fund – including non-reimbursable GO bond funding.

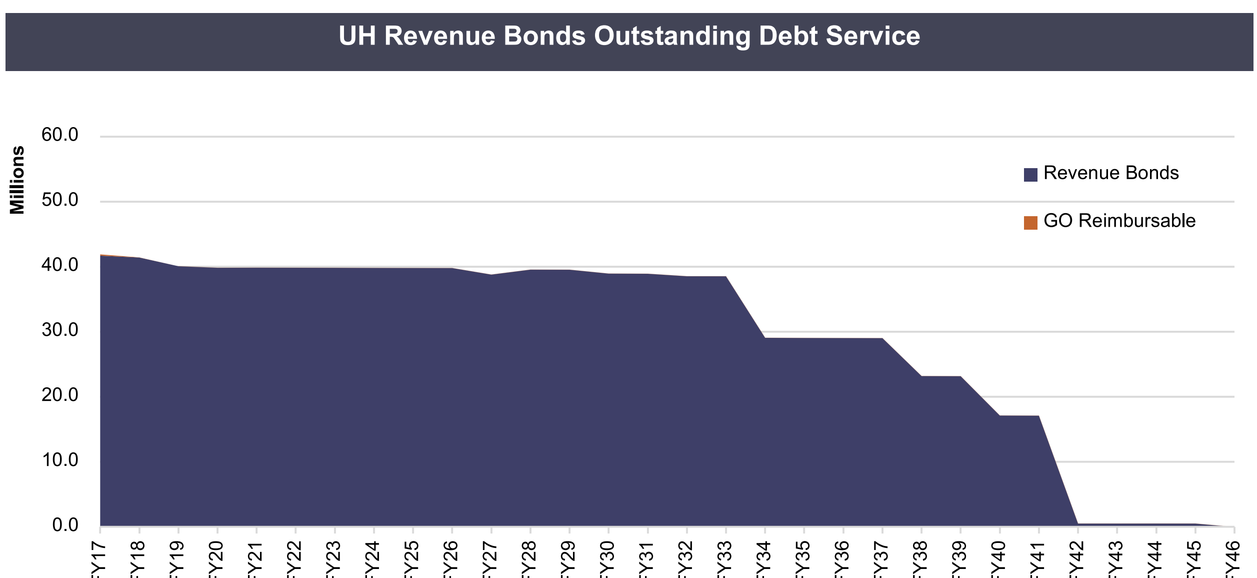
A. Debt Profile

UH currently has 13 series of bonds outstanding for a total par amount of $562.62 million. UH also has a note payable outstanding in the amount of $17 million. Lastly, it is obligated for making debt service reimbursements to the general fund for its share of reimbursable GO bonds.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
				Revenue Bonds			
Series 2006A(R)	Tax-Exempt	133,810,000	10/25/06	7/15/32	20,590,000	7/15/2016	16,045,000
Series 2006A	Tax-Exempt	100,000,000	12/13/06	10/1/36	19,970,000	10/1/2016	17,490,000
Series 2009A	Tax-Exempt	100,000,000	4/15/09	10/1/38	87,340,000	10/1/2019	76,400,000
Series 2010A-1	BAB	111,265,000	10/7/10	10/1/40	111,265,000	10/1/2020	107,610,000
Series 2010A-2	Tax-Exempt	27,375,000	10/7/10	10/1/19	13,325,000	-	-
Series 2010B-1	BAB	127,535,000	10/7/10	10/1/40	127,535,000	10/1/2020	123,345,000
Series 2010B-2	Tax-Exempt	26,555,000	10/7/10	10/1/19	14,955,000	-	-
Series 2012A	Tax-Exempt	8,575,000	2/22/12	10/1/18	3,245,000	-	-
Series 2015A	Taxable	8,575,000	9/24/15	10/1/44	8,575,000	10/1/2025	6,630,000
Series 2015B	Tax-Exempt	47,010,000	9/24/15	10/1/36	47,010,000	10/1/2025	34,610,000
Series 2015C	Taxable	17,585,000	9/24/15	10/1/22	15,945,000	MWC	-
Series 2015D	Taxable	25,715,000	9/24/15	10/1/21	25,465,000	MWC	-
Series 2015E	Tax-Exempt	67,400,000	4/20/16	10/1/32	67,400,000	10/1/2026	34,200,000
Sub-Total	**-**	**-**	**-**	**-**	**562,620,000**	**-**	**416,330,000**
				GO Bonds (Reimbursable)			
GO Bonds	Tax-Exempt	-	-	-	213,434	-	-
				Notes Payable			
Note Payable	Tax-Exempt	17,000,000	5/4/12	7/16/17	17,000,000	-	-
Total	-	-	-	-	**579,833,434**	-	**416,330,000**

B. Debt Service Chart

UH's debt service is fairly level with $40 million annual payments through FY2033. Thereafter, debt service gradually steps down until all debt is repaid in FY2045. The $17 million in principal outstanding for the note is payable in FY2018. UH typically issues 30 year revenue bonds. Approximately 36% of outstanding principal will be paid down in the next ten years.



C. Credit Ratings

UH's credit ratings are split among the rating agencies on account of different methodologies and evaluation of UH's credit profile. UH's revenue bonds carry strong ratings as reflected below.

University of Hawaii				
		Moody's	S&P	Fitch
Revenue Bonds	Rating	Aa2	A+	AA
	Outlook	Negative	Stable	Stable

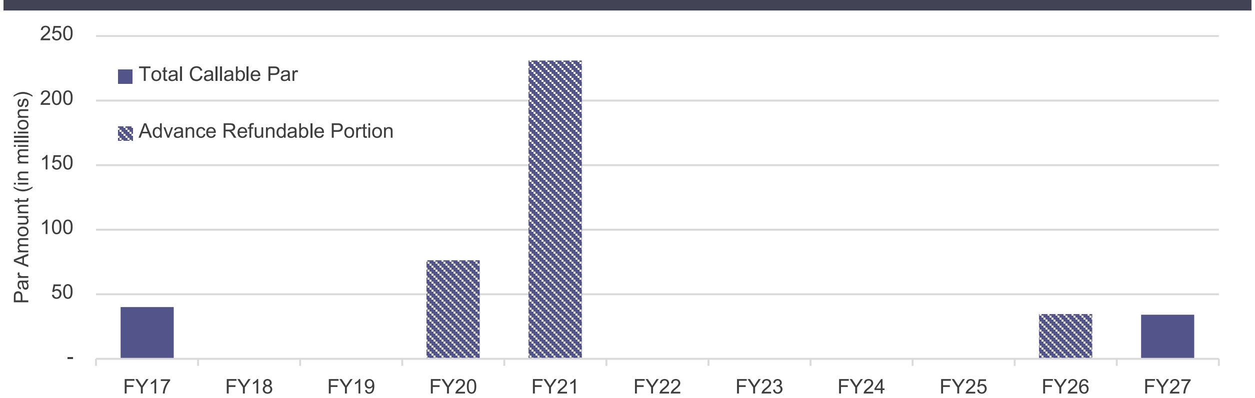
Credit strengths include UH's essential role as the State's only public system of higher education, strong support from the State for capital and operations and GO debt issuances, and manageable debt burden with limited additional debt plans.

Credit challenges include weak operations, slightly declining enrollment, limited projected net tuition revenue growth, low financial resources ratios, and very high pension and OPEB obligations.

D. Schedule of Callable Bonds

The following chart provides a summary of callable university revenue bonds and par amounts along with their eligibility to be advance refunded. The total callable par in UH's debt portfolio is $416.3 million. Series 2006 and Series 2006A, with an outstanding callable par of $33.5 million, are currently callable, represented by callable par in FY2017 in the chart below. About $342 million of the total callable can be advance refunded. However, the $230 million in callable par in FY2021 represents Series 2010A-1 and Series 2010B-1 taxable Build America Bonds (BABs). Due to the receipt of subsidy payments from the federal government, there is additional complexity to refunding BABs. Pursuant to the criteria outlined in its Debt Management Policy, UH may pursue opportunities to refund callable bonds.

