

BP-14 Final Rate Proposal

Transmission Revenue Requirement Study Documentation

BP-14-FS-BPA-08A

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COMMONLY USED ACRONYMS AND SHORT FORMS

AAC	Anticipated Accumulation of Cash
AGC	Automatic Generation Control
ALF	Agency Load Forecast (computer model)
aMW	average megawatt(s)
AMNR	Accumulated Modified Net Revenues
ANR	Accumulated Net Revenues
ASC	Average System Cost
BiOp	Biological Opinion
BPA	Bonneville Power Administration
Btu	British thermal unit
CDD	cooling degree day(s)
CDQ	Contract Demand Quantity
CGS	Columbia Generating Station
CHWM	Contract High Water Mark
COE, Corps, or USACE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
Corps, COE, or USACE	U.S. Army Corps of Engineers
COSA	Cost of Service Analysis
COU	consumer-owned utility
Council or NPCC	Northwest Power and Conservation Council
CP	Coincidental Peak
CRAC	Cost Recovery Adjustment Clause
CSP	Customer System Peak
CT	combustion turbine
CY	calendar year (January through December)
DDC	Dividend Distribution Clause
<i>dec</i>	decrease, decrement, or decremental
DERBS	Dispatchable Energy Resource Balancing Service
DFS	Diurnal Flattening Service
DOE	Department of Energy
DSI	direct-service industrial customer or direct-service industry
DSO	Dispatcher Standing Order
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EN	Energy Northwest, Inc.
EPP	Environmentally Preferred Power
ESA	Endangered Species Act
e-Tag	electronic interchange transaction information
FBS	Federal base system
FCRPS	Federal Columbia River Power System
FCRTS	Federal Columbia River Transmission System
FELCC	firm energy load carrying capability
FHFO	Funds Held for Others
FORS	Forced Outage Reserve Service

FPS	Firm Power Products and Services (rate)
FY	fiscal year (October through September)
GARD	Generation and Reserves Dispatch (computer model)
GEP	Green Energy Premium
GRSPs	General Rate Schedule Provisions
GTA	General Transfer Agreement
GWh	gigawatthour
HDD	heating degree day(s)
HLH	Heavy Load Hour(s)
HOSS	Hourly Operating and Scheduling Simulator (computer model)
HYDSIM	Hydrosystem Simulator (computer model)
ICE	Intercontinental Exchange
<i>inc</i>	increase, increment, or incremental
IOU	investor-owned utility
IP	Industrial Firm Power (rate)
IPR	Integrated Program Review
IRD	Irrigation Rate Discount
IRM	Irrigation Rate Mitigation
IRMP	Irrigation Rate Mitigation Product
JOE	Joint Operating Entity
kW	kilowatt (1000 watts)
kWh	kilowatthour
LDD	Low Density Discount
LLH	Light Load Hour(s)
LRA	Load Reduction Agreement
Maf	million acre-feet
Mid-C	Mid-Columbia
MMBtu	million British thermal units
MNR	Modified Net Revenues
MRNR	Minimum Required Net Revenue
MW	megawatt (1 million watts)
MWh	megawatthour
NCP	Non-Coincidental Peak
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFB	National Marine Fisheries Service (NMFS) Federal Columbia River Power System (FCRPS) Biological Opinion (BiOp)
NLSL	New Large Single Load
NMFS	National Marine Fisheries Service
NOAA Fisheries	National Oceanographic and Atmospheric Administration Fisheries
NORM	Non-Operating Risk Model (computer model)
Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NPCC or Council	Pacific Northwest Electric Power and Conservation Planning Council

NPV	net present value
NR	New Resource Firm Power (rate)
NT	Network Transmission
NTSA	Non-Treaty Storage Agreement
NUG	non-utility generation
NWPP	Northwest Power Pool
OATT	Open Access Transmission Tariff
O&M	operation and maintenance
OATI	Open Access Technology International, Inc.
OMB	Office of Management and Budget
OY	operating year (August through July)
PF	Priority Firm Power (rate)
PFp	Priority Firm Public (rate)
PFx	Priority Firm Exchange (rate)
PNCA	Pacific Northwest Coordination Agreement
PNRR	Planned Net Revenues for Risk
PNW	Pacific Northwest
POD	Point of Delivery
POI	Point of Integration or Point of Interconnection
POM	Point of Metering
POR	Point of Receipt
Project Act	Bonneville Project Act
PRS	Power Rates Study
PS	BPA Power Services
PSW	Pacific Southwest
PTP	Point to Point Transmission (rate)
PUD	public or people's utility district
RAM	Rate Analysis Model (computer model)
RAS	Remedial Action Scheme
RD	Regional Dialogue
REC	Renewable Energy Certificate
Reclamation or USBR	U.S. Bureau of Reclamation
REP	Residential Exchange Program
RevSim	Revenue Simulation Model (component of RiskMod)
RFA	Revenue Forecast Application (database)
RHWM	Rate Period High Water Mark
RiskMod	Risk Analysis Model (computer model)
RiskSim	Risk Simulation Model (component of RiskMod)
ROD	Record of Decision
RPSA	Residential Purchase and Sale Agreement
RR	Resource Replacement (rate)
RRS	Resource Remarketing Service
RSS	Resource Support Services
RT1SC	RHWM Tier 1 System Capability
RTO	Regional Transmission Operator
SCADA	Supervisory Control and Data Acquisition

SCS	Secondary Crediting Service
Slice	Slice of the System (product)
TISFCO	Tier 1 System Firm Critical Output
TCMS	Transmission Curtailment Management Service
TOCA	Tier 1 Cost Allocator
TPP	Treasury Payment Probability
TRAM	Transmission Risk Analysis Model
Transmission System Act	Federal Columbia River Transmission System Act
TRL	Total Retail Load
TRM	Tiered Rate Methodology
TS	BPA Transmission Services
TSS	Transmission Scheduling Service
UAI	Unauthorized Increase
ULS	Unanticipated Load Service
USACE, Corps, or COE	U.S. Army Corps of Engineers
USBR or Reclamation	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VERBS	Variable Energy Resources Balancing Service (rate)
VOR	Value of Reserves
VR1-2014	First Vintage rate of the BP-14 rate period
WECC	Western Electricity Coordinating Council (formerly WSCC)
WIT	Wind Integration Team
WSPP	Western Systems Power Pool

1. TRANSMISSION REVENUE REQUIREMENTS

1.1 Introduction

This Chapter 1 documents how the Bonneville Power Administration's (BPA) annual transmission revenue requirements are determined. Two tables are presented, each showing both years of the rate period (FY 2014 and FY 2015). On the first table, revenue requirements for FY 2014 and FY 2015 are projected in an income statement format. The second table, a statement of annual cash flows, determines the minimum required net revenues and presents the annual cash flows available for risk mitigation.

1.2 Income Statement

Transmission Operations (Line 2). Transmission Operations includes spending for technical operations; substation operations; control center support; power system dispatching; Transmission information technology (IT) costs, including Agency Services IT costs that are allocated to Transmission Services (TS); and scheduling services (reservations, pre-scheduling, real-time and after-the-fact scheduling, and technical support). This category also includes spending for business strategy and assessment, billing, finance, contract management, and internal operations. See Chapter 3.

Transmission Maintenance (Line 3). This category includes spending for all Transmission Services maintenance activities, such as ongoing maintenance of substations, lines, and protection control systems. This category also includes spending on environmental analysis and pollution prevention and abatement. *Id.*

Transmission Engineering (Line 4). This category includes spending on asset management and planning, design of lines/towers/substations, construction planning, construction management, and real property services. *Id.*

Transmission Acquisition & Ancillary Services (Line 5). This category includes inter-business line expenses resulting from functional separation and costs of ancillary services products, including Power Services generation inputs to ancillary services. It also includes the costs of station service and remedial action schemes, Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation) transmission facilities serving the Network and Utility Delivery segments, and payments to other utilities for stability reserves, settlements, and operating leases. *Id.*

BPA Internal Support (Line 6). This category includes spending on general and administrative programs that are allocated to BPA's two business units. These programs include legal services, finance, risk management, security and emergency management, human resources, and executive oversight and management. *Id.*

Other Income, Expenses & Adjustments (Line 7). Generally, this category includes items that do not fit in any other category. For this proceeding, this line item is used to display the adjustment to expenses through the use of financial reserves. See Study at section 2.5.

Depreciation & Amortization (Line 8). Depreciation is the annual capital recovery expense associated with Federal Columbia River Transmission System (FCRTS) plant-in-service. BPA transmission and general plant are depreciated by the straight-line method, using the remaining life technique. Amortization refers to the annual capital recovery expense for deferred transmission assets. *See* Documentation, Chapters 3 and 4.

Total Operating Expenses (Line 9). Total Operating Expenses is the sum of the above expenses (Lines 2 through 8).

Federal Appropriations (Line 12). Federal Appropriations consists of interest on the appropriations BPA received prior to full implementation of BPA's self-financing authority and is determined in the transmission repayment studies. *See* Chapter 3.

Capitalization Adjustment (Line 13). Implementation of the BPA Appropriations Refinancing Act (see Study, section 1.2.1.2) entailed a change in capitalization on BPA's financial statements. Outstanding appropriations attributed to the transmission function were reduced by \$470 million as a result of the refinancing. The reduction is recognized annually over the remaining repayment period of the refinanced appropriations. The annual recognition of this adjustment is based on the increase in annual interest expense resulting from implementation of the Act, as shown in repayment studies for the year of the refinancing transaction (1997). The capitalization adjustment is included on the income statement as a non-cash expense. *Id.*

Long-Term Debt (Line 14). Long-term debt includes interest on bonds that BPA issues to the U.S. Treasury to fund investments in transmission plant, environment, general plant supportive of transmission, and capital equipment. Such interest expense is determined in the transmission repayment studies. This line includes any payments of call premiums for bonds projected to be amortized. *Id.*

Amortization of Capitalized Bond Premiums (Line 15). When a bond issued to the Treasury is refinanced, any call premium resulting from early retirement of the original bond is capitalized and included in the principal of the new bond. The capitalized call premium then is amortized over the term of the new bond. The annual amortization is a non-cash component of interest expense. *Id.*

Debt Service Reassignment Interest (Line 16). Debt service reassignment interest consists of the interest component of the debt service reassigned to TS through the Debt Optimization Program. *Id.* and Chapter 8.

Non-Federal Interest (Line 17). Non-Federal interest consists of interest paid on BPA's lease-financing projects and other capital leases as well as interest paid on customer advance funding for generator interconnection agreements and for the California-Oregon Intertie (COI) upgrade. The customers' advanced funds accrue interest on the outstanding balances until they are returned to customers through credits for transmission service. *See* Study, section 2.3.5.

