

STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
 DF-46 (REV 07/14)

Fiscal Year 2015/16	Business Unit 7730	Department Franchise Tax Board	Priority No. 1
Budget Request Name 7730-001-BCP-BR-2015-GB		Program 6280	Subprogram 6280010/6280019

Budget Request Description
 Mainframe Workload Growth

Budget Request Summary

The Franchise Tax Board (FTB) requests an augmentation of \$5.3 million General Fund and \$218,000 Special Funds in 2015/16, and ongoing annually-adjusted augmentations of similar amounts for replacement of the mainframe's central processing unit, additional memory, storage space, and software to meet workload growth projections.

Requires Legislation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Code Section(s) to be Added/Amended/Repealed
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Does this BCP contain information technology (IT) components? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes, departmental Chief Information Officer must sign.</i>	Department CIO	Date
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For IT requests, specify the date a Special Project Report (SPR) or Feasibility Study Report (FSR) was approved by the Department of Technology, or previously by the Department of Finance.

FSR SPR FSR RER Approved Project No. Date: July 28, 2014

If proposal affects another department, does other department concur with proposal? Yes No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Department Director	Date	Agency Secretary	Date

Pending Board Approval

Department of Finance Use Only						
Additional Review:	Capital Outlay	ITCU	FSCU	OSAE	CALSTARS	Technology Agency
BCP Type:	Policy	Workload Budget per Government Code 13308.05				
PPBA	Date submitted to the Legislature					

Analysis of Problem

A. Budget Request Summary

The Franchise Tax Board (FTB) requests an augmentation of \$5.3 million General Fund and \$218,000 Special Funds in 2015/16, and annually-adjusted ongoing augmentations of similar amounts for replacement of the mainframe's central processing unit, additional memory, storage space, and software to meet workload growth projections. In the past, augmentations for this purpose have occurred on a roughly biennial basis. The biennial cost is estimated to be between \$11 and \$12 million.

In this proposal, FTB seeks to finance the cost of the upgrades using the GS \$Mart program. This will allow for the costs of the upgrade to be spread annually at a lower amount. It is requested that subsequent years' costs be adjusted incrementally through planning estimates, according to the amounts shown in Attachment A.

Without these upgrades, FTB's ability to efficiently and effectively collect revenue for the General Fund and respond to taxpayers will be negatively impacted. FTB is requesting baseline funding due to the ongoing nature of this work and FTB's success with managing mainframe upgrades over several decades. Failure to upgrade the mainframe could result in detrimental impacts to the EDR project as well as risks to FTB key legacy systems having insufficient processing capacity to process and collect current revenues.

B. Background/History

FTB's Tier III equivalent Data Center provides mainframe and distributed systems access and the necessary operating capacity for FTB to administer its programs successfully. FTB's Data Center processed on average, approximately 23.4 million online transactions per month and 228,000 batch jobs per month in 2012/13. During April 2014, FTB processed approximately 28.5 million online transactions and roughly 262,000 batch jobs. The Data Center also generated 2.6 million print pages per month of documents, notices, bills and letters during the 2014 peak filing season (January through March). Each year FTB processes more than 16 million Personal Income Tax (PIT) returns and 1.5 million Business Entity (BE) returns, responds to more than three million telephone calls, handles over seven million internet contacts, and collects about \$60 billion (an average of more than 65 percent of the state's general revenue), each year.

The mainframe is essential to FTB's mission-critical legacy applications, Taxpayer Information (TI), Business Entity Tax System (BETS), and Court Ordered Debt (COD). Additionally, the mainframe supports application systems operating in the distributed environment such as, the Accounts Receivable Collection System (ARCS), Professional Audit Support System (PASS), Integrated Non-Filer System (INC), and online self-service applications for taxpayers. All these systems have a substantial dependency on data that resides within the mainframe and therefore, rely on the mainframe environment having sufficient processing capacity to support the efficient and effective operations of those applications.

Historically, FTB has successfully replaced the mainframe every four years. The last mainframe replacement was in 2011/12 and the next replacement is being planned for in 2015/16, pending approval of this BCP request. FTB usually upgrades its CPU Millions of Instructions Per Second (MIPS) every two years. During the last upgrade in 2013/14, 477 MIPS were purchased providing FTB with the current capacity of 2,132 MIPS. The 2013/14 MIPS purchase represented 29 percent growth in capacity, which based on a 10 percent growth rate was expected to be sufficient until 2016/17.