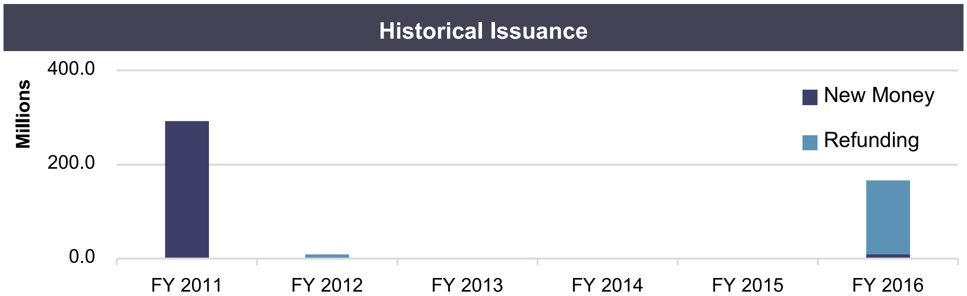
Schedule of Callable University Revenue Bonds



E. Multi-Year Program Anticipated/Intended Debt Issuance

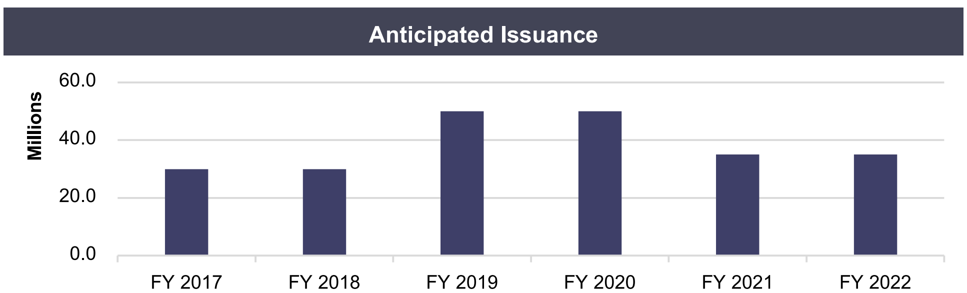
Existing Debt

UH's last sizeable new money issuance was in FY2011 with the most recent issuance in FY2015 largely being refunding bonds.



Anticipated Debt

Over the next six years, UH plans to issue approximately $230 million in aggregate new money bonds in installments of $30 million to $50 million annually subject to legislative authorization and State capital support.



Unissued but Authorized Debt

UH has $30 million in authorized but unissued revenue bonds remaining.

F. Measuring Debt Burden

Current Year *and Projected (six-years)* Metrics

AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	4.8%	5.2%	7.4%	5.4%	5.6%	5.8%	5.9%
Pension pay-go to annual revenues	12.3%	12.7%	12.9%	13.2%	13.4%	13.6%	13.9%
OPEB pay-go annual revenues	8.0%	8.7%	9.3%	10.0%	10.7%	11.4%	12.2%
All annual obligations to annual revenues	25.1%	26.6%	29.6%	28.5%	29.7%	30.9%	32.0%
Annual debt service to annual appropriations	2.4%	2.6%	3.6%	2.6%	2.8%	2.9%	2.9%
Pension pay-go to annual appropriations	6.2%	6.4%	6.5%	6.6%	6.8%	6.9%	7.0%
OPEB pay-go annual appropriations	4.1%	4.4%	4.7%	5.0%	5.4%	5.8%	6.2%
All annual obligations to annual appropriations	12.7%	13.3%	14.8%	14.3%	14.9%	15.6%	16.2%
Debt service coverage	4.52x	4.83x	3.59x	5.33x	5.49x	5.69x	5.96x
Operating margin(1)	-97.7%	-98.6%	-98.2%	-97.9%	-97.5%	-97.1%	-96.8%
Operating margin(2)	-4.1%	-2.4%	-2.4%	-2.0%	-1.6%	-1.3%	-1.0%
Liquidity – days' cash on hand	74 days	59 days	52 days	45 days	39 days	34 days	29 days
Debt to operating revenues	0.38x	0.37x	0.36x	0.36x	0.37x	0.37x	0.36x
Debt to net cash flow from operations	(0.74x)	(0.74x)	(0.71x)	(0.73x)	(0.74x)	(0.74x)	(0.73x)

(1) Excluding State support for operations *(2) Including State support for operations*

Note: Projected metrics assume issuance of $230 million of additional revenue bonds during the projection period (see anticipated debt above)

Relevant Affordability Metrics

1. Indenture Limitations: UH's revenue bonds do not have legal covenants limiting the issuance of additional bonds nor a rate covenant required to maintain revenues at a certain level.

2. Annual debt service payments to annual revenues or annual debt service payments to annual appropriations: This ratio is a measure of budgetary flexibility afforded to UH by evaluating how much of UH's budget is tied up in fixed costs such as debt service. UH's debt service payments account for 4% to 7% of revenues and barely 3.6% of UH expenditures. However including pension and OPEB contributions UH's fixed costs account for a sizeable 25% to 32% of revenues.

3. Debt service coverage: While legally only a part of UH operating revenue defined as 'network revenues' are pledged for specific series, in the context of affordability we look to all available revenues of the university system to evaluate debt service coverage. Debt service coverage after payment of all operating expenses and including debt service on anticipated debt is projected to remain strong at or above 3.5 times.

4. Operating margin: This is a ratio of net income from operating activities to operating revenue. It's a basic ratio used to gauge profitability of operations. UH's operating margin is negative as it relies on grants, contributions and State support for its operations. UH reports near break-even operations, after accounting for the State support it receives for operations. UH's reliance on State support for operations is largely attributable to its broader scope and functions which include community colleges.

5. Liquidity – days' cash on hand: For FY2016, UH had adequate liquidity with about 76 days' cash on hand.

6. Balance sheet leverage – expendable resources to debt: The ratio measures the resources available to UH to repay debt in case of short-to-medium term volatility in operations. UH's expendable resources are negative limiting its ability to respond to operational volatility.

7. Income statement leverage – expendable resources to operations: This ratio evaluates the ability to operate relying on wealth that can be accessed over time without earning additional revenue and is discussed in the following section on peer comparison.

8. Debt to operating revenues: The ratio is a balance sheet ratio which measures the coverage of debt from annual revenues. UH's debt-to-operating ratio is 0.38 times for FY2016 which is considered low. It has been gradually decreasing over the last five years and is projected to continue to decrease over the six year planning horizon indicative of somewhat conservative borrowing practice as compared to revenue growth allowing the ratio to moderate overtime.

9. Debt to cashflow: This ratio measures the ability of UH to repay its debt from the profitability of its current operations and is a good measure of debt affordability. UH's operating margin has been negative for several years resulting in a negative debt-to-cashflow. It is reflective of UH's reliance on State transfers for operations.

Peer/Median Comparisons

It is important to note that UH is unique in that it is a system of university campuses, community colleges, and educational centers. As such, it is challenging to compare UH against peer universities and university systems based on UH's specific characteristics. Moody's publishes a median ratios report for public universities analyzing various financial metrics relevant to the sector, some of which were discussed in the affordability metrics section.

DEBT AND OPERATING METRICS (2015)	UH*	MOODY'S UNIVERSITY MEDIANS		
Rating Level	**Aa2**	**Aa1**	**Aa2**	**Aa3**
Balance Sheet Ratios				
Spendable Cash & Investments to Total Debt (x)	**1.0**	2.2	1.4	1.4
Total Debt to Operating Revenue (x)	**0.4**	0.4	0.6	0.5
Total Cash & Investments-to-Total Debt (x)	**1.4**	2.6	1.9	1.9
Debt Service to Operating Expenses (%)	**2.6**	3.8	4.3	4.1
Capital Ratios				
Spendable Cash & Investments to Operating Expenses (x)	**0.4**	0.9	0.7	0.7
Operating Ratios				
Moody's Operating Cashflow Margin (%)	**-10.4**	6.1	3.5	2.4
Annual Debt Service Coverage (x)	**1.4**	3.4	2.5	2.7

*US Public Universities 2015 Moody's Medians; *UH data from Moody's Financial Ratios Analysis*

In the adjoining tables, in addition to comparing UH's metrics to sector medians, we analyze UH against specific credits rated in the 'Aa' category like UH from Moody's report using FY2015 data. These peers include the University of Utah, University of Colorado, University of New Mexico, Washington State University, University of Kentucky, University of Arizona and Texas Tech University System.