Allowance for Funds Used During Construction (AFUDC) (Line 18). AFUDC for Treasury-financed transmission projects is a credit against interest on long-term debt (Line 14). This non-

cash reduction to interest expense reflects an estimate of interest on the funds used during the construction period of facilities that are not yet in service. Also included is the interest accrued on LGIA funds during the construction period of the associated facilities. AFUDC is capitalized along with other construction costs and is recovered through rates over the expected service life of the related plant as part of the depreciation expense after the facilities are placed in service. *See* Chapter 3.

Interest Income (Line 19). Interest income is computed on the projected year-end cash balances in the BPA Fund that are attributed to the transmission function and that carry over into the next year. It is credited against interest on long-term debt. Also included is an interest income credit calculated in the transmission repayment studies on funds to be collected during each year for payments of Federal interest and amortization at the end of the fiscal year. *See* Chapter 5.

Net Interest Expense (Line 20). Net Interest Expense is computed as the sum of the interest on Federal Appropriations (Line 12), Capitalization Adjustment (Line 13), Long Term Debt (Line 14), Amortization of Capitalized Bond Premiums (Line 15), Debt Service Reassignment Interest (Line 16), Non-Federal Interest (Line 17), AFUDC (Line 18), and Interest Income (Line 19).

Total Expenses (Line 21). Total Expenses is the sum of Total Operating Expenses (Line 9) and Net Interest Expense (Line 20).

Minimum Required Net Revenues (Line 22). Minimum Required Net Revenues (MRNR), an input from Line 2 of the Statement of Cash Flows (Table 1-2), may be necessary to cover cash requirements in excess of accrued expenses. An explanation of the method used for determining MRNR is included in Chapter 1.3 below.

Planned Net Revenues for Risk (Line 23). Planned Net Revenues for Risk is the amount of net revenues, if any, to be included in rates for financial risk mitigation. There are no Planned Net Revenues for Risk included in the Initial Rate Proposal. Starting Transmission reserves in FY 2014 are projected to be sufficient to mitigate risk in FYs 2014 and 2015. *See* Study, section 2.2.

Total Planned Net Revenues (Line 24). Total Planned Net Revenues is the sum of Minimum Required Net Revenues (Line 22) and Planned Net Revenues for Risk (Line 23).

Total Revenue Requirement (Line 25). Total Revenue Requirement is the sum of Total Expenses (Line 21) and Total Planned Net Revenues (Line 24).

1.3 Statement of Cash Flows

Below is a line-by-line description of each of the components in the Statement of Cash Flows (Table 1-2).

Minimum Required Net Revenues (MRNR) (Line 2). BPA determines whether MRNR are necessary by evaluating the annual cash inflows and outflows shown on the Statement of Cash

Flows. MRNR may be necessary to ensure that the Cash Provided By Current Operations (Line 10) will be sufficient to cover the planned amortization payments (the difference between Lines 14 and 20) without causing the Annual Increase (Decrease) in Cash (Line 21) to be negative. The MRNR determined in the Statement of Cash Flows is incorporated in the Income Statement (Table 1-1, Line 21).

Depreciation & Amortization (Line 4). The depreciation amount is from the Income Statement (Table 1-1, Line 8). It, like the following three lines, is added back to net revenues in computing Cash Provided By Current Operations (Table 1-2, Line 10) because it is a non-cash expense.

Transmission Credit Projects Net Interest (Line 5). Transmission Credit Projects Net Interest is the non-cash expenses from the Income Statement for generator interconnection and COI upgrade customers' interest on their credit balances for advance funding (included in Table 1-1, line 17) and the AFUDC on the projects under construction funded by those customers (included in Table 1-1, line 18).

Amortization of Capitalized Bond Premiums (Line 6). Amortization of Capitalized Bond Premiums, from the Income Statement (Table 1-1, Line 16), is a non-cash expense.

Capitalization Adjustment (Line 7). The Capitalization Adjustment, from the Income Statement (Table 1-1, Line 17), is a negative non-cash expense.

Drawdown of Cash Reserves for Capital Funding (Line 8). The Drawdown of Cash Reserves for Capital Funding refers to the use of cash accumulated from transmission revenues in prior rate periods to fund a portion of capital expenditures in each year of the rate period rather than borrowing from Treasury. It is included on this statement to avoid having the amount of this reserve financing included in the calculation of MRNR.

AC Intertie/Fiber (Line 10). Accrual revenues are recognized here because these revenues provide no cash for cost recovery. BPA accounts for the AC Intertie non-Federal capacity ownership lump-sum payments received in FY 1995 as unearned revenues that are recognized annually over the estimated average service life of the associated transmission facilities. Similarly, some leases of fiber optic capacity have included up-front payments, which are being recognized over the life of the particular contract. The annual accrual revenues, which are part of the total revenues recovering the FCRTS revenue requirement, are included here as a non-cash adjustment to cash from current operations.

LGIA (Line 11). Revenue credits associated with customer-funded capital projects are included in this category. These customers provide an upfront cash payment for construction of transmission facilities that is returned to them through the credits for transmission service, resulting in transmission revenues that do not produce cash.

Cash Provided By Current Operations (Line 120). Cash Provided By Current Operations, the sum of lines 2, 4, 5, 6, 7, 8, 10, and 11, is available for the year to satisfy cash requirements.

Investment in Utility Plant (Line 15). Investment in Utility Plant represents the annual increase in capital expenditures for additions and replacements to the transmission system funded by Treasury bonds or available cash reserves. *See* Chapter 3.

Cash Used for Capital Investments (Line 16). Cash Used for Capital Investments is the sum of investments in utility plant.

Increase in Long-Term Debt (Line 18). Increase in Long-Term Debt reflects the new bonds issued by BPA to the U.S. Treasury to fund the construction and environmental capital equipment programs. This amount also includes any notes issued to the U.S. Treasury. *See* Chapter 7.

Debt Service Reassignment Principal (Line 19). Debt Service Reassignment Principal is the principal component of the debt service obligation reassigned to TS through the Debt Optimization Program. *See* Chapter 8.

Repayment of Capital Leases (Line 20). Repayment of capital leases is BPA's payment of the principal component of certain capital leases.

Repayment of Long-Term Debt (Line 21). Repayment of Long-Term Debt is BPA's planned repayment of outstanding bonds issued by BPA to the U.S. Treasury, as determined in the repayment studies. *See* Chapter 3.

Repayment of Capital Appropriations (Line 22). Repayment of Capital Appropriations represents projected amortization of outstanding BPA appropriations (pre-self-financing) as determined in the repayment studies. *Id.*

Cash From Treasury Borrowing and Appropriations (Line 23). Cash From Treasury Borrowing and Appropriations is the sum of Lines 18 through 22. This is the net cash flow resulting from increases in cash from new long-term debt and decreases in cash from repayment of long-term debt and capital appropriations.

Annual Increase (Decrease) in Cash (Line 24). Annual Increase (Decrease) in Cash, the sum of Lines 12, 16, and 23, reflects the annual net cash flow from current operations and investing and financing activities. Revenue requirements are set to meet all projected annual cash flow requirements, as included on the Statement of Cash Flows. A decrease shown in this line would indicate that annual revenues are insufficient to cover the year's cash requirements. In such cases, Minimum Required Net Revenues are included to offset such decrease. *See* above discussion of Minimum Required Net Revenues (Line 2).

Planned Net Revenues For Risk (Line 25). Planned Net Revenues For Risk reflects the amounts included in revenue requirements to meet BPA's risk mitigation objectives (from Table 1-1, Line 24.)

Total Annual Increase (Decrease) in Cash (Line 26). Total Annual Increase (Decrease) in Cash, the sum of Lines 24 and 25, is the total annual cash that is projected to be available to add to BPA's cash reserves.

**TABLE 1-1
TRANSMISSION REVENUE REQUIREMENT INCOME STATEMENT**

(\$000)

		A	B
		FY 2014	FY 2015
1	OPERATING EXPENSES		
2	TRANSMISSION OPERATIONS	140,729	144,346
3	TRANSMISSION MAINTENANCE	154,234	157,893
4	TRANSMISSION ENGINEERING	41,638	41,769
5	TRANSMISSION ACQ & ANCILLARY SERVICES	125,415	125,530
6	BPA INTERNAL SUPPORT	78,428	80,902
7	OTHER INCOME, EXPENSES & ADJUSTMENTS	(20,000)	(20,000)
8	DEPRECIATION & AMORTIZATION	192,141	202,465
9	TOTAL OPERATING EXPENSES	712,585	732,905
10	INTEREST EXPENSE		
11	INTEREST EXPENSE		
12	FEDERAL APPROPRIATIONS	14,540	13,930
13	CAPITALIZATION ADJUSTMENT	(18,968)	(18,968)
14	ON LONG-TERM DEBT	109,582	135,310
15	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	561	561
16	DEBT SERVICE REASSIGNMENT INTEREST	44,124	36,995
17	NON-FEDERAL INTEREST	43,371	47,967
18	AFUDC	(36,477)	(39,234)
19	INTEREST INCOME	(9,666)	(14,127)
20	NET INTEREST EXPENSE	147,068	162,434
21	TOTAL EXPENSES	859,653	895,338
22	MINIMUM REQUIRED NET REVENUE 1/	129,718	142,452
23	PLANNED NET REVENUES FOR RISK	0	0
24	TOTAL PLANNED NET REVENUE	129,718	142,452
25	TOTAL REVENUE REQUIREMENT	989,371	1,037,791
1/	SEE NOTE ON CASH FLOW TABLE.		

**TABLE 1-2
TRANSMISSION REVENUE REQUIREMENT STATEMENT OF CASH FLOWS**

(\$000)

		A	B
		FY 2014	FY 2015
1	CASH FROM CURRENT OPERATIONS:		
2	MINIMUM REQUIRED NET REVENUE 1/	129,718	142,452
3	DRAWDOWN OF CASH RESERVES FOR CAPITAL FUNDING	15,000	15,000
4	EXPENSES NOT REQUIRING CASH:		
5	DEPRECIATION & AMORTIZATION	192,141	202,465
6	TRANSMISSION CREDIT PROJECTS NET INTEREST	2,601	1,977
7	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	561	561
8	CAPITALIZATION ADJUSTMENT	(18,968)	(18,968)
9	NON-CASH REVENUES		
10	AC INTERTIE CO/FIBER	(6,583)	(6,583)
11	LGIA	(41,709)	(41,814)
12	CASH PROVIDED BY CURRENT OPERATIONS	272,761	295,090
13	CASH USED FOR CAPITAL INVESTMENTS:		
14	INVESTMENT IN:		
15	UTILITY PLANT	(662,693)	(639,534)
16	CASH USED FOR CAPITAL INVESTMENTS	(662,693)	(639,534)
17	CASH FROM TREASURY BORROWING AND APPROPRIATIONS:		
18	INCREASE IN LONG-TERM DEBT	647,693	624,534
19	DEBT SERVICE REASSIGNMENT PRINCIPAL	(175,093)	(185,173)
20	REPAYMENT OF CAPITAL LEASES	(1,217)	(1,298)
21	REPAYMENT OF LONG-TERM DEBT	(73,050)	0
22	REPAYMENT OF CAPITAL APPROPRIATIONS	(8,401)	(93,619)
23	CASH FROM TREASURY BORROWING AND APPROPRIATIONS	389,932	344,444
24	ANNUAL INCREASE (DECREASE) IN CASH	0	0
25	PLANNED NET REVENUES FOR RISK	0	0
26	TOTAL ANNUAL INCREASE (DECREASE) IN CASH	0	0
1/ Line 24 must be greater than or equal to zero, otherwise net revenues will be added so that there are no negative cash flows for the year.			