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In the past, FTB experienced an annual growth rate of 10 percent in MIPS usage. In 2013/14, due to unforeseen growth patterns, FTB experienced a 43 percent growth rate in MIPS usage. In September 2013, FTB began to experience sustained spikes in CPU usage up to 100 percent of general processor capacity. From September 2013 through March 2014, the general processor used an average 2,071 MIPS out of 2,132 available (97.1 percent of capacity).

Analysis of the sudden increase in usage attributed the growth to several unanticipated workloads such as a change in how notices are prepared for print (triggered by an upgrade to Windows 7), and implementation of various security tools as well as increased workload growth and testing demands. These factors combined, have contributed to increased CPU usage beyond the original historically based 10 percent annual growth projections. FTB has since determined that the annual growth rate is closer to 12 to 15 percent which aligns with industry standard annual growth projections.

FTB has engaged in mitigation techniques to move processes from the mainframe to slow the growth, such as moving the notice print functions to a different secure environment. With this mitigation technique the immediate need for an upgrade has been eliminated.

The Enterprise Data to Revenue (EDR) project has implemented many improvements to processes allowing FTB to expand compliance activities related to and supporting the \$4.7 billion revenue committed as a result of this project. To date, the EDR Project effort has produced \$1 billion of this commitment 10 months ahead of schedule. Although some of these workload expansions have resulted in increased workloads processed by and through the mainframe, there are multiple other situations, where EDR improvements have decreased the demands on the mainframe as well. EDR is also delivering two large solutions in 2015 and 2016 which further reduce the current load and growth on the mainframe and have been taken into account for FTB's estimates.

At the start of the EDR project, FTB and the Solution Provider determined future system needs and impacts built upon best assumptions at that time. Based on those assumptions, FTB did not forecast an abnormal or inconsistent growth for mainframe capacity based on historical numbers. As the project has progressed, FTB has evaluated the impacts of EDR on the mainframe and has determined that non-EDR impacts to the mainframe have accounted for the majority of the mainframe growth. These include continued population increases (more filers), and as mentioned above the unplanned growth due to enhanced security requirements and vendor related software upgrades requiring more capacity to run. Thus, FTB did not find it appropriate to attribute this as an EDR project cost. Additionally, under the terms of the contract with the EDR Solution Provider, FTB is responsible for providing sufficient tools, platforms, and various hardware and software to build the EDR project deliverables on. Failure to upgrade the mainframe could result in detrimental impacts to the EDR project as well as risks to FTB key legacy systems having insufficient processing capacity to process and collect current revenues.

Although FTB has been able to slow the growth somewhat, the growth is still consistent to a Gartner study which shows industry growth patterns of 12 to 15 percent. These are primarily due to the world-wide increase in data collection and usage and the movement towards providing increased mobile services. This growth is also consistent to the

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growth patterns the Office of Technology Services (OTech) is currently experiencing as well.

The increase in FTB's processing requirements requires growth in two areas corresponding with the need to increase the mainframe MIPS. These are memory and space. Computer programs running on the mainframe also use the mainframe's central storage (memory). Sufficient central storage (GB of memory) needs to be available for processing work to maximize the available CPU processing throughput. As CPU utilization increases, central storage should be augmented correspondingly. In addition, FTB departmental programs rely heavily on the completion of the nightly batch processing window in order to provide updates to the TI, BETS and COD systems. These batch window processes rely on Direct Access Storage Device (DASD) space to complete processing within the batch windows. The historical growth of DASD space resources results from the increase in the number of filers, file redesign, additional year segments, auxiliary master files, and additional files required to support new annual change applications and department operations for tax programs. Due to the projected mainframe workload growth, FTB estimates the need for an additional 35 terabytes (TB) from 2015/16 through 2018/19.

Based on a revised 12 to 15 percent projected increase, the current system will exceed its capacity by December 2015 even with the planned mitigation actions. The current mainframe will not be able to support the business areas without major process and performance degradation issues.