DEBT AND OPERATING METRICS (FY 2014/FY 2015)	Univ. of Hawaii	Univ. of Utah	Univ. of Colorado	Univ. of New Mexico	WA State Univ.	Univ. of Kentucky	Univ. of Arizona	Texas Tech Univ. System
Rating	**Aa2**	**Aa1**	**Aa2**	**Aa2**	**Aa2**	**Aa2**	**Aa2**	**Aa2**
Balance Sheet Ratios								
Spendable Cash & Investments to Total Debt	**1.0**	2.2	2	1.4	0.6	1.6	0.7	2.3
Total Debt to Operating Revenue (x)	**0.4**	0.3	0.5	0.3	0.7	0.3	0.7	0.4
Total Cash & Investments-to-Total Debt (x)	**1.4**	2.6	2.3	1.9	1.8	2.3	1.1	3.3
Debt Service to OpEx* (%)	**2.6**	5.6	3	2	4.1	3.3	5	4.5
Capital Ratios								
Spendable Cash & Investments to OpEx* (x)	**0.4**	0.6	1.1	0.4	0.4	0.6	0.5	0.9
Operating Ratios								
Moody's Operating Cashflow Margin (%)	**-10.4**	6.5	3.6	7.4	-6.1	5.3	5.7	4.8
Annual Debt Service Coverage (x)	**1.4**	2.3	3.9	6.9	1.3	3.7	3.2	3.4

UH ratios as well as peers ratios based on the most recent data available from Moody's Financial Ratios Analysis *Operating Expenditure

UH's debt service coverage levels, although adequate are weaker compared to other similarly rated credits. Its operating margin, at negative 10.4%, is much lower than the 3.5% sector medians for 'Aa2' rated universities. This is indicative of UH's significant reliance on State support. Some of its balance sheet ratios which compare liquidity and spendable resources against debt burden as well as income statement leverage are also below sector medians. UH's debt service expenditure is low accounting for about 2.6% of operations and compares favorably with peers.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

UH's revenues and coverage levels are strong, boosted by State support received for operations and capital purposes. However, net tuition revenue growth is projected to be limited given the desire to maintain affordable tuition rates for students. As reflected in the affordability metrics, projected revenues are sufficient to cover existing and projected debt service over the projection period.

On a broad level, UH's debt affordability is constrained by two factors - other fixed costs embedded in the budget and its reliance on State support for operations. Pension and OPEB contribution make up a significant portion of UH's expenses. As the funding requirements for these liabilities ramp up, UH should preserve budgetary flexibility and financial capacity in consideration of its future debt issuances. While state support for university systems across the nation is not atypical, it will be crucial for UH to secure necessary appropriations to fulfill debt obligations, address capital backlog, and maintain operations during the projection period. Increased fixed costs (pension and OPEB) pressure UH's budgetary requirements and continued reliance on State support limit progress towards department self-sustainability.

As UH addresses its capital plan needs, it is essential for UH to continue to seek solutions and funding strategies which minimize reliance on UH operating revenues. A strategic focus on securing funding or partnerships with stakeholders will improve financial metrics and gradually enhance debt affordability over time.

VII. Hawaiian Home Lands

The Department of Hawaiian Home Lands (DHHL) is responsible for the management and disposition of the 'Hawaiian Home Lands' which are lands set aside for rehabilitation of native Hawaiians by the Hawaiian Home Commission Act (HHCA). DHHL's primary mission is to provide qualified native Hawaiians the opportunity to own homes on the trust's lands. DHHL performs various functions including administering the homestead lease program, providing direct loans to lessees for construction and repairs, undertaking infrastructure development for the homestead lands, administering other general leases, licenses and permits and managing the overall land inventory system. Major DHHL revenue sources include general lease revenues, and income derived from DHHL's loans made to native Hawaiian lessees.

DHHL primarily issues revenue bonds and COPs. The revenue bonds are secured by a gross pledge on general lease and license and permit fee revenues with debt service having priority over operating costs. DHHL has the flexibility to revise rates, rentals, fees and charges to ensure sufficiency of revenues for payment of debt service on its revenue bonds. DHHL's COPs are payable from funds appropriated for DHHL.

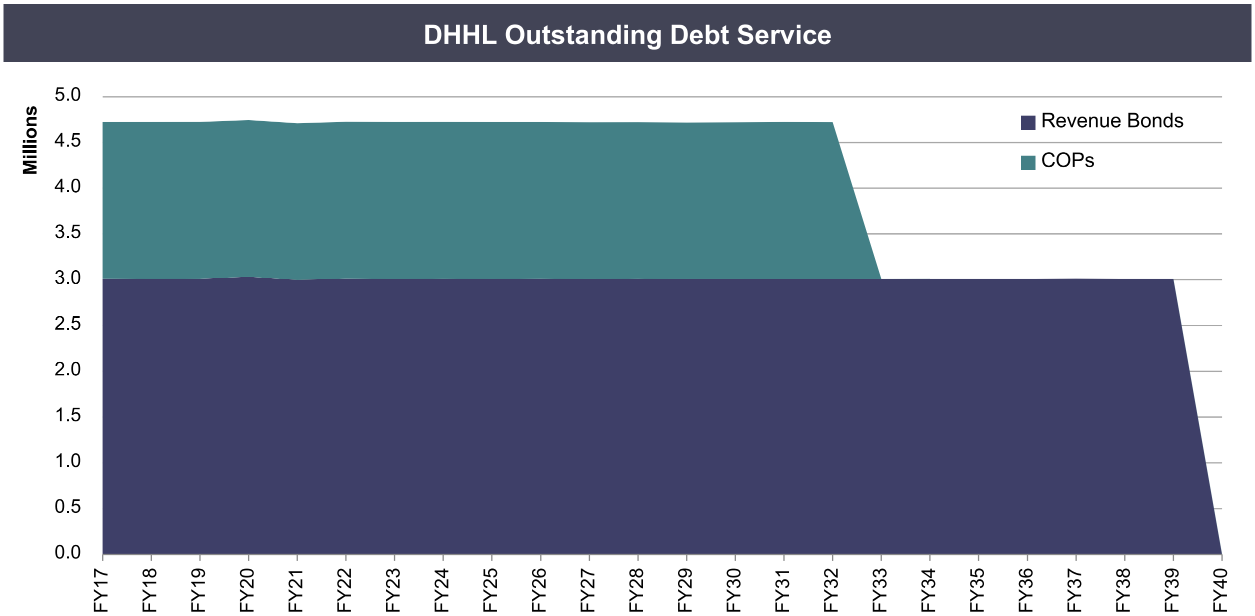
A. Debt Profile

DHHL currently has one revenue bond series outstanding for a total par of $37.49 million. DHHL also has COPs outstanding in the amount of $19.3 million. Additionally, DHHL is responsible for making payments on its share of reimbursable GO debt, of which less than $30,000 is currently outstanding. For the purpose of this Study, only the "available lands" (as defined in Section 207(a) of the Hawaiian Homes Commission Act, 1920) related debt is evaluated.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
			Revenue Bonds				
Series 2009	Tax-Exempt	42,500,000	4/2/09	4/1/39	37,490,000	4/1/2019	34,815,000
			COPs				
Series 2006A	Tax-Exempt	24,500,000	12/12/06	11/1/31	19,335,000	11/1/2016	18,475,000
Total	-	-	-	-	**56,825,000**	-	**53,290,000**

B. Debt Service Chart

DHHL's debt service structure consists of level annual debt service payments on both the revenue bonds and COPs. Annual debt service is approximately $4.7 million through FY2032 when the COPs are paid off and the debt service on the remaining revenue bonds is approximately $3.0 million thereafter. Approximately 37.4% of the principal will be repaid within the next ten years.



C. Credit Ratings

DHHL's revenue bonds and COPs are rated in the 'A' category.

Department of Hawaiian Home Lands			
		Moody's	Fitch
Revenue Bonds	Rating	A1	A
	Outlook	Stable	Stable
Certificates of Participation	Rating	A1	
	Outlook	Stable	

For the revenue bonds, credit strengths include strong debt service coverage, operational flexibility of DHHL, and no future debt plans. Credit challenges include concentration of revenues from top lessees and non-payment risk from lessees.