2. SEGMENTATION OF TRANSMISSION REVENUE REQUIREMENT

2.1 Introduction

This chapter documents how the components of the transmission revenue requirements are allocated to the transmission segments, defined in the Transmission Segmentation Study (BP-14-FS-BPA-06). This allocation results in the segmented revenue requirements, which are used to develop proposed transmission and ancillary services rates. See Transmission Rates Study, BP-14-FS-BPA-07.

2.2 Segmentation

The allocation of the revenue requirement components to the transmission segments is described below.

Operations & Maintenance Expense (O&M)

BPA transmission O&M (see Chapter 3 - Transmission Expenses) is segmented in three steps. Step 1: certain costs are directly assigned to the segments and Ancillary Services to which they are attributed: (1) costs for balancing reserve capacity to the Ancillary and Control Area Services that recover those costs; (2) the annual costs of transmission facilities owned and operated by the Corps of Engineers and Bureau of Reclamation to the Network and Utility Delivery segments; (3) costs associated with synchronous condensing and remedial action schemes for generation dropping to the Intertie segment; (4) costs associated with redispatch provided by Power Services to Transmission Services under Attachment M of the tariff to the Network segment; (5) portions of Transmission Services O&M (specifically, certain costs associated with the Ancillary Service of Scheduling, System Control and Dispatch (SCD)— the costs of the scheduling program, portions of the costs of the system operations program, and costs of related pilot programs) to Ancillary Services; and (6) payments for operating leases of transmission facilities to the Network segment.

Step 2: the costs of the direct programs for operating and maintaining the transmission system are allocated between lines and substations according to the percentage share of historical O&M spending on lines and substations, as identified in the Segmentation Study. Segmentation Study, BP-14-FS-BPA-06, Table C. The costs of these direct programs include all the remaining costs of the system operations program (those not assigned to SCD) and the costs of system maintenance and environmental operations programs. Then costs assigned to the lines and substations are allocated to the segments based on the percentage share of historical O&M spending that has been identified for each segment in the Segmentation Study. Costs are allocated first to lines and substations and then to the segments because historically the division of costs between lines and substations has varied by segment and this method allows us to reflect the appropriate division of costs for lines and for substations by segment. Station service costs are allocated to the segments based on the percentage share of historical substation O&M in each segment. *See id.* This second step results in segmented direct O&M expenses.

Step 3: the directly assigned SCD O&M in step 1 and segmented direct transmission O&M expenses in step 2 are summed for each segment. The remaining expense programs (Marketing, Business Support, Engineering and Corporate Services and costs associated with General

Transfer Agreement (GTA) settlements) are then allocated to the segments pro rata based on the ratio of the sum for each segment to total O&M. Finally, the costs in one remaining expense category—non-between-business-line ancillary services—are segmented based on the ratio of net plant investment in each segment to total transmission net plant investment. The costs are segmented on this basis, rather than on by O&M-based ratio, because they are transmission system overhead not directly associated with or influenced by BPA O&M activities.

Net Interest Expense and Planned Net Revenues

Transmission net interest expense (Table 1-1, line 20) and total planned net revenues (line 24) are segmented similarly in a two-step process. As with O&M, costs that can be directly assigned are allocated to the segments first, after which the remainder are allocated.

Net Interest:

Step 1: interest expense and AFUDC associated with Large and Small Generator Interconnection Agreements (LGIA and SGIA) transmission credits is directly assigned to the Network segment. Interest expense and AFUDC associated with transmission credits related to the California-Oregon Intertie upgrade project is directly assigned to the Southern Intertie segment. (The Study discusses these credits in more detail. Study, section 2.3.5.)

Step 2: after subtracting the total net interest expense directly assigned above (interest net of AFUDC), the remaining net interest expense to the segments and ancillary services is allocated pro rata based on the ratio of net plant investment in each segment to total transmission net plant.

Total Planned Net Revenue:

Step 1: minimum required net revenue related to LGIA/SGIA transmission credits and COI upgrade transmission credits is calculated and directly assigned to the Network and Southern Intertie segments, respectively. The calculation begins with the total revenue credits to be repaid (that is, non-cash revenues) and subtracts from that net interest and depreciation expense associated with the advance-funded facilities. The result is the minimum required net revenues required to ensure that cash requirements can be met.

Step 2: after subtracting the total minimum required net revenue assigned directly above, the remaining planned net revenue is allocated to the segments and ancillary services based on the ratio of net plant investment in each segment to total net plant investment.

Depreciation

Depreciation is segmented in two steps.

Step 1: depreciation is calculated directly for each segment and ancillary service based on gross plant investment for the particular year (see Chapter 4 for more discussion on plant investment).

Step 2: after calculating depreciation for the gross investment particular to each segment, general plant depreciation (exclusive of that associated with ancillary services) is allocated to the segments and ancillary services based the ratio of direct O&M in each segment to total transmission O&M.

TABLE 2-1:
SEGMENTATION OF O&M

(\$000s)

FY 2014	A	B	C	D	E	F	G	H
	TOTAL FCRTS	GENERATION INTEGRATION	NETWORK	SOUTHERN INTERTIE	EASTERN INTERTIE	UTILITY DELIVERY	DSI DELIVERY	ANCILLARY SERVICES
SEGMENTATION STUDY AVERAGES								
1	3-YEAR AVERAGE O&M: LINES	54,952	401	50,991	2,926	621	13	-
2	3-YEAR AVERAGE O&M: SUBSTATIONS	57,752	1,126	44,236	10,242	316	1,300	532
3	TOTAL 3-YEAR AVERAGE O&M (LN 2+3)	112,704	1,527	95,227	13,168	937	1,313	532
SYSTEM OPERATION, MAINTENANCE & ENVIRONMENT								
4	SYSTEM OPERATION ^{1/}	22,307						46,311
5	SYSTEM MAINTENANCE	149,763						
6	ENVIRONMENTAL OPERATIONS	4,471						
7	TOTAL TO SEGMENT (LN 6+7+8)	176,541						
8	DIRECT LINES O&M	86,078	628	79,873	4,583	973	20	
9	DIRECT SUBS O&M	90,463	1,764	69,291	16,043	495	2,036	833
10	DIRECT TRANSMISSION O&M SUBTOTAL (LN 8+9)	176,541	2,392	149,165	20,626	1,468	2,057	833
11	SCHEDULING	12,611						12,611
12	TOTAL DIRECT TRANSMISSION O&M W/ANCILLARY SERVICES	235,463	2,392	149,165	20,626	1,468	2,057	833
OVERHEAD CATEGORIES								
13	MARKETING	18,098	184	11,465	1,585	113	158	64
14	BUSINESS SUPPORT	41,402	421	26,228	3,627	258	362	147
15	SYSTEM ENGINEERING	41,638	423	26,377	3,647	260	364	147
16	CORPORATE	78,428	797	49,684	6,870	489	685	278
17	OVERHEAD CATEGORIES SUBTOTAL (LN 13+14+15+16)	179,566	1,824	113,754	15,730	1,119	1,568	636
18	TOTAL 2014 O&M (LN 12+17)	415,029	4,216	262,919	36,356	2,587	3,625	1,469
FY 2015								
SEGMENTATION STUDY AVERAGES								
19	3-YEAR AVERAGE O&M: LINES	54,952	401	50,991	2,926	621	13	-
20	3-YEAR AVERAGE O&M: SUBSTATIONS	57,752	1,126	44,236	10,242	316	1,300	532
21	TOTAL 3-YEAR AVERAGE O&M (LN 19+20)	112,704						
SYSTEM OPERATION, MAINTENANCE & ENVIRONMENT								
22	SYSTEM OPERATION ^{1/}	22,815	-	-	-	-	-	47,964
23	SYSTEM MAINTENANCE	153,324	-	-	-	-	-	-
24	ENVIRONMENTAL OPERATIONS	4,569	-	-	-	-	-	-
25	TOTAL TO SEGMENT (LN 22+23+24)	180,708						47,964
26	DIRECT LINES O&M	88,109	643	81,758	4,692	996	21	-
27	DIRECT SUBS O&M	92,599	1,805	70,928	16,422	507	2,084	853
28	DIRECT TRANSMISSION O&M SUBTOTAL (LN 26+27)	180,708	2,448	152,686	21,113	1,502	2,105	853
29	SCHEDULING	12,865	-	-	-	-	-	12,865
30	TOTAL DIRECT TRANSMISSION O&M W/ANCILLARY SERVICES	241,537	2,448	152,686	21,113	1,502	2,105	853
OVERHEAD CATEGORIES								
31	MARKETING	18,501	188	11,695	1,617	115	161	65
32	BUSINESS SUPPORT	42,201	428	26,677	3,689	262	368	149
33	SYSTEM ENGINEERING	41,769	423	26,404	3,651	260	364	148
34	CORPORATE	80,902	820	51,142	7,072	503	705	286
35	OVERHEAD CATEGORIES SUBTOTAL (LN 31+32+33+34)	183,373	1,859	115,918	16,029	1,141	1,598	648
36	TOTAL 2015 O&M (LN 30+35)	424,910	4,307	268,604	37,143	2,643	3,704	1,501

1/ SYSTEM OPERATION EXPENSES NET OF ANCILLARY SERVICES

**TABLE 2-2
INVESTMENT BASE
(\$000s)**

		A	B	C	D	E	F	G	H
		TOTAL	GENERATION	NETWORK	SOUTHERN	EASTERN	UTILITY	DSI	ANCILLARY
		FCRTS	INTEGRATION	NETWORK	INTERTIE	INTERTIE	DELIVERY	DELIVERY	SERVICES
FY 2014									
1	FCRTS INVESTMENT BASE	3,816,618	50,727	3,108,797	438,719	68,689	20,979	18,107	110,600
2	PERCENT	100.00%	1.33%	81.45%	11.49%	1.80%	0.55%	0.47%	2.90%
FY 2015									
3	FCRTS INVESTMENT BASE	4,120,347	49,139	3,409,756	439,603	66,162	20,799	17,575	117,313
4	PERCENT	100.00%	1.19%	82.75%	10.67%	1.61%	0.50%	0.43%	2.85%