C. State Level Considerations

Upgrading FTB's equipment to effectively and efficiently handle the growth of current and anticipated workloads reduces the risk that these components will fail which would impact FTB's revenue generating capabilities.

This proposal supports FTB's mission to responsibly manage the resources allocated to the department. This proposal also supports FTB's Strategic Plan Goal #2 of Effective Enforcement that states that FTB will administer and enforce the law effectively to ensure that all taxpayers meet their obligations to file and pay the proper amount owed. FTB's mainframe is host to the legacy systems providing the data necessary to determine and enforce compliancy and payment. Upgrading the mainframe to align with workload growth increases the capacity and provides FTB with the ability to continue to administer and enforce California Tax Law effectively.

This proposal also aligns with Goal #4 of Operational Excellence that states FTB will build an operational infrastructure in order to continuously provide excellent and cost effective products and services to customers. As innovation occurs and best practices evolve in tax and business administration, FTB embraces change in a creative and responsible manner to enhance the operational infrastructure. FTB's mainframe is pivotal to providing additional information to taxpayers through the numerous self service tools offered to taxpayers, such as MyFTB, which allows them to access personal information when they need it thus enhancing their ability to self comply. Upgrading the mainframe to align with workload growth insures the continued ability of FTB to provide excellent customer service.

D. Justification

The current mainframe processor does not have sufficient CPU and memory capacity to effectively and efficiently handle the growth of current application workloads projected beyond December 2015. The proposed solution is to replace the existing mainframe central processing unit in 2015/16 with an upgradeable box/platform with a minimum configuration of 3,215 MIPS, 272 GB CPU main memory, additional 20 TB of DASD, and upgrade software licenses appropriate to the new mainframe. In 2017/18, the proposed solution will upgrade the configuration to 4,252 MIPS, 288 GB of CPU main memory, and an additional 15 TB of DASD to support the department's continued growth.

Industry guidelines recommend operating at less than 90 percent of available general processor capacity in order to maintain acceptable demand levels on critical systems and maintain an efficient information system network. Under the proposed solution, FTB will operate at approximately 70 percent capacity in 2015/16, 80 percent capacity in 2016/17, 70 percent capacity in 2017/18, and 80 percent capacity in 2018/19. Mainframe capacity is increasing at a rate higher than has occurred historically resulting in this request being increased over prior year upgrades. FTB has proposed upgrading MIPS capacity to these levels for several reasons:

- Due to the cyclical nature of tax processing, FTB has multiple peak seasons where its system capacity must allow for increased processing volumes. Unfortunately, at these levels, there are also months where capacity is also well above industry standards but necessary in order to meet the processing peaks and the required year end annual changes. With levels requested, FTB sometimes will approach 90 percent to 100 percent of capacity during peak periods. FTB is requesting the level of MIPS necessary to perform tax processing and revenue generation for the state.
- FTB is updating MIPS every other year. By the time the upgrade occurs in year three of the four year cycle, FTB will already be approaching or exceeding capacity standards so FTB has allowed a slight margin to avoid additional future impacts.
- Considering level of effort to procure and upgrade the mainframe, FTB did not consider it feasible to purchase MIPS annually. If FTB initiated the procurement process annually it would reduce the department's ability to leverage the department's purchasing power in order to negotiate the best prices with the software vendors. Additionally, FTB was cognizant of purchasing too many MIPS above those needed.

This proposal requests baseline funding due to the ongoing nature of this work and FTB's success with managing mainframe upgrades over several decades. Subsequent annual funding increases to meet mainframe growth projections will be handled through annual Planning Estimate Adjustments (PEAs). Planning for projected needs will meet FTB's long term goals and provide the assured system stability required for a Tier III equivalent Data Center.

This proposal seeks to finance the cost of the upgrades using the GS \$Mart program. This will allow for the costs of the upgrade to be spread annually at a lower amount. In 2011/12, FTB requested the full cash cost of the project; however, the Legislature recommended that FTB finance the replacement of the system in order to even out the year over year costs. For this request, FTB estimates that financing the upgrades in 2015/16 and 2017/18 over two years would cost approximately \$946,000 more over the four year project compared to paying up front, but would save the state \$3.5 million in the budget year. FTB suggested financing this request to equalize the payment over two

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years and avoid the large upfront costs; however, FTB has no concerns with seeking an augmentation to fund the full “cash cost” of the project in the budget year if this approach is more desirable.