For the COPs, credit strengths include legal provisions, stable trend of source of lease rental payments, and a certificate reserve fund. Credit challenges include exposure to economic downturn which could reduce lease revenue income.

D. Schedule of Callable Bonds

Approximately $18.5 million of DHHL's Series 2006A COPs are currently callable. In addition, about $34.8 million of DHHL's revenue bonds Series 2009 is callable in April 2019, although it is also eligible for advance refunding. In aggregate, DHHL has about $53.3 million in currently outstanding callable par which may be refunded.

E. Multi-Year Program Anticipated/Intended Debt Issuance

Existing Debt

DHHL has not issued any new money debt or refunding debt in the last five years.

Anticipated Debt

DHHL does not have any plans for additional debt over the next five years.

Unissued but Authorized Debt

DHHL does not have any unissued bond authorization remaining.

F. Measuring Debt Burden

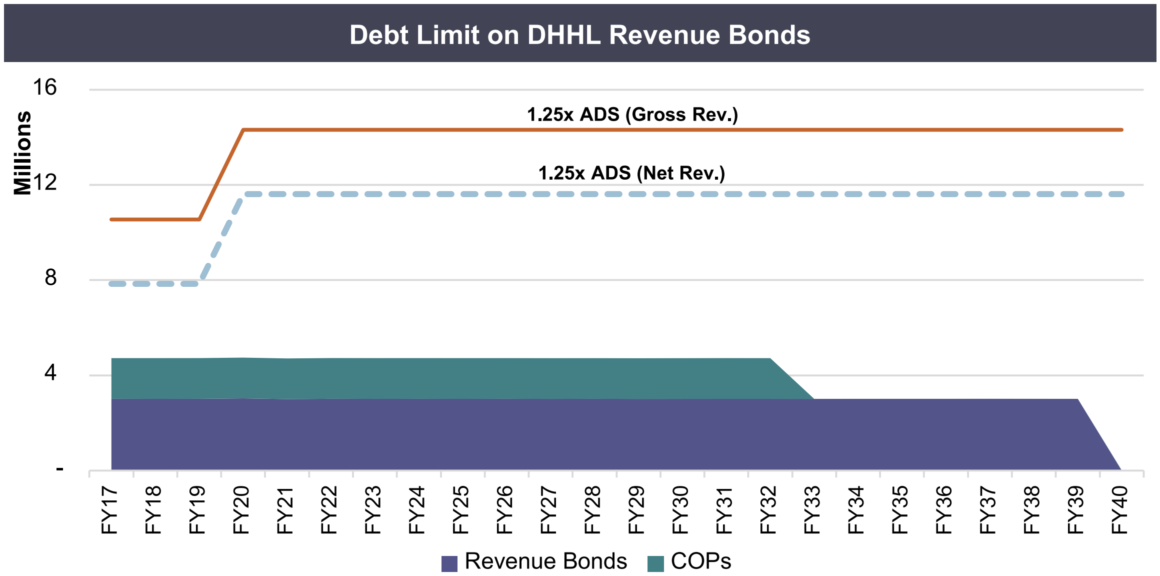
Current Year and Projected (six-years) Metrics

AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	8.9%	8.9%	8.9%	8.9%	8.9%	8.8%	8.9%
All annual obligations to annual revenues	15.9%	16.3%	16.6%	17.0%	17.5%	17.8%	18.3%
Annual debt service to annual appropriations	10.5%	10.4%	10.4%	10.4%	10.5%	10.4%	10.4%
All annual obligations to annual appropriations	18.8%	19.2%	19.6%	20.1%	20.6%	21.0%	21.6%
Gross Debt Service Coverage (Revenue Bonds)	4.38x	4.38x	4.38x	5.94x	5.91x	5.97x	5.94x
Net Debt Service Coverage (Revenue Bonds)	3.26x	3.26x	3.26x	4.82x	4.79x	4.84x	4.82x
Liquidity – days' cash on hand	2,150 days	2,150 days	2,150 days	2,151 days	2,150 days	2,152 days	2,151 days

Note: Projected metrics assume no additional debt issuances.

Relevant Affordability Metrics

1. Indenture Limitations: DHHL's revenue bonds are subject to a rate covenant to maintain rates, rentals, fees, and charges of at least 1.25 times aggregate annual debt service. In addition the indenture also includes an ABT test of 1.25 times coverage on projected debt service payments from historical revenues for five years following a new debt issuance along with 1.25 times coverage on outstanding bonds for three years preceding the issuance. The COPs are lease obligations payable from appropriations and such structures typically do not have debt limitations in the indenture as with revenue bonds. DHHL's revenue bonds are in compliance with the rate covenant reflected in the following chart. The debt service on outstanding revenue bonds is significantly lower than the legal maximum allowable debt service while maintaining 1.25 times coverage (orange line in the chart). The legal requirements are based on gross revenues pledged in the indenture (instead of net revenues after operating expenditures) and exclude COPs. However, the rate covenants are met even on a net revenue basis after incorporating debt service on COPs. With pledged revenues projected to increase in FY2019, the debt limit will correspondingly increase to higher levels for future years with significant capacity under the legal limits to issue additional debt, if required. None is anticipated at this time.



2. Annual debt service payments to annual revenues or annual debt service payments to annual appropriations: Both of these ratios give an indication of the amount of fixed costs that are built into the budget and are a measure of financial/operational flexibility. For FY2016, the estimated debt service on all outstanding debt to total DHHL revenues was 8.9% and debt service compared to total DHHL expenditures was 10.5%. The ratios are expected to remain at similar levels over the projected horizon through FY2022.

3. Gross debt service coverage: Gross debt service coverage is computed based on gross pledged revenues before payment of any operating expenses. Gross coverage has been very strong historically and is projected to remain above 4.0 times.

4. Net debt service coverage: Legally, debt service is payable before operating expenses reflecting the strength of the gross revenue pledge. However, it is important to evaluate debt service coverage based on net revenues (after operating expenses) as a measure of self-sustainability and overall affordability. Current and future net debt service coverage on DHHL's revenue bonds is also strong at over 3.0 times for the next five years.

5. Liquidity – days' cash on hand: The unrestricted cash balance accessible to DHHL is very strong at approximately 2,150 days of cash.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

As reflected in the affordability metrics above, DHHL is projected to generate more than sufficient revenues to pay debt service on all of its obligations. Furthermore, its finances are buoyed by its exceptionally strong cash balances. Current debt service is well under the legal limits dictated by the indenture with capacity for more debt should DHHL require it. From a broader affordability perspective, net debt service coverage is very strong on existing debt. At this time, DHHL has no borrowing plans over the next five years and affordability metrics are expected to remain stable.

VIII. Hawaii Housing Finance and Development Corporation

The Hawaii Housing Finance and Development Corporation (HHFDC) was established with the purpose of amalgamating other housing corporations, authorities and trust funds of the State under one corporation. HHFDC's mission is to increase the supply of workforce and affordable homes by providing tools and resources to facilitate housing development. Tools and resources include housing tax credits, low interest construction loans, equity gap loans, developable land and expedited land use approvals.

HHFDC manages three financing programs: Hawaii rental housing system revenue bonds (RHS Program), single family mortgage purchase revenue bonds (SF Program), and the multifamily housing revenue bonds. The multifamily housing revenue bonds are conduit issuances and not direct obligations of HHFDC. As such, the multifamily housing revenue bonds program is excluded from this Study. The affordability discussion is limited to the RHS Program and SF Program.

RHS Program

The RHS Program assists in the delivery of affordable rental housing throughout the State on a cost-effective basis. HHDFC may issue revenue bonds pledged by revenues (net of operating expenses) from income, rent, fees and changes derived from operating the rental housing program. HHFDC has the flexibility to raise rates to ensure sufficiency of revenues. HHFDC's rental housing system revenue bonds are also supported by a general obligation pledge of HHFDC.

SF Program

The SF Program assists eligible borrowers to finance the purchase of single family homes. HHFDC uses proceeds of these bonds to purchase mortgage loans. The SF Program revenue bonds are pledged by payments on mortgage-backed pass-through securities guaranteed by Ginnie Mae and Fannie Mae.