**TABLE 2-3
SEGMENTATION OF DEPRECIATION
(\$000s)**

		A	B	C	D	E	F	G	H
		TOTAL	GENERATION	NETWORK	SOUTHERN	EASTERN	UTILITY	DSI	ANCILLARY
		FCRTS	INTEGRATION	NETWORK	INTERTIE	INTERTIE	DELIVERY	DELIVERY	SERVICES
FY 2014									
1	DIRECT DEPRECIATION	149,561	1,722	113,874	18,056	2,653	668	585	12,002
2	PERCENTAGE OF DIRECT O&M W/OUT ANCILLARY SERVICES	100.00%	1.02%	63.35%	8.76%	0.62%	0.87%	0.35%	25.02%
3	TRANSMISSION GENERAL PLANT	42,580	433	26,974	3,730	265	372	151	10,655
4	TOTAL 2014 DEPRECIATION EXPENSE	192,141	2,155	140,849	21,786	2,918	1,040	736	22,658
FY 2015									
6	DIRECT DEPRECIATION	157,262	1,722	121,863	18,317	2,653	675	585	11,446
7	PERCENTAGE OF DIRECT O&M W/OUT ANCILLARY SERVICES	100.00%	1.01%	63.21%	8.74%	0.62%	0.87%	0.35%	25.18%
8	TRANSMISSION GENERAL PLANT	45,203	459	28,636	3,960	282	395	160	11,312
9	TOTAL 2015 DEPRECIATION EXPENSE	202,465	2,181	150,499	22,277	2,935	1,070	745	22,758

**TABLE 2-4
SEGMENTATION OF INTEREST EXPENSE
(\$000s)**

		A	B	C	D	E	F	G	H
		TOTAL	GENERATION	NETWORK	SOUTHERN	EASTERN	UTILITY	DSI	ANCILLARY
		FCRTS	INTEGRATION	NETWORK	INTERTIE	INTERTIE	DELIVERY	DELIVERY	SERVICES
FY 2014									
1	TC PROJECTS INTEREST EXPENSE			7,881	1,223				
2	TC PROJECTS AFUDC			(6,503)					
3	TC PROJECTS NET INTEREST	2,601		1,378	1,223				
4	REMAINING NET INTEREST EXPENSE	144,467	1,920	117,675	16,606	2,600	794	685	4,186
5	TOTAL 2014 NET INTEREST	147,068	1,920	119,053	17,829	2,600	794	685	4,186
FY 2015									
8	TC PROJECTS INTEREST EXPENSE			8,058	932				
9	TC PROJECTS AFUDC			(7,013)					
10	TC PROJECTS NET INTEREST	1,977		1,045	932				
11	REMAINING NET INTEREST EXPENSE	160,666	2,135	130,869	18,468	2,892	883	762	4,656
12	TOTAL 2015 NET INTEREST	162,643	2,135	131,914	19,400	2,892	883	762	4,656

**TABLE 2-5
SEGMENTATION OF PLANNED NET REVENUE**

(\$000s)

	A	B	C	D	E	F	G	H
	TOTAL	GENERATION	NETWORK	SOUTHERN	EASTERN	UTILITY	DSI	ANCILLARY
	FCRTS	INTEGRATION	NETWORK	INTERTIE	INTERTIE	DELIVERY	DELIVERY	SERVICES
FY 2014								
1 TC PROJECTS REVENUE CREDITS			34,339	7,370				
2 TC PROJECTS NET INTEREST			1,378	1,223				
3 TC PROJECTS DEPRECIATION			6,472	280				
4 TC PROJECTS MINIMUM REQUIRED NET REVENUE (LN 1-2-3)	32,356		26,489	5,867				
5 REMAINING PLANNED NET REVENUE	97,362	1,294	79,306	11,192	1,752	535	462	2,821
6 TOTAL PLANNED NET REVENUE (LN 4+5)	129,718	1,294	105,795	17,059	1,752	535	462	2,821
FY 2015								
9 TC PROJECTS REVENUE CREDITS			34,444	7,370				
10 TC PROJECTS NET INTEREST			1,045	932				
11 TC PROJECTS DEPRECIATION			7,060	280				
12 TC PROJECTS MINIMUM REQUIRED NET REVENUE (LN 9-10-11)	32,497		26,339	6,158				
13 REMAINING PLANNED NET REVENUE	109,955	1,311	90,993	11,731	1,766	555	469	3,131
14 TOTAL PLANNED NET REVENUE (LN 12+13)	142,452	1,311	117,332	17,889	1,766	555	469	3,131

**TABLE 2-6
SEGMENTATION OF TRANSMISSION ACQUISITION & ANCILLARY SERVICES**

(\$000s)

	A	B	C	D	E	F	G	H
	TOTAL	GENERATION	NETWORK	SOUTHERN	EASTERN	UTILITY	DSI	ANCILLARY
	FCRTS	INTEGRATION	NETWORK	INTERTIE	INTERTIE	DELIVERY	DELIVERY	SERVICES
FY 2014								
PAYMENTS TO POWER SERVICES:								
1 STATION SERVICE	2,385	47	1,827	423	13	54	22	
2 REDISPATCH	400		400					
3 SYNCHRONOUS CONDENSERS/GEN DROP	1,912		1,579	333				
4 GENERATION INPUTS	102,923							102,923
5 COE/USBR TRANSMISSION	7,699		7,461			238		
6 PAYMENTS TO OTHERS (NON-PS):								
7 OPERATING LEASES	4,258		4,258					
8 NON-BBL ANCILLARY SERVICES	4,205	56	3,425	483	76	23	20	122
9 SETTLEMENT AGREEMENTS	80		80					
10 TRANSMISSION RENEWABLES	516	5	327	45	3	5	2	129
11 TRANSMISSION RENEWABLES	1,037							1,037
12 TOTAL 2014 TRANS ACQ & ANCLRY	125,415	108	19,357	1,285	92	319	44	104,211
FY 2015								
PAYMENTS TO POWER SERVICES:								
13 STATION SERVICE	2,385	47	1,827	423	13	54	22	
14 REDISPATCH	400		400					
15 SYNCHRONOUS CONDENSERS/GEN DROP	1,912		1,579	333				
16 GENERATION INPUTS	103,122							103,122
17 COE/USBR TRANSMISSION	7,500		7,268			232		
18 PAYMENTS TO OTHERS (NON-PS):								
19 OPERATING LEASES	4,338		4,338					
20 NON-BBL ANCILLARY SERVICES	4,205	56	3,425	483	76	23	20	122
21 REDISPATCH	80		80					
22 SETTLEMENT AGREEMENTS	525	5	332	46	3	5	2	132
23 TRANSMISSION RENEWABLES	1,063							1,063
24 TOTAL 2015 TRANS ACQ & ANCLRY	125,530	108	19,249	1,285	92	313	44	104,439

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3. TRANSMISSION EXPENSES

3.1 Introduction

This chapter compiles the expenses that are included in transmission revenue requirements for the rate period.

3.2 Expenses

Table3-1 displays the forecast program spending levels that are the basis for the revenue requirement study. O&M expenses came from the Integrated Program Review process; see Study, BP-14-FS-BPA-07, section 2. Inter-business line expenses, including the cost of redispatch, are composed of two groups of costs. The first is the generation inputs for ancillary services. The second is the annual cost of Network segment facilities and Utility Delivery segment facilities of the Corps of Engineers and Bureau of Reclamation annual costs of those agencies. These inter-business line expenses are recovered by rates developed in the Generation Inputs Study, BP-14-FS-BPA-05.

Depreciation and amortization expense is calculated using the straight-line method and remaining-life technique for lines, substations, and each of the FERC Accounts in the general plant category. *See* Chapter 4.

Interest expense is calculated in the transmission repayment study, using the capital appropriations and BPA revenue bonds issued to Treasury at individual interest rates. *See* Chapter 5 for calculation of the interest credit on cash reserves.

**TABLE 3-1
TRANSMISSION PROGRAM SPENDING FORECAST
(\$000s)**

		A	B
	PROGRAM & OTHER OPERATING COSTS	FY 2014	FY 2015
1	TRANSMISSION SYSTEM OPERATIONS		
2	INFORMATION TECHNOLOGY	7,415	7,568
3	POWER SYSTEM DISPATCHING	13,589	14,123
4	CONTROL CENTER SUPPORT	18,562	19,298
5	TECHNICAL OPERATIONS	6,745	6,974
6	SUBSTATION OPERATIONS	<u>22,307</u>	<u>22,815</u>
7	SUB-TOTAL TRANSMISSION SYSTEM OPERATIONS	68,618	70,779
8	TRANSMISSION SCHEDULING		
9	MANAGEMENT SUPERVISION & ADMINISTRATION	-	-
10	RESERVATIONS	5,697	5,816
11	PRE-SCHEDULING	246	252
12	REAL-TIME SCHEDULING	5,436	5,537
13	SCHEDULING TECHNICAL SUPPORT	1,007	1,031
14	SCHEDULING AFTER-THE-FACT	<u>224</u>	<u>229</u>
15	SUB-TOTAL TRANSMISSION SCHEDULING	12,611	12,865
16	TRANSMISSION MARKETING		
17	TRANSMISSION SALES	2,994	3,062
18	TRANSMISSION FINANCE	-	-
19	CONTRACT MANAGEMENT	5,291	5,405
20	TRANSMISSION BILLING	2,858	2,930
21	BUSINESS STRATEGY & ASSESSMENT	<u>6,955</u>	<u>7,103</u>
22	SUB-TOTAL TRANSMISSION MARKETING	18,098	18,501
23	TRANSMISSION BUSINESS SUPPORT		
26	EXECUTIVE AND ADMIN SERVICES	13,774	14,106
27	LEGAL SUPPORT	3,877	3,951
28	TS INTERNAL GENERAL & ADMINISTRATIVE	15,743	16,025
29	AIRCRAFT SERVICES	2,030	2,294
30	LOGISTICS SERVICES	5,014	4,947
31	SECURITY ENHANCEMENTS	<u>966</u>	<u>878</u>
32	SUB-TOTAL TRANSMISSION BUSINESS SUPPORT	41,402	42,201
33	TRANSMISSION ENGINEERING		
34	RESEARCH & DEVELOPMENT	7,782	7,940
35	TSD PLANNING & ANALYSIS	14,013	13,289
36	CAPITAL TO EXPENSE TRANSFER	4,124	4,202
37	REGULATORY & REGION ASSOCIATION FEES	12,015	12,561
38	ENVIRONMENTAL POLICY/PLANNING	1,166	1,189
39	ENG. LINE RATING	<u>2,539</u>	<u>2,589</u>
40	SUB-TOTAL TRANSMISSION ENGINEERING	41,638	41,769