In April 2014, IBM announced a staged withdrawal from marketing of the z196 mainframe (the model FTB currently uses). The first stage would end hardware upgrades in June 2014, followed a year later by the withdrawal of capacity upgrades in June 2015. Therefore, by only purchasing additional MIPS for the current mainframe model, FTB would not be positioned to expand capacity beyond June 2015.

The investment in the FTB mainframe infrastructure is a significant risk mitigation strategy. The replacement of the mainframe mitigates the risks associated with the existing mainframe system (end of market, end of support, and performance limitations). The replacement expands system/infrastructure performance capabilities that provide a capacity expansion path for growth through the mainframe’s end of life which is generally four years. This strategy mitigates the risk of FTB key legacy systems having insufficient processing capacity to process and collect current revenues. Insufficient processing capacity leads to increased return processing time causing extensive backlogs and delayed revenue impacts. When the mainframe takes longer to process a (system) task, this increases the time it takes to complete user requests. Longer online response times leads to customer dissatisfaction and reduction in use of FTB’s online services. Online services use information via the mainframe to process customer requests without the need for expensive manual intervention by a FTB representative. This has helped FTB to provide fast, efficient customer service while controlling costs to the State. In addition, it allows taxpayers to quickly and efficiently resolve inquiries, thereby promoting greater taxpayer self compliance.

The proposed solution also ensures that FTB has a stabilized mainframe environment during the development of current and future projects such as the ongoing Enterprise to Data Revenue project (EDR). Moreover, the project and associated investment is essential to the existing mainframe and key legacy applications (e.g. Taxpayer Information (TI), Business Entity Tax System (BETS) and Court Ordered Debt (COD) as well as application systems operating in the distributed environment such as the Accounts Receivable Collection System (ARCS), Professional Audit Support System (PASS), Integrated Non-File System (INC) and self service applications for taxpayers. All these systems have a substantial dependency on data that resides within the mainframe and these systems therefore, rely on the mainframe environment having sufficient processing capacity to support the efficient and effective operations of those applications.

E. Outcomes and Accountability

The FTB’s mission is to help taxpayers file accurate and timely tax returns and pay the proper amount owed. To accomplish this mission, FTB has a technical infrastructure, which consists of a mainframe and server environments, a network infrastructure, and storage solutions.

The proposed solution will upgrade the mainframe model to the newest version being marketed in 2015, and increasing capacity (MIPS) to meet near-term capacity needs through 2016/17. Furthermore, to strategically plan for future capacity needs through 2018/19, additional capacity (MIPS) will be required in 2017/18. In addition, memory and DASD will be correspondingly increased. The proposal represents FTB’s projected MIPS

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utilizations and purchases based on an estimated 15 percent annual growth in MIPS usage. FTB will continue to closely monitor mainframe capacity and analyze forecasted workload growth.

The BCP is supported by the FSR Reporting Exemption Request approved by the California Department of Technology (CalTech) on July 28, 2014. The Exemption Request gives FTB project delegation of the mainframe's central processing unit, additional memory, storage space, and software.

F. Analysis of All Feasible Alternatives

Alternative #1: Provide \$5.3 million General Fund and \$218,000 Special Funds in 2015/16, and annually-adjusted ongoing augmentations of similar amounts for replacement of hardware and software to meet workload growth projections.

This alternative seeks to finance the cost of the upgrades using the GS \$Mart program. This will allow for the costs of the upgrade to be spread annually at a lower amount. The biennial cost is estimated to be between \$11 and \$12 million. It is requested that subsequent years' costs be adjusted incrementally through planning estimates.

Without these upgrades, FTB's ability to efficiently and effectively collect revenue for the General Fund and respond to taxpayers will be negatively impacted. FTB is requesting baseline funding due to the ongoing nature of this work and FTB's success with managing mainframe upgrades over several decades.

Alternative #2: Provide \$9 million General Fund in 2015/16 and annually-adjusted ongoing augmentations to fund the "cash cost" of the project.