A. Debt Profile

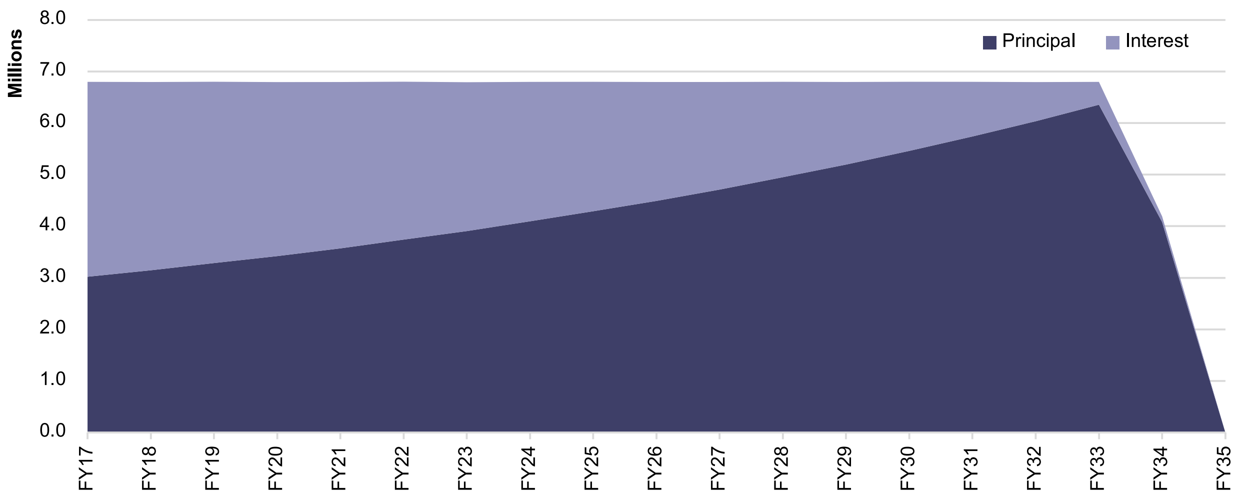
The RHS Program has two series outstanding in the total amount of $79.5 million. The SF Program has four series outstanding totaling $54.6 million. The most recent SF Program series was issued in FY2013.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
			RHS Program				
Series 2004A	Tax-Exempt	84,055,000	10/13/04	7/1/33	61,870,000	Current	61,870,000
Series 2004B	Tax-Exempt	20,875,000	10/13/04*	7/1/33	17,615,000	7/1/2019	14,955,000
Total	-	-	-	-	79,485,000	-	76,825,000
*Bonds remarketed 06/10/2009							
			SF Program				
Series 2011A	Tax-Exempt	7,005,000	1/1/11	1/1/19	3,370,000	-	-
Series 2011B	Tax-Exempt	12,995,000	1/1/11	1/1/26	10,800,000	7/1/2021	6,860,000
Series 2009A-1	Tax-Exempt	30,000,000	12/1/11	7/1/41	26,430,000	Current	26,430,000
Series 2013A	Taxable	26,309,825	3/28/13	7/1/37	14,022,911	Current	14,022,911
Total	-	-	-	-	54,622,911	-	47,312,911

B. Debt Service Chart

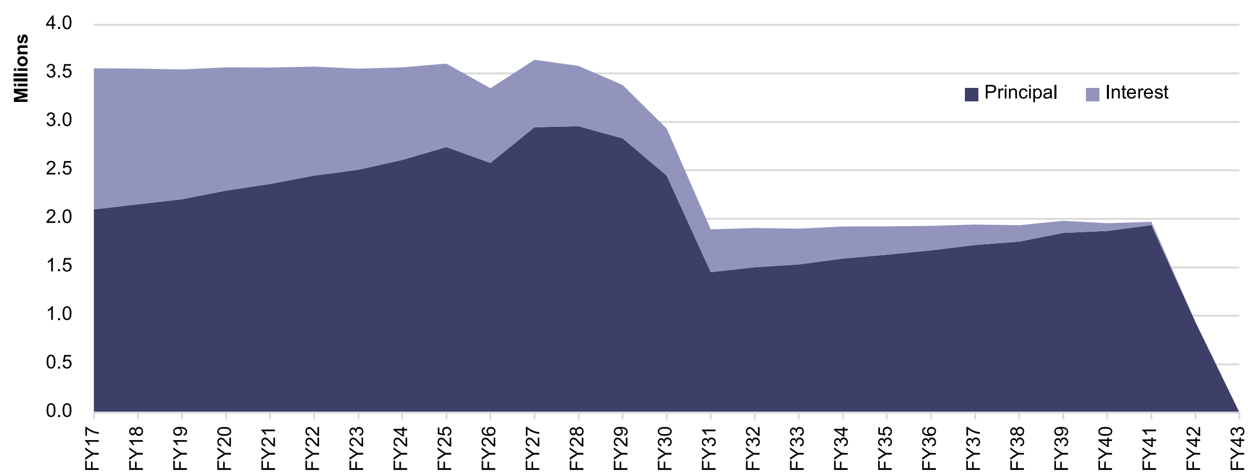
The RHS Program revenue bonds amortize with level debt service payments of approximately $6.8 million through FY2033. The overall principal amortization is moderate with 46.5% of the debt being repaid in the next ten years.

RHS Program Outstanding Debt Service



For the SF Program, annual revenue bond debt service of about $3.6 million steps down in FY2031 to $1.9 million until all bonds are retired in FY2042. Aggregate principal amortization is moderate with 43.9% of debt being retired over the next ten years.

SF Program Outstanding Debt Service



C. Credit Ratings

The RHS Program was recently upgraded to 'A1' from 'A2' by Moody's and the outlook was revised to stable (August 2016). Credit strengths include the GO pledge of HHFDC, strong historical pledged revenues, strong HHFDC financial position, and a debt service reserve fund. Credit challenges include exposure to reallocation of funds from HHFDC to the State, and potential challenges to operation of residential real estate properties.

HHFDC RHS Program				
		Moody's	S&P	Fitch
Revenue Bonds	Rating	A1		
	Outlook	Stable		

The SF Program carry the ratings and outlook of the U.S. government as shown in the table below. Pledged indenture assets consist of mortgage-backed securities (MBS) guaranteed by Ginnie Mae and Fannie Mae. Credit challenges include declining profitability of the program.

HHFDC SF Program				
		Moody's	S&P	Fitch
Revenue Bonds	Rating	Aaa	AA+	AAA
	Outlook	Negative	Negative	Negative

D. Schedule of Callable Bonds

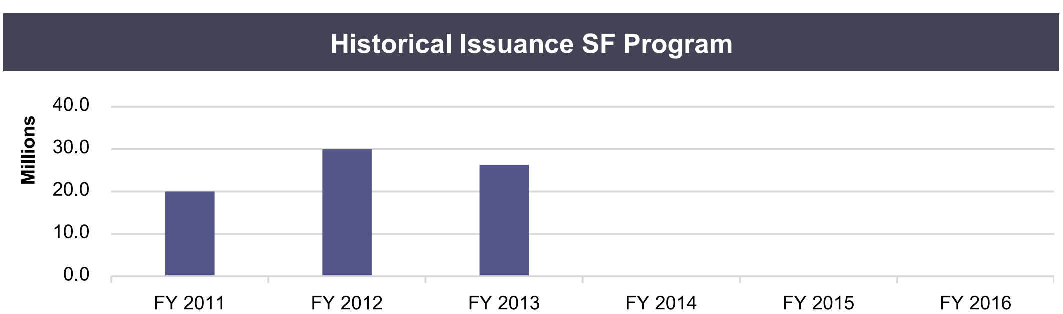
Under the RHS Program, Series 2004A is currently callable and the full outstanding $61.9 million can be refunded for debt service savings. Series 2004B has a call date in July 2019, and it is eligible for advance refunding. A little under $15 million of the outstanding Series 2004B par is callable. In total $76.8 million outstanding under the RHS program represents callable par.

The total callable par under the SF program is approximately $47.3 million. The SF Program has a complex structure including various loan repayment timing and as such refunding evaluations are driven by factors other than savings. The portfolio is monitored for refunding opportunities internally by HHFDC.