**TABLE 3-1
TRANSMISSION PROGRAM SPENDING FORECAST**

(\$000s)			
41	TRANSMISSION SYSTEM MAINTENANCE		
42	NON-ELECTRIC MAINTENANCE	27,303	27,853
43	SUBSTATION MAINTENANCE	31,121	31,777
44	TRANSMISSION LINE MAINTENANCE	26,139	26,820
45	SYSTEM PROTECTION CONTROL MAINTENANCE	13,096	13,381
46	POWER SYSTEM CONTROL MAINTENANCE	16,904	17,582
47	JOINT COST MAINTENANCE	1	1
48	SYSTEM MAINTENANCE MANAGEMENT	6,434	6,574
49	RIGHT OF WAY MAINTENANCE	8,428	8,597
50	HEAVY MOBILE EQUIPMENT MAINTENANCE	-	-
51	TECHNICAL TRAINING	3,201	3,269
52	VEGETATION MANAGEMENT	<u>17,135</u>	<u>17,471</u>
53	SUB-TOTAL TRANSMISSION SYSTEM MAINTENANCE	149,763	153,324
54	TRANSMISSION ENVIRONMENTAL OPERATIONS		
55	POLLUTION PREVENTION & ABATEMENT	4,387	4,484
56	ENVIRONMENTAL ANALYSIS	<u>83</u>	<u>85</u>
57	SUB-TOTAL TRANSMISSION ENVIRONMENTAL OPERATIONS	<u>4,471</u>	<u>4,569</u>
58	SUB-TOTAL TRANSMISSION SYSTEM OPERATIONS & MAINTENANCE	336,601	344,008
59	NON-BETWEEN BUSINESS LINE ANCILLARY SERVICES		
60	LEASED FACILITIES	4,258	4,338
61	SETTLEMENT AGREEMENTS	516	525
62	NON-BBL ANCILLARY SERVICES	4,205	4,205
63	TRANSMISSION RENEWABLES	<u>1,037</u>	<u>1,063</u>
64	SUB-TOTAL NON-BETWEEN BUSINESS LINE ANCILLARY SERVICES	10,016	10,132
65	CORPORATE EXPENSES		
66	UNFUNDED RETIREMENT BENEFITS	18,501	18,819
67	CORPORATE OVERHEAD DISTRIBUTIONS	<u>59,927</u>	<u>62,083</u>
68	SUB-TOTAL CORPORATE CHARGES	78,428	80,902
69	TOTAL TRANSMISSION IPR PROGRAM LEVELS	425,045	435,042

**TABLE 3-2
SUMMARY OF TRANSMISSION REPAYMENT STUDY DATA**

(\$000s)

		A	B
		2014	2015
1	DSR INTEREST	44,124	36,995
2	CAPITAL LEASE INTEREST	34,267	38,977
3	LGIA INTEREST	9,104	8,990
4	APPROPRIATION INTEREST	14,540	13,930
5	BOND INTEREST	<u>109,582</u>	<u>135,310</u>
6	TOTAL GROSS INTEREST	211,618	234,202
7	CAPITAL LEASE PRINCIPAL	1,217	1,298
8	DSR PRINCIPAL	175,093	185,173
9	APPROPRIATION PRINCIPAL	8,401	93,619
10	BOND PRINCIPAL	<u>73,050</u>	<u>-</u>
11	TOTAL PRINCIPAL	257,761	280,090

**TABLE 3-3
ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION**

(\$000s)

		A	B
<u>PLANT FUNDED FROM BPA BORROWING</u>			
		<u>2014</u>	<u>2015</u>
1	CAPITAL EXPENDITURES	566,629	550,729
2	PLANT-IN-SERVICE	445,650	577,587
3	SOY CWIP BALANCE	945,386	1,066,364
4	EOY CWIP BALANCE	1,066,364	1,039,506
5	AVERAGE CWIP BALANCE	1,005,875	1,052,935
6	AFUDC RATE	4.40%	4.55%
7	AFUDC FOR FEDERAL PROJECTS	28,768	31,141
8	CORPORATE CAPITAL (65% OF TOTAL)	23,458	24,024
9	CORPORATE AFUDC	1,206	1,080
10	TOTAL AFUDC FOR BPA BORROWING	29,974	32,221
<u>PLANT FUNDED FROM REVENUES & BY THIRD PARTIES</u>			
8	CAPITAL EXPENDITURES	28,350	20,250
9	PLANT-IN-SERVICE	28,350	20,250
10	SOY CWIP BALANCE	151,583	158,086
11	EOY CWIP BALANCE	151,583	158,086
12	AVERAGE CWIP BALANCE	151,583	158,086
13	AFUDC RATE	4.40%	4.55%
14	AFUDC FOR NON-FEDERAL PROJECTS	6,503	7,013
15	TOTAL AFUDC	36,477	39,234

**Table 3-4
Amortization of Premiums of Bond Refinancings**

(\$000s)

	A	B	C	D	E	F	G	H	I	J	K	L
	DATE OF REFINANCING	PREMIUM	PRORATION	NO. OF MONTHS	MONTHLY AMORTIZATION	TYPE OF BOND	LAST MONTH TO AMORTIZE	CALCULATION OF ANNUAL AMOUNTS				
								2011	2012	2013	2014	2015
1	1/0/1998	2,556,947		156	16,391	CONSTRUCTION	May-2011	131	-	-	-	-
2	5/31/1998	6,322,053		408	15,495	CONSTRUCTION	May-2032	186	186	186	186	186
3	8/31/1998	4,684,950		360	13,014	CONSTRUCTION	Aug-2028	156	156	156	156	156
4	8/31/1998	<u>6,560,000</u>		360	<u>18,222</u>	CONSTRUCTION	Aug-2028	<u>219</u>	<u>219</u>	<u>219</u>	<u>219</u>	<u>219</u>
5	Total	20,123,950			63,122			692	561	561	561	561

**TABLE 3-5
BETWEEN BUSINESS LINE COSTS**

(\$000s)				
		A	B	C
		<u>2013</u>	<u>2014</u>	<u>AVERAGE</u>
1	ANCILLARY SERVICES	103,028	103,028	103,028
2	SYNCHRONOUS CONDENSING	1,573	1,573	1,573
3	GENERATION DROPPING	333	333	333
4	COE/RECLAMATION NETWORK/ DELIVERY FACILITIES SEGMENTATION	7,600	7,600	7,600
5	Redispatch	400	400	400
6	STATION SERVICE	<u>2,385</u>	<u>2,385</u>	<u>2,385</u>
7	TOTAL	115,319	115,319	115,319
				115,319

4. FCRTS INVESTMENT BASE

4.1 Introduction

This chapter documents the development of the FCRTS investment for the rate period, which is the basis for annual depreciation expense calculations and the allocation of financing related costs (net interest expense and planned net revenue) to the segments.

4.2 Methodology

The calculation of investment base for each year of the rate period starts with historical transmission plant investment, which is provided by the Segmentation Study, BP-14-FS-BPA-06. The general plant investment is identified according to FERC Account from BPA plant investment records. In addition, general plant investment for facilities required for Ancillary Services is separately identified and treated by FERC Account. The historical investment information includes plant investments associated with Projects Funded In Advance. Entities provide BPA with funding for exclusive use facilities and BPA retains ownership of the facilities. The facilities are excluded from general rate development, but depreciation of the facilities is included in BPA expenses. The depreciation calculated herein on these facilities is used for budgeting purposes, but neither the investment nor associated depreciation is incorporated into ratemaking.

Forecast plant additions, derived from capital budgets, are then added to the historical year investment. The additions are adjusted to take into account retirements. The ratio of retirements to additions based on an average of the most recent five years of actual data by FERC Account is applied to the additions in each year of the cost evaluation period. This procedure produces gross investment for lines, substations and general plant accounts for each year of the cost evaluation period.

The gross investment is then reduced by accumulated depreciation. Depreciation is calculated using the straight-line method, remaining-life technique. For general plant categories, annual depreciation rates are used unadjusted. For lines and substations, the annual depreciation rate has been weighted by the depreciation rates of each FERC account that composes these facilities. Depreciation is calculated on gross plant investment in each plant category according to the category's group rates. For each forecast year, depreciation expense is added to the prior year's accumulated depreciation to establish the forecast of accumulated depreciation.

Calculation of the investment base for each of the segments for each of the rate period years starts with the average net plant investment for that year (gross investment less accumulated depreciation). Various adjustments are made to the calculated investment base to reflect plant not included in the Transmission Segmentation Study's (BP-14-FS-BPA-06) analysis of historical investment and additions, and to remove plant that was funded in advance by customer deposits. First, net investment related to intangible plant (capacity rights acquired by BPA) is added to the Network and Southern Intertie segments based on contract analysis. The regulatory asset net investment (spacer dampers) is added to the Network segment. Then, net investment in general plant categories is prorated to the segments based on the sum of all investments above.

Next the Network net plant investment is reduced by the net plant associated with LGIAs and the Southern Intertie net plant investment is reduced by the net plant associated with the COI upgrade. The Southern Intertie net plant investment is also reduced to remove the balance of the unearned revenues associated with non-Federal capacity ownership on the AC Intertie. Finally, the unearned revenue balance associated with prepaid fiber optic leases is allocated to each segment pro rata based on the communications plant in each segment.