This alternative provides the funding to replace the mainframe's central processing unit and to increase processing capability, memory, storage and software upgrades to meet workload growth projections through 2018/19 while avoiding the additional interest expense. FTB estimates that financing the upgrades in 2015/16 and 2017/18 over two years would cost approximately \$946,000 more over the four year project compared to paying up front, but would save the state \$3.5 million in the budget year. Costs in subsequent years are estimated to be \$1.9 million in 2016/17, \$8.6 million in 2017/18 and \$2.7 million in 2018/19. It is requested that subsequent years' costs be adjusted incrementally through planning estimates.

Alternative #3: Use Mainframe Services provided by the Office of Technology Services (OTech).

To utilize OTech's Mainframe Services, FTB must convert from the current platform of Top Secret (provided by Computer Associates) to OTech's Resource Access Control Facility (provided by IBM). This alternative would be subject to the following issues:

- The conversion process would take a minimum of 9 months to complete. This delay will put FTB at risk by not meeting its processing compliance workload requirements.
- FTB has limited resources to devote to completing the conversion. Therefore, additional costs would be incurred.
- Excessive costs due to platform license purchases, IBM consultant fees, etc.
- FTB has a significant investment in raised floor capacity.
- Increased security issues due to transmitting over a public network.
- This alternative could create a schedule risk to the EDR Project presenting the potential for a breach of contract.

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- FTB has very small window for nightly batch processing which is critical to update the key systems to process the high volumes of tax returns and payments. This is especially important during the peak processing seasons where FTB deposits the majority of the general deposit funds over a very short period of time. Utilizing OTech's mainframe services would not allow FTB sufficient processing time for the nightly batch services causing delays to return and payment processing past the mandated processing timeframes. This causes additional lost revenue to the state since FTB would be required to pay additional processing interest and penalties.

Alternative #4: Deny request.

By denying the request FTB will not be able to successfully administer its programs and will place at risk the Taxpayer Information, Business Entities and Non-Tax Debt information systems, and jeopardize the ability to perform core tasks such as processing tax returns and payments, compliance activities including audits, filing enforcement activities and debt collection, and jeopardizes many self service tools currently available to taxpayers.

G. Implementation Plan

- July 1, 2015 - Funding provided.
- August 2015 - Award procurement.
- September 2015 - Install mainframe, additional memory, DASD, and software.
- October 2015 - Implement into operation.

H. Supplemental Information

None.

I. Recommendation

FTB recommends approval of Alternative 1 to provide an augmentation of \$5.3 million General Fund and \$218,000 Special Funds in 2015/16, and ongoing annually-adjusted augmentations of similar amounts for replacement of the mainframe's central processing unit, additional memory, storage space, and software to meet workload growth projections. The proposal will provide the appropriate solution to support the department's revenue activities with the least possible financial impact. FTB is requesting baseline funding due to the ongoing nature of this work and FTB's success with managing mainframe upgrades over several decades. Additionally, Alternative 1 meets the business objectives and functional requirements necessary to maintain existing systems without risking major equipment or software failure.

Analysis of Problem

Attachment A

2015/16	
Box w/MIPS	\$2,578,197
One Time SW Upgrade Fee	\$1,401,260
SW maintenance	\$1,528,976
DASD Storage/Memory /1	\$0
Warm Site Contract	\$28,500
Sub-Total	\$5,536,933
2016/17	
Box w/MIPS	\$2,578,197
One Time SW Upgrade Fee	\$1,388,260
SW Maintenance	\$1,834,772
DASD Storage/Memory /1	\$0
Warm Site Contract	\$28,500
Sub-Total	\$5,829,729
2017/18	
Increase MIPS	\$1,584,947
SW Upgrade Fee	\$1,787,281
SW maintenance	\$2,201,726
DASD Storage/Memory /1	\$0
Warm Site Contract	\$49,560
Sub-Total	\$5,623,514
2018/19	
Increase MIPS	\$1,584,947
SW Upgrade Fee	\$1,787,281
SW Maintenance	\$2,642,071
DASD Storage/Memory /1	\$0
Warm Site Contract	\$49,560
Sub-Total	\$6,063,859
Total	\$23,054,035

1/ DASD Storage/Memory is included in MIPS cost.