E. Multi-Year Program Anticipated/Intended Debt Issuance

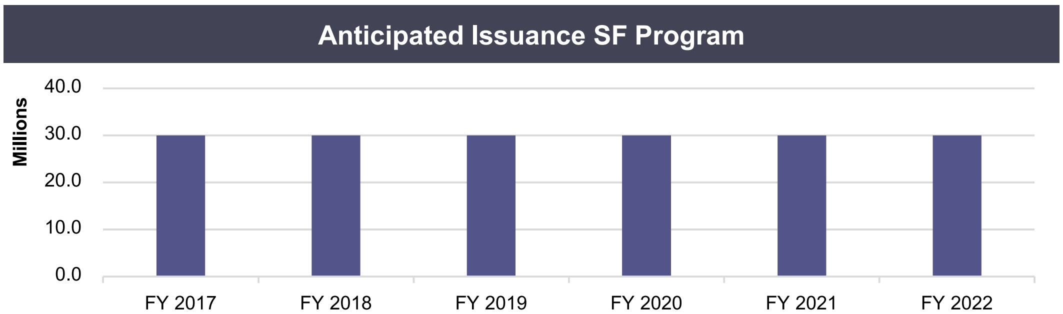
Existing Debt

HHFDC has not issued new debt under the RHS Program since 2004. No new money debt has been issued under the SF Program in the last five years; however, HHFDC issued an aggregate $76.3 million in refunding bonds.



Anticipated Debt

At this time, HHFDC does not have plans to issue additional revenue bonds over the next five years under the RHS Program. As for the SF Program, HHFDC issues revenue bonds when market conditions are favorable. For the purpose of this Study, HHFDC has assumed the following schedule of issuances; however, market conditions will dictate the actual issuance for HHFDC's SF Program.



Unissued but Authorized Debt

HHFDC has $97.72 million in revenue bonds authorized but unissued under the RHS Program. Under its SF Program, HHFDC has $327 million in remaining unissued but authorized debt.

F. Measuring Debt Burden

Current Year and Projected (six-years) Metrics

RHS Program

AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	34.5%	33.4%	32.5%	31.5%	30.6%	29.7%	28.9%
Annual debt service to annual appropriations	41.6%	40.7%	39.7%	38.8%	37.8%	36.9%	36.0%
Debt service coverage (Net)	1.50x	1.53x	1.56x	1.59x	1.63x	1.66x	1.69x

Note: Projected metrics assume no additional debt issuances.

SF Program

AFFORDABILITY METRICS	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Annual debt service to annual revenues	69.3%	48.9%	60.5%	67.8%	72.0%	77.2%	80.9%
Annual debt service to annual appropriations	94.2%	87.4%	91.3%	93.2%	94.3%	95.0%	95.4%
Debt service coverage (Net)	1.38x	1.90x	1.56x	1.40x	1.33x	1.24x	1.19x

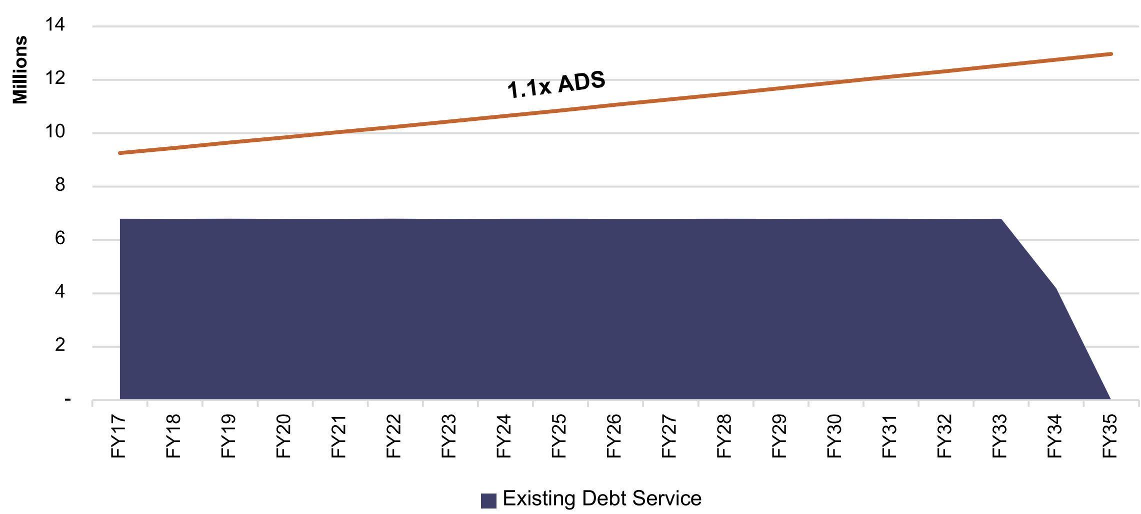
Note: Projected metrics assume issuance of $180 million of additional revenue bonds during the projection period (see anticipated debt above)

Relevant Affordability Metrics

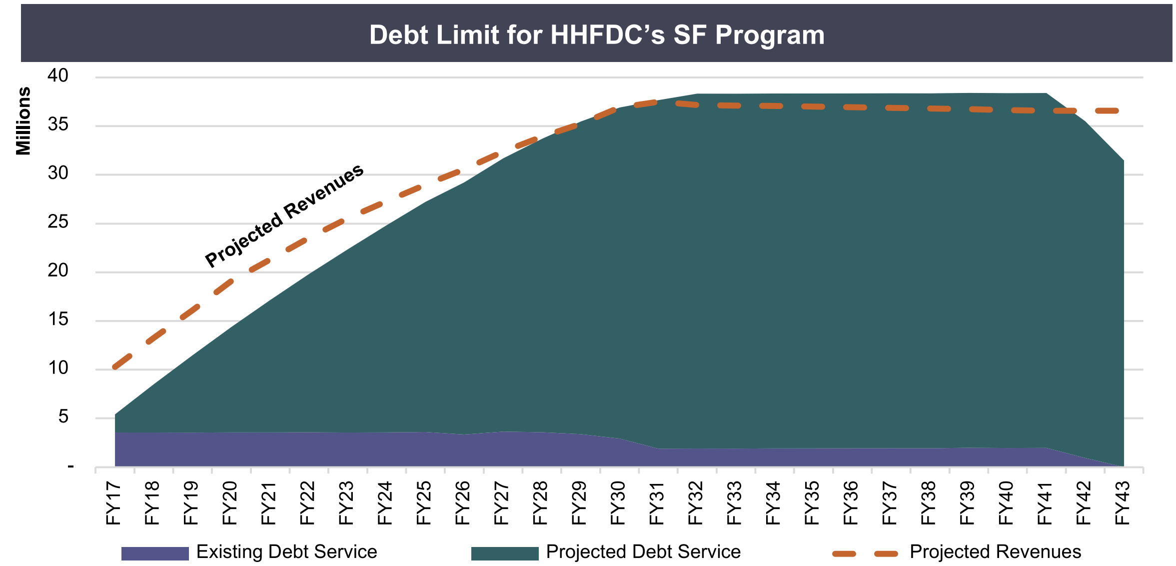
1. Indenture Limitations: The RHS Program's existing debt is subject to a rate covenant wherein net revenues of the RHS Program after payment of operating costs should at least be 1.1 times aggregate annual debt service. In other words, HHFDC must prescribe and collect rates, rents, fees and charges under the program such that they are sufficient to provide at least 1.1 times coverage on aggregate debt service on outstanding bonds after payment of operating costs. As

per the bond indenture, HHFDC must comply with another rate covenant of 1.25 times coverage on aggregate debt service based on net revenues as well as other lawfully available funds. Given the projected net revenues, the debt service on RHS Program revenue bonds is well within the limits prescribed by the rate covenant. Any new bonds would be subject to an ABT test of 1.1 times coverage on projected debt service payments from projected net revenues for five years following issuance along with 1.1 times coverage on outstanding bonds from existing net revenues for three years preceding the issuance. Although no additional borrowings are anticipated at this time, there is some room under the legal limit for additional debt as can be observed in the following chart (orange line in the chart).