**Table 4-2: Investment Base
(\$000s)**

		A	B	C	D	E	F
		BALANCE-AS-OF		AVERAGE	BALANCE-AS-OF		AVERAGE
		2013	2014	2014	2014	2015	2015
COMPLETED PLANT							
1	GENERATION-INTEGRATION	79,799	79,799	79,799	79,799	79,799	79,799
2	NETWORK	5,004,367	5,324,776	5,164,572	5,324,776	5,725,265	5,525,020
3	SOUTHERN INTERTIE	832,906	844,056	838,481	844,056	857,144	850,600
4	EASTERN INERTIE	120,152	120,152	120,152	120,152	120,152	120,152
5	UTILITY DELIVERY	31,015	31,380	31,198	31,380	31,745	31,563
6	DSI DELIVERY	27,329	27,329	27,329	27,329	27,329	27,329
7	REGULATORY ASSET	27,993	33,973	30,983	33,973	33,973	33,973
8	INTANGIBLE PLANT	-	-	-	-	-	-
9	ANCILLARY SERVICES	170,983	193,966	182,474	193,966	204,201	199,083
10	GENERAL PLANT	<u>932,709</u>	<u>1,015,621</u>	<u>974,165</u>	<u>1,015,621</u>	<u>1,135,239</u>	<u>1,075,430</u>
11	TOTAL COMPLETED PLANT	7,227,255	7,671,052	7,449,153	7,671,052	8,214,848	7,942,949
ACCUMULATED DEPRECIATION							
12	GENERATION-INTEGRATION	35,484	37,206	36,345	37,206	38,928	38,067
13	NETWORK	2,267,011	2,378,682	2,322,847	2,378,682	2,498,223	2,438,453
14	SOUTHERN INTERTIE	363,908	381,907	372,908	381,907	400,167	391,037
15	EASTERN INERTIE	59,983	62,636	61,310	62,636	65,289	63,963
16	UTILITY DELIVERY	12,893	13,561	13,227	13,561	14,236	13,899
17	DSI DELIVERY	11,525	12,110	11,818	12,110	12,695	12,403
18	REGULATORY ASSET	4,357	6,519	5,438	6,519	8,800	7,660
19	INTANGIBLE PLANT	591	690	640	690	788	739
20	ANCILLARY SERVICES	81,729	93,731	87,730	93,731	105,177	99,454
21	GENERAL PLANT	<u>333,246</u>	<u>375,826</u>	<u>354,536</u>	<u>375,826</u>	<u>421,029</u>	<u>398,427</u>
22	TOTAL ACCUMULATED DEPRECIAT	3,565,332	3,362,868	3,266,799	3,362,868	3,565,332	3,464,102
NET PLANT INVESTMENT							
23	GENERATION-INTEGRATION	44,315	42,593	43,454	42,593	40,871	41,732
24	NETWORK	2,737,356	2,946,094	2,841,725	2,946,094	3,227,042	3,086,567
25	SOUTHERN INTERTIE	468,998	462,149	465,573	462,149	456,977	459,563
26	EASTERN INERTIE	60,169	57,516	58,842	57,516	54,863	56,189
27	UTILITY DELIVERY	18,122	17,819	17,971	17,819	17,509	17,664
28	DSI DELIVERY	15,804	15,219	15,511	15,219	14,634	14,926
29	REGULATORY ASSET	23,636	27,454	25,545	27,454	25,173	26,313
30	INTANGIBLE PLANT	(591)	(690)	(640)	(690)	(788)	(739)
31	ANCILLARY SERVICES	89,254	100,234	94,744	100,234	99,024	99,629
32	GENERAL PLANT	<u>599,463</u>	<u>639,795</u>	<u>619,629</u>	<u>639,795</u>	<u>714,211</u>	<u>677,003</u>
33	TOTAL NET PLANT INVESTMENT	4,056,528	4,308,184	4,182,354	4,308,184	4,649,515	4,478,847

TABLE 4-3: BPA PROJECTED TRANSMISSION PLANT INVESTMENT

(\$000s)

		A	B	C	D	E	F
			TOTAL		TOTAL		TOTAL
		2013	2013	2014	2014	2015	2015
		ADDITIONS	INVEST	ADDITIONS	INVEST	ADDITIONS	INVEST
1	GENERATION-INTEGRATION	0	79,799	0	79,799	0	79,799
2	NETWORK	210,129	5,004,367	320,408	5,324,776	400,489	5,725,265
3	SOUTHERN INTERTIE	11,052	832,906	11,149	844,056	13,088	857,144
4	EASTERN INTERTIE	0	120,152	0	120,152	0	120,152
5	UTILITY DELIVERY	464	31,015	365	31,380	364	31,745
6	DSI DELIVERY	0	27,329	0	27,329	0	27,329
7	REGULATORY ASSET	15,000	27,993	5,980	33,973		33,973
8	INTANGIBLE - SPACER DAMPERS		0		0		0
9	ANCILLARY SERVICES	7,166	170,983	22,983	193,966	10,236	204,201
10	GENERAL PLANT	95,898	932,709	82,912	1,015,621	119,618	1,135,239
11	TOTAL BPA	339,708	7,227,255	443,798	7,671,052	543,796	8,214,848

Table 4-4 : Investment Base by Segment
(\$000s)

		A	B	C	E	F	G	H	I
			GENERATION		SOUTHERN	EASTERN	UTILITY	DSI	ANCILLARY
	FY 2014	TOTAL	INTEGRATION	NETWORK	INTERTIE	INTERTIE	DELIVERY	DELIVERY	SERVICES
1	NET TRANSMISSION PLANT	3,537,820	43,454	2,841,725	465,573	58,842	17,971	15,511	94,744
2	INTANGIBLE PLANT	(640)		(269)	(371)				
3	REGULATORY ASSET	25,545		25,545					
4	SUBTOTAL INVESTMENT	3,562,725	43,454	2,867,001	465,202	58,842	17,971	15,511	94,744
5	PERCENT	1	0	1	0	0	0	0	0
6	GENERAL PLANT	619,629	7,558	498,629	80,908	10,234	3,126	2,698	16,478
7	TC PROJECTS (NET PLANT)	(248,676)		(237,998)	(10,678)				
8	ACC REV BAL ADJ - Fiber	(23,406)	(285)	(18,835)	(3,056)	(387)	(118)	(102)	(622)
9	ACC REV BAL ADJ - 3AC	(93,657)			(93,657)				
10	INVESTMENT BASE	3,816,618	50,727	3,108,797	438,719	68,689	20,979	18,107	110,600
	FY 2015								
11	NET TRANSMISSION PLANT	3,676,641	41,732	3,086,567	459,563	56,189	17,664	14,926	99,629
12	INTANGIBLE PLANT	(739)		(310)	(429)				
13	REGULATORY ASSET	26,313		26,313					
14	SUBTOTAL INVESTMENT	3,702,215	41,732	3,112,570	459,134	56,189	17,664	14,926	99,629
15	PERCENT		0	1	0	0	0	0	0
16	GENERAL PLANT	677,003	7,631	569,178	83,959	10,275	3,230	2,729	18,219
17	TC PROJECTS (NET PLANT)	(265,670)		(255,272)	(10,398)				
18	ACC REV BAL ADJ - Fiber	(19,888)	(224)	(16,720)	(2,466)	(302)	(95)	(80)	(535)
19	ACC REV BAL ADJ - 3AC	(90,626)			(90,626)				
20	INVESTMENT BASE	4,003,034	49,139	3,409,756	439,603	66,162	20,799	17,575	117,313

Table 4-5: Calculation of Retirement Ratios									
(\$000s)									
Retirements	A	B	C	D	E	F	G	H	I
	FERC Account	2007	2008	2009	2010	2011	Total	5-Year Average	10-Year Average
Transmission Plant									
STRUCTURES/IMPROVEMENTS	352	97	120	194	343	424	1,177	235	
STATION EQUIPMENT	353	9,439	43,703	11,308	27,319	8,382	100,151	20,030	
TOWERS & FIXTURES	354	151	52	233	440	390	1,267	253	
POLES & FIXTURES	355	1,940	562	604	2,556	1,792	7,455	1,491	
OVERHEAD CONDUCTOR	356	1,980	331	80	1,177	1,433	5,000	1,000	
UNDERGROUND CONDUCTOR	358	-	-	-	12	(12)	-	-	
ROADS & TRAILS	359	40	-	10	17	71	137	27	
General Plant									
STRUCTURES/IMPROVEMENTS	390	11	13	5	-	17	47	9	
OFFICE FURNITURE	391.1	-	-	-	-	-	-	-	
DATA PROCESS EQUIPMENT	391.2	464	10,516	3,771	4,642	3,706	23,099	4,620	
SOFTWARE	391.3	29,064	21,214	8,964	728	2,313	62,283	12,457	
ROLLING STOCK	392.1	-	-	68	3,175	155	3,398	680	
HELICOPTERS	392.2	-	-	-	2,462	1,247	3,709	742	
AIRPLANES	392.3	-	3,665	-	1,591	-	5,255	1,051	
STORES EQUIPMENT	393	-	-	-	1,653	44	1,698	340	
TOOLS/SHOP/GARAGE EQUIP	394	-	-	-	-	(0)	(0)	-	
LABORATORY EQUIP (PORT)	395	18,079	657	9	361	4,093	23,199	4,640	
POWER OPERATED EQUIP	396	-	-	60	6,290	(3,004)	3,346	669	
COMMUNICATION EQUIP-PORT	397	19,814	28,014	33,332	21,337	40,756	143,253	28,651	17,682
MISC EQUIP	398	-	-	-	-	-	-	-	

**Table 4-5: Calculation of Retirement Ratios
(\$000s)**

		A	B	C	D	E	F	G	H	I
	Additions	FERC Account	2007	2008	2009	2010	2011	Total	5-Year Average	Additions Net of Retirements
24	Transmission Plant									
25	STRUCTURES/IMPROVEMENTS	352	5,836	10,203	10,086	7,821	9,169	43,115	8,623	8,388
26	STATION EQUIPMENT	353	62,815	132,158	120,636	132,473	112,100	560,181	112,036	92,006
27	TOWERS & FIXTURES	354	2,001	558	461	16,070	6,739	25,829	5,166	4,912
28	POLES & FIXTURES	355	22,707	13,594	10,670	43,086	23,976	114,034	22,807	21,316
29	OVERHEAD CONDUCTOR	356	12,824	3,941	2,582	23,976	18,772	62,093	12,419	11,419
30	UNDERGROUND CONDUCTOR	358	-	-	-	259	-	259	52	52
31	ROADS & TRAILS	359	3,450	4,145	4,145	12,891	12,736	37,366	7,473	7,446
32										
33	General Plant									
34	STRUCTURES/IMPROVEMENTS	390	745	459	375	5,862	3,028	10,470	2,094	2,085
35	OFFICE FURNITURE	391.1	-	472	-	64	-	536	107	107
36	DATA PROCESS EQUIPMENT	391.2	3,359	763	763	2,668	1,746	9,299	1,860	(2,760)
37	SOFTWARE	391.3	4,520	8,285	8,285	2,636	1,893	25,618	5,124	(7,333)
38	ROLLING STOCK	392.1	1,509	5,210	5,210	7,518	9,681	29,129	5,826	5,146
39	HELICOPTERS	392.2	-	-	-	8,170	-	8,170	1,634	892
40	AIRPLANES	392.3	8,656	-	-	-	-	8,656	1,731	680
41	STORES EQUIPMENT	393	-	-	-	300	73	373	75	(265)
42	TOOLS/SHOP/GARAGE EQUIP	394	186	334	334	1,374	1,476	3,705	741	741
43	LABORATORY EQUIP (PORT)	395	3,011	1,700	1,700	682	1,266	8,357	1,671	(2,968)
44	POWER OPERATED EQUIP	396	2,608	3,100	3,100	1,883	578	11,270	2,254	1,585
45	COMMUNICATION EQUIP-PORT	397	36,862	16,532	16,498	34,808	28,051	132,751	26,550	8,868
46	MISC EQUIP	398	3,918	2,211	2,211	9,526	1,890	19,757	3,951	3,951
	Ratios of Additions Net of Retirements									
47	Substations	0.83204								
48		(lines I25 + I26) / (lines H25 + H26)								
49	Lines	0.94215								
50		(lines I27 + I28 + I29 + I30 + I31) / (lines H27 + H28 + H 29 + H30 + H 31)								