Mainframe Workload Growth Fiscal Detail

	CY	BY	BY+1	BY+2	BY+3	BY+4
Personal Service						
Positions (Perm)	0.0	0.0	0.0	0.0	0.0	0.0
Positions (Temp)	0.0	0.0	0.0	0.0	0.0	0.0
Exempt	0.0	0.0	0.0	0.0	0.0	0.0
Board	0.0	0.0	0.0	0.0	0.0	0.0
Total Positions	0.0	0.0	0.0	0.0	0.0	0.0
Total Salaries and Wages						
Earnings - Permanent	0	0	0	0	0	0
Earnings - Temporary	0	0	0	0	0	0
Earnings - Statutory/Exempt	0	0	0	0	0	0
Overtime, Holiday, Other	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0
Total Staff Benefits	0	0	0	0	0	0
Unallocated, Special Adjustments	0	0	0	0	0	0
Total Personal Services	\$0	\$0	\$0	\$0	\$0	\$0
Operating Expenses and Equipment						
General Expense	0	0	0	0	0	0
Printing	0	0	0	0	0	0
Communications	0	0	0	0	0	0
Postage	0	0	0	0	0	0
Insurance	0	0	0	0	0	0
Travel-In State	0	0	0	0	0	0
Travel-Out of State	0	0	0	0	0	0
Training	0	0	0	0	0	0
Facilities Operations	0	0	0	0	0	0
Utilities	0	0	0	0	0	0
Consulting: Interdepartmental	0	0	0	0	0	0
Consulting: External	0	0	0	0	0	0
Other Departmental Services	0	0	0	0	0	0
Consolidated Data Center	0	0	0	0	0	0
Information Technology	0	5,537,000	5,830,000	5,624,000	6,064,000	8,409,000
Pro Rata	0	0	0	0	0	0
Statewide Cost Allocation Plan	0	0	0	0	0	0
Capital Assets	0	0	0	0	0	0
Equipment	0	0	0	0	0	0
Other	0	0	0	0	0	0
Special Items of Expense	0	0	0	0	0	0
Unclassified/Special Adjustment	0	0	0	0	0	0
Total Operating Expenses and Equipment	\$0	\$5,537,000	\$5,830,000	\$5,624,000	\$6,064,000	\$8,409,000
Total State Operations Expenditures	\$0	\$5,537,000	\$5,830,000	\$5,624,000	\$6,064,000	\$8,409,000
Fund Source - State Operations						
General Fund	0	5,319,000	5,600,000	5,402,000	5,825,000	8,078,000
Federal Funds	0	0	0	0	0	0
Other/Special Funds	0	218,000	230,000	222,000	239,000	331,000
Reimbursements (non-add)	0	0	0	0	0	0
Total State Operations Expenditures	\$0	\$5,537,000	\$5,830,000	\$5,624,000	\$6,064,000	\$8,409,000
Fund Source - Local Assistance						
General Fund	0	0	0	0	0	0
Federal Funds	0	0	0	0	0	0
Other/Special Funds	0	0	0	0	0	0
Reimbursements (non-add)	0	0	0	0	0	0
Total Local Assistance Expenditures	\$0	\$0	\$0	\$0	\$0	\$0
Fund Source - Capital Outlay (if applicable)						
General Fund	0	0	0	0	0	0
Federal Funds	0	0	0	0	0	0
Other/Special Funds	0	0	0	0	0	0
Reimbursements (non-add)	0	0	0	0	0	0
Total Capital Outlay Expenditures	\$0	\$0	\$0	\$0	\$0	\$0
Total Expenditures	\$0	\$5,537,000	\$5,830,000	\$5,624,000	\$6,064,000	\$8,409,000
Other Items						
Unclassified	0	0	0	0	0	0
Reappropriation	0	0	0	0	0	0
Reversion	0	0	0	0	0	0
Revenue						
General Fund	0	0	0	0	0	0
Other/Special Funds	0	0	0	0	0	0
Loans/Revenue Transfers						
General Fund	0	0	0	0	0	0
Other/Special Funds	0	0	0	0	0	0