Debt Limit for HHFDC's RHS Program



There are no legal limitations in the bond indenture for SF Program revenue bonds. However, if market conditions are conducive to additional borrowings, HHFDC would need to conduct the program such that sufficient revenues are available to pay debt service. At this time, projected revenues (orange line in the following chart) are adequate to absorb the additional debt service on anticipated borrowings. It is noted here that, while the depicted borrowing program and projected revenues appear to increase significantly in a short period of time, this is in line with the projected debt issuance and corresponding mortgage-backed security income that would correspond with additional debt issuances. Additional debt is strictly contingent on market conditions and may not materialize both in terms of timing and amount.



2. <u>Annual debt service payments to annual revenues and annual debt service payments to annual appropriations:</u> These ratios are used to measure the fixed costs in a budget to evaluate the degree of flexibility in the budget. These metrics are more meaningful when evaluated for a department as a whole. Usually at a program level a majority of the revenues are dedicated towards debt service with little being assigned to ongoing costs and administrative expenses. For this reason, the high debt service ratios (debt service of at least 30% and up to 80% of the program budget) for the two programs are not atypical.

3. <u>Net debt service coverage:</u> Net debt service coverage, the ratio of the net revenues as defined and pledged in the indenture to annual debt service, for outstanding RHS Program revenue bonds is good at 1.5 times and is expected to stay above that for the foreseeable future. The net debt service coverage on SF Program revenue bonds, taking into account additional debt, is also expected to be adequate at or above one times.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

For the two programs being analyzed, the projected revenues are sufficient to pay debt service on existing bonds. From a legal standpoint, the RHS Program revenue bonds are in compliance with the rate covenant and from a financial standpoint, coverage is adequate. There has not been a bond issuance under the RHS Program since 2004 and currently, HHFDC does not anticipate issuance of additional RHS Program debt.

During the projection period, HHFDC may issue new money debt under the SF Program. There are no affordability concerns relating to any additional revenue bonds under the SF Program. The bonds are pledged by payments on mortgage-backed pass-through securities guaranteed by Ginnie Mae and Fannie Mae and in the absence of extraordinary events affecting the national credit, there will be sufficient revenues to pay corresponding debt service relating to the SF Program.

IX. Department of Business, Economic Development, and Tourism

The Department of Business, Economic Development, and Tourism (DBEDT) is Hawaii's resource center for economic and statistical data, business development opportunities, energy and conservation information, and foreign trade advantages. DBEDT's mission is to achieve a Hawaii economy that embraces innovation and is globally competitive, dynamic and productive, providing opportunities for all Hawaii's citizens. Through its attached agencies, DBEDT fosters planned community development, creates affordable workforce housing units in high-quality living environments, and promotes innovation sector job growth.

The State acting through DBEDT issued its first Green Infrastructure Bond, the Green Energy Market Securitization (GEMS) Bonds, to finance the purchase or installation of green infrastructure equipment for clean energy technology, energy use reduction, demand side management infrastructure among other related purposes as authorized by the public utilities commission highlighted in the statute (HRS §39A, HRS §196 Part IV and HRS §269 Part X).

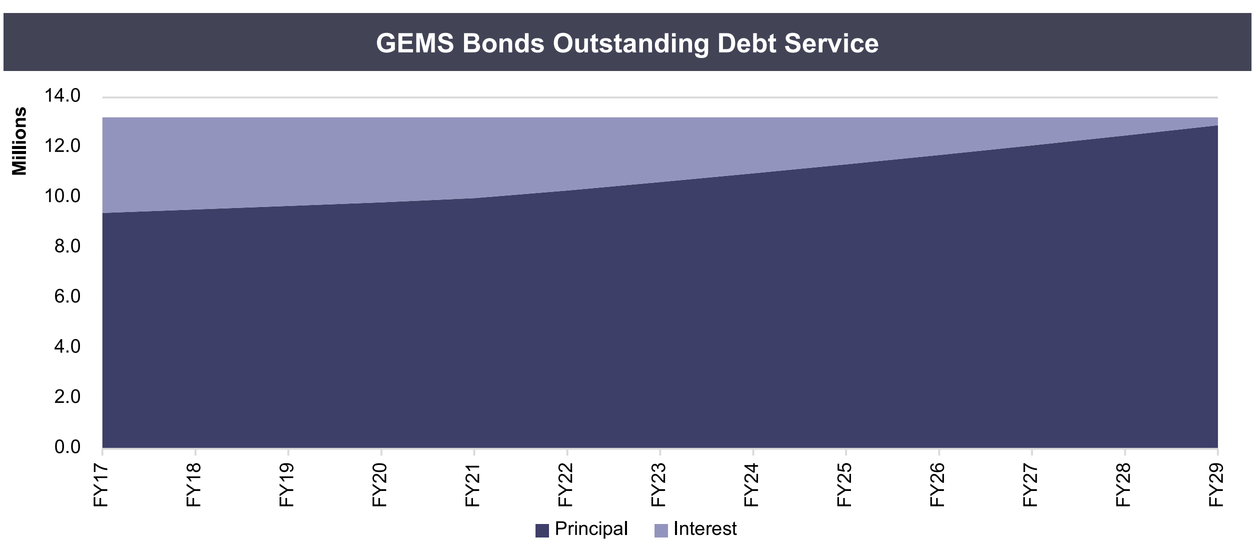
A. Debt Profile

The GEMS Bonds 2014 Series A were issued in two tranches totaling $150 million in par amount, $136 million is currently outstanding.

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par
Series 2014 A-1	Taxable	50,000,000	11/1/14	7/1/20	36,183,990
Series 2014 A-2	Taxable	100,000,000	11/1/14	1/1/29	100,000,000
Total	-	-	-	-	136,183,990

B. Debt Service Chart

GEMS Bond annual debt service is approximately $13.2 million through FY2029.



C. Credit Ratings

The GEMS Bonds carry the highest credit ratings.

Department of Business, Economic Development & Tourism				
		Moody's	S&P	Fitch
Green Energy Market Securitization Bonds	Rating	Aaa	AAA	AAA
	Outlook	Stable	Stable	Stable

Credit strengths include the State's legislative non-impairment pledge, the size, stability and diversity of the service area, and the statutory true-up mechanism which adjusts the charges to ensure sufficient collections for payment of debt service.

D. Schedule of Callable Bonds

The GEMS Bonds are not subject to optional redemption prior to maturity. As such, there are no refunding opportunities associated with the GEMS Bonds.

E. Multi-Year Program Anticipated/Intended Debt Issuance

Existing Debt:

DBEDT issued $150 million of GEMS Bonds 2014 Series A as reflected in the debt profile above.

Anticipated Debt

DBEDT does not have any plans for additional Green Infrastructure debt over the next five years.

Unissued but Authorized Debt

DBEDT does not have any unissued but authorized Green Infrastructure debt.

F. Measuring Debt Burden

The GEMS Bond structure is unique in the strength of the security and pledge to bondholders. Per the Certificate of the Director of the DBEDT, the GEMS bonds are supported by green infrastructure property and DBEDT's irrevocable right to impose, collect, and adjust non-by-passable securitization charges from all existing and future electric service customers of Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc. and Maui Electric Company, Limited. A statutorily uncapped true-up mechanism mandatorily adjusts the securitization charges to ensure sufficient collections for timely payments on the bonds.

The GEMS Bond's unique structure ensures that sufficient revenues will be generated, along with available funds, to cover all operating expenses and debt service payments. As such current year and projected years' coverage (revenues plus available funds) is greater than or equal to 1.00 times debt service in every year.

G. Discussion on Debt Affordability, Potential Concerns and Recommendations

The GEMS Bond true-up mechanism adjusts the securitization charges to ensure sufficient collections for timely payments on the bonds. With the strength of the credit and structure in place, it is clear that sufficient revenues will be available to pay existing debt service on the GEMS Bonds.