**Table 4.6: BPA Transmission Plant Investment Additions
(\$000s)**

		E	F	G	H	I	J	K	L	M	N	O	P
					TOTAL						TOTAL		
					2013						2014		
					2015						2015		
GROSS INVESTMENTS													
		LINES	SUBS	OTHER	ADDITIONS	LINES	SUBS	OTHER	ADDITIONS	LINES	SUBS	OTHER	ADDITIONS
1	GENERATION-INTEGRATION	0	0		0	0	0		0	0	0		0
2	NETWORK	88,172	152,708		240,880	107,443	263,432		370,875	224,656	226,945		451,601
3	SOUTHERN INTERTIE	2,079	10,929		13,008	1,996	11,140		13,136	3,056	12,270		15,326
4	EASTERN INTERTIE	0	0		0	0	0		0	0	0		0
5	UTILITY DELIVERY	0	558		558	0	439		439	0	438		438
6	DSI DELIVERY	0	0		0	0	0		0	0	0		0
7	REGULATORY ASSET												
8	GENERAL PLANT												
9	TOTAL BPA	90,251	164,195	0	254,446	109,439	275,011	0	384,450	227,712	239,653	0	467,365
INVESTMENTS NET OF RETIREMENTS													
10	GENERATION-INTEGRATION	0	0		0	0	0		0	0	0		0
11	NETWORK	83,076	127,053		210,129	101,233	219,175		320,408	211,671	188,818		400,489
12	SOUTHERN INTERTIE	1,959	9,093		11,052	1,881	9,268		11,149	2,879	10,209		13,088
13	EASTERN INTERTIE	0	0		0	0	0		0	0	0		0
14	UTILITY DELIVERY	0	464		464	0	365		365	0	364		364
15	DSI DELIVERY	0	0		0	0	0		0	0	0		0
16	REGULATORY ASSET			15,000	15,000			5,980	5,980			0	0
17	GENERAL PLANT			103,063	103,063			105,895	105,895			129,854	129,854
18	TOTAL BPA	85,034	136,610	118,063	339,708	103,113	228,809	111,875	443,798	214,550	199,391	129,854	543,796

Table 4-7: Amortization of BPA Transmission Other Deferred Assets

(\$000s)

SPACER DAMPERS 30-YEAR SERVICE LIFE											
		A	B	C	D	E	F	G	H	I	J
	FY	INVESTMENT	PARTIAL YEAR AMORTIZATION	FULL YEAR AMORTIZATION	ANNUAL AMORTIZATION	ACCUMULATED AMORTIZATION	CUMULATIVE INVESTMENT	DEFERRED INVESTMENT	NET INVESTMENT	ORIGINAL INVESTMENT	RETIREMENT
1	2006	1,094	45	36		0	1,094	5,696		2,728	(1,634)
2	2007	1,123	46	37		0	2,216	5,200		2,800	(1,677)
3	2008	9,658	334	322		0	11,875		11,875	24,091	(14,433)
4	2009	1,119	37	37		0	12,993		12,993	2,790	(1,671)
5	2010	2,688	66	90		0	15,681		15,681	6,704	(4,016)
6	2011	8,083	135	269		1,630	23,764		22,134	39,113	(23,431)
7	2012	3,888	58	130	849	2,479	27,652		25,173		
8	2013	0	0	0	921	3,400	27,652		24,252		
9	2014	0	0	0	921	4,321	27,652		23,331		
10	2015	0	0	0	921	5,242	27,652		22,410		
11	2016	0	0	0	921	6,163	27,652		21,489		
12	2017	0	0	0	921	7,084	27,652		20,568		
13	2018	0	0	0	921	8,005	27,652		19,647		
14	2019	0	0	0	921	8,926	27,652		18,726		
15	2020	0	0	0	921	9,847	27,652		17,805		
FY 2008 investment = 9,617 plus total deferred investment from 2006 and 2007.											
FY 2011: retirement of \$23,431 of impaired assets											
SPACER DAMPERS 25-YEAR SERVICE LIFE											
		A	B	C	D	E	F	G	H		
	FY	INVESTMENT	PARTIAL YEAR AMORTIZATION	FULL YEAR AMORTIZATION	ANNUAL AMORTIZATION	ACCUMULATED AMORTIZATION	CUMULATIVE INVESTMENT	DEFERRED INVESTMENT	NET INVESTMENT		
16	2012	15,000	300	600	300	300	15,000	0	14,700		
17	2013	15,000	300	600	900	1,200	30,000	0	28,800		
18	2014	4,000	80	160	1,280	2,480	34,000	0	31,520		
19	2015	0	0	0	1,360	3,840	34,000	0	30,160		
20	2016	0	0	0	1,360	5,200	34,000	0	28,800		
21	2017	0	0	0	1,360	6,560	34,000	0	27,440		
22	2018	0	0	0	1,360	7,920	34,000	0	26,080		
23	2019	0	0	0	1,360	9,280	34,000	0	24,720		
24	2020	0	0	0	1,360	10,640	34,000	0	23,360		

TABLE 4-8: DEPRECIATION OF CUSTOMER-FUNDED INVESTMENTS

(\$000s)

LARGE GENERATOR INTERCONNECTION AGREEMENTS									
A	B	C	D	E	F	G	H	I	J
	CUMULATIVE	TOTAL			DEPRECIATION		ACCUMULATED		
IN-SERVICE	INVESTMENT	ANNUAL	LINES	SUBSTATIONS	LINES	SUBSTATIONS	DEPRECIATION	SUBSTATIONS	TOTAL
		INVESTMENT					LINES		
2006	6,980	6,980	768	6,212	8	77	8	77	85
2007	33,827	26,847	2,953	23,894	49	453	57	530	587
2008	56,641	22,814	2,510	20,304	108	1,004	165	1,534	1,699
2009	128,460	71,819	7,900	63,919	220	2,054	385	3,588	3,973
2010	136,700	8,240	1,086	7,154	317	2,940	702	6,528	7,230
2011	194,898	58,198	3,446	54,752	366	3,712	1,068	10,240	11,308
2012	216,898	22,000	3,300	18,700	439	4,628	1,507	14,868	16,375
2013	249,163	32,265	4,840	27,425	527	5,203	2,034	20,071	22,105
2014	277,514	28,351	4,253	24,098	626	5,846	2,660	25,917	28,577
2015	297,244	19,730	2,518	17,212	699	6,361	3,359	32,278	35,637
California-Oregon Intertie (COI)									
	CUMULATIVE	TOTAL			DEPRECIATION		ACCUMULATED		
IN-SERVICE	INVESTMENT	ANNUAL	LINES	SUBSTATIONS	LINES	SUBSTATIONS	DEPRECIATION	SUBSTATIONS	TOTAL
		INVESTMENT					LINES		
2012	11,238	11,238	0	11,238	0	140	0	140	140
2013	11,238	0	0	0	0	280	0	420	420
2014	11,238	0	0	0	0	280	0	700	700
2015	11,238	0	0	0	0	280	0	980	980

**TABLE 4-9: BPA GENERAL PLANT CUMULATIVE INVESTMENT
(\$000s)**

		A	B	C	D	E	F	G	H	I	J	K	L
		FERC	DEPR	FY 2012	FY 2013	FY 2013	FY 2013	FY 2014	FY 2014	FY 2014	FY 2015	FY 2015	FY 2015
		ACCT	ACCRL	TOTAL	DEPR	ACCUM	TOTAL	DEPR	ACCUM	TOTAL	DEPR	ACCUM	TOTAL
			RATE	INVEST	EXPENSE	DEPR	INVEST	EXPENSE	DEPR	INVEST	EXPENSE	DEPR	INVEST
1	LAND & LAND RIGHTS	389	0.0642	368	252	2,764	7,471	489	3,253	7,765	630	3,883	11,869
2	STRUCTURES & IMPROVEMENTS	390	0.0178	194,018	3,843	60,777	237,813	4,645	65,422	284,063	5,401	70,823	322,825
3	OFFICE FURNITURE & FIXTURES	391.1	0.0527	2,147	113	1,460	2,147	113	1,573	2,147	113	1,686	2,147
4	DATA PROCESSING -EQUIPMENT	391.2	0.1327	0	0	0	0	0	0	0	0	0	0
5	DATA PROCESSING -SOFTWARE	391.3	0.1710	0	0	0	0	0	0	0	0	0	0
6	TRANSPORT EQUIPMENT	392.1	0.0333	54,984	1,998	20,023	65,041	2,283	22,306	72,105	2,503	24,809	78,243
7	HELICOPTERS	392.2	0.0332	9,234	307	2,091	9,234	307	2,398	9,234	307	2,705	9,234
8	AIRPLANES	392.3	0.0630	8,656	545	2,970	8,656	545	3,515	8,656	545	4,060	8,656
9	STORES EQUIPMENT	393	0.0391	607	24	61	607	24	85	607	24	109	607
10	TOOLS, SHOP & GARAGE EQUIPMENT	394	0.0410	9,187	419	2,893	11,272	507	3,400	13,458	604	4,004	15,985
11	LAB EQUIPMENT	395	0.0688	26,687	1,836	15,801	26,687	1,836	17,637	26,687	1,836	19,473	26,687
12	POWER OPERATED EQUIPMENT	396	0.0540	28,806	1,556	12,013	28,806	1,556	13,569	28,806	1,556	15,125	28,806
13	COMMUNICATIONS EQUIPMENT	397	0.0569	393,336	22,442	168,711	395,501	22,608	191,319	399,162	23,966	215,285	443,225
14	MISC EQUIPMENT	398	0.0670	35,186	2,357	13,300	35,186	2,357	15,657	35,186	2,357	18,014	35,186
15	SUBTOTAL GENERAL PLANT			763,217	35,692	302,867	828,421	37,270	340,137	887,876	39,842	379,979	983,470
CORPORATE ASSIGNMENT													
18	OFFICE FURNITURE & FIXTURES	391.1	0.05270	987	52	887	987	52	939	987	3	942	987
19	DATA PROCESSING -EQUIPMENT	391.2	0.13270	27,950	3,709	11,513	27,950	3,709	15,222	27,950	3,709	18,931	27,950
20	DATA PROCESSING -SOFTWARE	391.3	0.17100	31,546	0	14,637	52,981	0	14,637	74,952	0	14,637	97,460
21	COMMUNICATIONS EQUIPMENT	397	0.05690	0	0	0	0	0	0	0	0	0	0
22	MISC EQUIPMENT	398	0.06700	13,112	1,189	3,341	22,369	1,549	4,890	23,856	1,649	6,539	25,373
23	SUBTOTAL CORPORATE ASSIGNMENT			73,594	4,950	30,378	104,287	5,310	35,688	127,745	5,361	41,049	151,769
24	TOTAL GENERAL PLANT			836,811	40,642	333,246	932,709	42,580	375,826	1,015,621	45,203	421,029	1,135,239