Appendix

A. Debt Service Assumptions

1. New Money Assumptions

Department	Credit Ratings	Interest Rate	First Maturity	Final Maturity	Debt Service Reserve Fund
B&F	Aa1/AA+/AA	6.00%	year 3	20	None
DOT-Airports	A1/A+/A	6.50%	2025	30	None
DOT-Harbors	A2/A+/A+	6.50%	year 1	30	Aggregate MADS
DOT-Highways	Aa2/AA+/AA	6.50%	year 1	20	1/2 MADS
University of Hawaii	Aa2/A+/AA	6.50%	year 1	30	None
HHFDC - Single Family	Aaa/AA+/AAA	Debt service and MBS assumptions provided by HHFDC			
HHFDC - Rental Housing	A1	n/a - no bonds anticipated			
DHHL	A1/--/A	n/a - no bonds anticipated			
DBEDT (GEMS)	Aaa/AAA/AAA	n/a - no bonds anticipated			

B. General Fund Debt by Series

Series Name	Tax Status	Issue Size	Delivery Date	Final Maturity	Outstanding Par	Next Call Date	Callable Par
			GO Bonds				
Series CM	Tax-Exempt	150,000,000	12/19/96	12/1/16	8,330,000	-	-
Series DJ	Tax-Exempt	350,000,000	4/12/07	4/1/27	18,100,000	-	-
Series DK	Tax-Exempt	375,000,000	5/20/08	5/1/28	32,475,000	5/1/2018	415,000
Series DL	Tax-Exempt	29,010,000	5/20/08	5/1/18	9,015,000	-	-
Series DN	Tax-Exempt	100,000,000	12/16/08	8/1/28	11,870,000	8/1/2018	1,825,000
Series DO	Tax-Exempt	101,825,000	12/16/08	8/1/18	28,850,000	-	-
Series DQ	Tax-Exempt	500,000,000	6/23/09	6/1/29	67,340,000	6/1/2019	17,860,000
Series DR	Tax-Exempt	225,410,000	6/23/09	6/1/19	106,870,000	-	-
Series DS	Taxable	32,000,000	11/5/09	9/15/24	23,480,000	-	-
Series DT	Tax-Exempt	204,140,000	11/24/09	11/1/19	142,300,000	-	-
Series DX	BAB	500,000,000	2/18/10	2/1/30	454,515,000	MWC	-
Series DY	Tax-Exempt	221,625,000	2/18/10	2/1/20	154,025,000	-	-
Series DZ	Tax-Exempt	800,000,000	12/7/11	12/1/31	402,105,000	12/1/2021	228,255,000
Series EA	Tax-Exempt	403,455,000	12/7/11	12/1/23	403,455,000	12/1/2021	115,430,000
Series EE	Tax-Exempt	444,000,000	12/4/12	11/1/32	329,585,000	11/1/2022	225,540,000
Series EF	Tax-Exempt	396,990,000	12/4/12	11/1/24	396,990,000	11/1/2022	114,595,000
Series EG	Taxable	26,000,000	12/4/12	11/1/32	26,000,000	11/1/2022	17,460,000
Series EH	Tax-Exempt	635,000,000	11/21/13	8/1/33	569,095,000	8/1/2023	423,115,000
Series EL	Tax-Exempt	50,860,000	11/21/13	8/1/23	50,860,000	-	-
Series EM	Taxable	25,000,000	11/21/13	8/1/33	25,000,000	8/1/2023	17,355,000
Series EN	Taxable	29,795,000	11/21/13	8/1/33	29,795,000	8/1/2023	18,605,000
Series EO	Tax-Exempt	575,000,000	11/25/14	8/1/34	563,030,000	8/1/2024	406,320,000
Series EP	Tax-Exempt	209,015,000	11/25/14	8/1/26	209,015,000	8/1/2024	60,330,000
Series EQ	Taxable	25,000,000	11/25/14	8/1/34	25,000,000	MWC	-
Series ES	Taxable	193,880,000	11/25/14	8/1/17	97,415,000	MWC	-
Series ET	Tax-Exempt	190,000,000	10/29/15	10/1/35	190,000,000	10/1/2025	122,415,000
Series EU	Tax-Exempt	35,000,000	10/29/15	10/1/35	35,000,000	10/1/2025	21,600,000
Series EW	Tax-Exempt	34,950,000	10/29/15	10/1/18	34,950,000	-	-
Series EX	Tax-Exempt	25,035,000	10/29/15	10/1/25	25,035,000	-	-
Series EY	Tax-Exempt	212,120,000	10/29/15	10/1/27	212,120,000	10/1/2025	61,230,000
Series EZ	Tax-Exempt	215,590,000	10/29/15	10/1/28	215,590,000	10/1/2025	76,325,000
Series FA	Taxable	25,000,000	10/29/15	10/1/35	25,000,000	10/1/2025	15,695,000
Series FB	Tax-Exempt	500,000,000	4/14/16	4/1/36	500,000,000	4/1/2026	323,515,000
Series FC	Taxable	25,000,000	4/14/16	4/1/21	25,000,000	MWC	-
Series FE	Tax-Exempt	219,690,000	4/14/16	10/1/28	219,690,000	10/1/2026	53,095,000
Series FF	Taxable	119,730,000	4/14/16	10/1/28	119,730,000	10/1/2026	26,345,000
Series FG	Tax-Exempt	375,000,000	10/13/16	10/1/36	375,000,000	10/1/2026	246,845,000
Series FH	Tax-Exempt	379,295,000	10/13/16	10/1/31	379,295,000	10/1/2026	197,840,000
Series FI	Tax-Exempt	2,710,000	10/13/16	10/1/33	2,710,000	10/1/2026	1,800,000
Series FJ	Taxable	25,000,000	10/13/16	10/1/22	25,000,000	-	-
Sub-Total	**-**	**8,987,125,000**	**-**	**-**	**6,568,635,000**	**-**	**2,793,810,000**

			COPs				
Series 2009A	Tax-Exempt	41,120,000	11/5/09	5/1/20	15,200,000	-	-
Sub-Total	**-**	**41,120,000**	**-**	**-**	**15,200,000**	**-**	**-**
			Capital Lease				
DAGS Facilities I	-	12,377,000	9/3/09	6/1/26	12,118,011	NA	NA
DAGS Facilities II	-	18,835,000	8/1/13	9/20/33	18,654,000	NA	NA
Public Safety Div.	-	25,512,000	4/14/11	11/1/30	23,699,845	NA	NA
Sub-Total	**-**	**56,724,000**	**-**	**-**	**54,471,856**	**-**	**-**
Grand Total	**-**	**9,084,969,000**	**-**	**-**	**6,638,306,856**	**-**	**2,793,810,000**

Glossary

Advance Refunding: When bonds are refunded more than 90 days prior to their express call date, the refunding is said to be an advance refunding. It should be noted that not all callable bonds are eligible for advance refunding. Only bonds, the proceeds of which are applied to projects, or bonds issued for current refundings may be advance refunded.

Build America Bonds or BABs: BABs are taxable municipal securities issued through December 31, 2010 under the American Recovery and Reinvestment Act of 2009 (ARRA). BABs may be direct pay subsidy bonds, wherein the issuer would receive a direct payment from federal government equal to about 35% of the interest costs or they may be tax credit bonds wherein the issuer may offer a tax credit to the buyer.

Current Refunding: When bonds are refunded no sooner than 90 days before their call date, the refunding is said to be a current refunding.

Make Whole Call (MWC): A type of call option that is designed to protect the investor from losses as a result of the earlier call. In order to exercise the call, the issuer must make a lump sum payment (referred to as a “make-whole-call premium”) derived from a formula based on the net present value of future interest payments that will not be paid as a result of the call. Because the cost can often be significant, such a call option is rarely exercised.

Negative Arbitrage: It is term used in conjunction with advance refundings. It occurs when the interest rate a borrower pays on the refunding bonds issued is higher than the escrow yield the borrower is able to achieve by investing those bond proceeds until the refunded bonds are callable.

Net Revenues: Net Revenues, are the total operating revenues net of any operations and maintenance cost for the department, program, project or undertaking as the case may be.

Optional Call or Redemption: The terms of the bond contract, sometimes referred to as “call or prepayment provisions,” giving the issuer the *right* to redeem or call, all or a portion of an outstanding issue of bonds prior to its stated date of maturity. Optional redemptions often can be exercised only on or after a specified date (referred to as the “call date”), typically for a municipal security beginning approximately ten years after the issue date.

Present Value Savings: It is the difference, expressed in current dollars, between the debt service on a refunded bond (or maturity) and debt service on the refunding bond (or maturity). It is calculated by discounting the difference in the future debt service payments at an appropriate discount rate.