TABLE 4-10: BPA TRANSMISSION GENERAL PLANT PROJECTED PLANT ADDITIONS
(\$000s)

		A	B	C	D
		FERC	2013	2014	2015
		ACCT	ADDTNS	ADDTNS	ADDTNS
1	LAND & LAND RIGHTS	389	7,103	294	4,104
2	STRUCTURES & IMPROVEMENTS	390	43,795	46,250	38,762
3	OFFICE FURNITURE & FIXTURES	391.1	0	0	0
4	DATA PROCESSING -EQUIPMENT	391.2	0	0	0
5	DATA PROCESSING -SOFTWARE	391.3	4,110	4,035	3,592
6	TRANSPORT EQUIPMENT	392.1	10,057	7,064	6,139
7	HELICOPTERS	392.2	0	0	0
8	AIRPLANES	392.3	0	0	0
9	STORES EQUIPMENT	393	0	0	0
10	TOOLS, SHOP & GARAGE EQUIPMENT	394	2,085	2,186	2,527
11	LAB EQUIPMENT	395	0	0	0
12	POWER OPERATED EQUIPMENT	396	0	0	0
13	COMMUNICATIONS EQUIPMENT	397	2,165	3,661	44,063
14	MISC EQUIPMENT	398	0	0	0
15	SUBTOTAL GENERAL PLANT		69,315	63,490	99,186
16	STATION EQUIPMENT	353	3,056	18,948	6,644
17	TOTAL GENERAL PLANT		72,370	82,437	105,830
CORPORATE ASSIGNMENT					
18	OFFICE FURNITURE & FIXTURES	391.1	0	0	0
19	DATA PROCESSING -EQUIPMENT	391.2	0	0	0
20	DATA PROCESSING -SOFTWARE	391.3	21,435	21,971	22,508
21	COMMUNICATIONS EQUIPMENT	397	0	0	0
22	MISC EQUIPMENT	398	9,258	1,487	1,516
23	TOTAL CORPORATE ASSIGNMENT		30,693	23,458	24,024

**TABLE 4-11: ANCILLARY SERVICES
SCHEDULING, SYSTEM CONTROL, AND DISPATCH SERVICES**

(\$000s)

		A	B	C								
	PLANT ADDITIONS FERC ACCOUNT	2013	2014	2015								
1	353	3,056	18,948	6,644								
2	391.2	0	0	0								
3	391.3	4,110	4,035	3,592								
4	397	0	0	0								
5	Total	7,166	22,983	10,236								
		A	B	C	D	E	F	G	H	I	J	K
		DEPR	2012	2013	2013	2013	2014	2014	2014	2015	2015	2015
		ACCRL	TOTAL	DEPR	ACCUM	TOTAL	DEPR	ACCUM	TOTAL	DEPR	ACCUM	TOTAL
	FERC ACCOUNT	RATE	INVEST	EXP	DEPR	INVEST	EXP	DEPR	INVEST	EXP	DEPR	INVEST
6	353	0.02180	77,855	1,731	31,229	80,911	1,970	33,199	99,858	2,249	35,448	106,502
7	391.2	0.13270	13,282	1,763	11,795	13,282	1,487	13,282	13,282	0	13,282	13,282
8	391.3	0.17100	29,462	5,389	20,174	33,572	6,086	26,260	37,607	6,738	32,998	41,199
9	397	0.05690	43,218	2,459	18,530	43,218	2,459	20,989	43,218	2,459	23,448	43,218
10	Total		163,817	11,342	81,729	170,983	12,002	93,731	193,966	11,446	105,177	204,201
		A	B	C	D	E	F					
	FERC ACCOUNT	2013	2014	AVERAGE 2014	2014	2015	AVERAGE 2015					
	PLANT INVESTMENT											
11	353	80,911	99,858	90,384	99,858	106,502	103,180					
12	391.2	13,282	13,282	13,282	13,282	13,282	13,282					
13	391.3	33,572	37,607	35,589	37,607	41,199	39,403					
14	397	43,218	43,218	43,218	43,218	43,218	43,218					
15	Total	170,983	193,966	182,473	193,966	204,201	199,083					
	ACCUMULATED DEPRECIATION											
16	353	31,229	33,199	32,214	33,199	35,448	34,324					
17	391.2	11,795	13,282	12,539	13,282	13,282	13,282					
18	391.3	20,174	26,260	23,217	26,260	32,998	29,629					
19	397	18,530	20,989	19,760	20,989	23,448	22,219					
20	Total	81,729	93,731	87,730	93,731	105,177	99,454					
	NET PLANT INVESTMENT											
21	353	49,682	66,659	58,170	66,659	71,054	68,856					
22	391.2	1,487	0	743	0	0	0					
23	391.3	13,397	11,346	12,372	11,346	8,200	9,774					
24	397	24,688	22,229	23,458	22,229	19,770	20,999					
25	Total	89,254	100,234	94,743	100,234	99,024	99,629					

5. PROJECTED CASH BALANCES/INTEREST CREDITS

5.1 Introduction

This chapter projects Transmission Services' cash balances for the rate period and estimates the interest income (credits) to be earned on BPA's projected cash balances and on annual funds to be returned to Treasury.

5.2 Interest credits on BPA's projected cash balances

The beginning rate period cash balance was derived from BPA's business unit cash analysis for the end of FY 2012 and from current forecasts of transmission revenues, expenses, and cash flows for FY 2013. The annual incremental cash provided from forecast net revenues is added to the beginning cash balance for revenue requirements and the current and revised revenue tests. Reserves during the rate period are reduced by \$15 million each year for the funding of capital expenditures in lieu of Treasury borrowing. Using the existing interest earnings rate, annual interest income is calculated from projected average annual cash balances. The resulting interest income is applied as a credit against interest expense in the transmission revenue requirements and in the income statements of the current and revised revenue tests.

5.3 Interest credits on funds held for others

The three-year average delta between historical and forecast funds held for others (FHFO) is added to the ending rate period FHFO cash balance and averaged for 2014. The 2015 end-of-year FHFO cash balance reflects expected lease financing draws of \$40 million. The projected interest earnings rate is multiplied by the FHFO average cash balance to determine the annual interest income. The resulting interest income is applied as a credit against interest expense in the transmission revenue requirement.

5.4 Interest income (repayment program calculation)

Separately, interest income rates listed in this chapter are calculated and used within the repayment program to calculate an interest credit based on the average cash necessary to pay the interest, bond call premiums, and amortization payments calculated by the study for return to Treasury in each study year. The repayment program assumes the cash accumulates at a uniform rate throughout the year, except for interest paid on bonds issued to Treasury at mid-year. At the end of the year, the cash balance, together with the interest credit earned thereon, is used in the program for payment of interest expense, amortization of the Federal investment, and payment of bond premiums.

TABLE 5-1: INTEREST INCOME FROM PROJECTED CASH BALANCES				
REVENUE REQUIREMENT DEVELOPMENT				
(\$000s)				
		A	B	C
		2014	2015	REPAYMENT PERIOD
1	ANNUAL CASH SURPLUS/(DEFICIT)	-	-	
2	ADJUSTMENTS TO CASH	(37,433)	(37,433)	
3	SOY CASH BALANCE	474,000	436,567	
4	EOY CASH BALANCE	436,567	399,134	
5	AVERAGE CASH BALANCE	455,284	417,851	399,134
6	INTEREST INCOME RATE	1.39%	2.09%	2.09%
7	INTEREST ON BPA FUND/INVESTMENTS (LN 5 X LN 6)	6,328	8,733	8,342
8	REPAYMENT STUDY INTEREST INCOME	1,303	1,643	
INTEREST EARNED ON FUNDS HELD FOR OTHERS				
9	SOY CASH BALANCE	117,000	127,000	
10	EOY CASH BALANCE	127,000	133,000	
11	AVERAGE CASH BALANCE	122,000	130,000	
12	INTEREST ON FUNDS HELD FOR OTHERS (LN 11 X LN 6)	1,896	2,917	2,917
13	TOTAL ANNUAL INTEREST INCOME (LN 7+8+12)	9,527	13,293	11,259

TABLE 5-2: INTEREST INCOME FROM PROJECTED CASH BALANCES				
REVENUES FROM CURRENT RATES				
(\$000s)				
		A	B	C
		2014	2015	REPAYMENT PERIOD
1	ANNUAL CASH SURPLUS/(DEFICIT)	(78,206)	(108,927)	
2	ADJUSTMENTS TO CASH	(37,433)	(37,433)	
3	SOY CASH BALANCE	474,000	358,361	
4	EOY CASH BALANCE	358,361	212,000	
5	AVERAGE CASH BALANCE	416,180	285,181	212,000
6	INTEREST INCOME RATE	1.39%	2.09%	2.09%
7	INTEREST ON BPA FUND/INVESTMENTS (LN 5 X LN 6)	5,785	5,960	4,431
8	REPAYMENT STUDY INTEREST INCOME	1,303	1,643	
INTEREST EARNED ON FUNDS HELD FOR OTHERS				
9	SOY CASH BALANCE	117,000	127,000	
10	EOY CASH BALANCE	127,000	133,000	
11	AVERAGE CASH BALANCE	122,000	130,000	
12	INTEREST INCOME (LN 11 X LN 6)**	1,896	2,917	2,917
13	TOTAL ANNUAL INTEREST INCOME (LN 7+8+12)	8,984	10,520	7,348
**Includes additional \$200k for trustee interest income from lease financing				

TABLE 5-3: INTEREST INCOME FROM PROJECTED CASH BALANCES				
REVENUES FROM PROPOSED RATES				
(\$000s)				
		A	B	C
		2014	2015	REPAYMENT PERIOD
1	ANNUAL CASH SURPLUS/(DEFICIT)	14,076	(12,167)	
2	ADJUSTMENTS TO CASH	(37,433)	(37,433)	
3	SOY CASH BALANCE	474,000	450,643	
4	EOY CASH BALANCE	450,643	401,043	
5	AVERAGE CASH BALANCE	462,321	425,843	401,043
6	INTEREST INCOME RATE	1.39%	2.09%	2.09%
7	INTEREST ON BPA FUND/INVESTMENTS (LN 5 X LN 6)	6,426	8,900	8,382
8	REPAYMENT STUDY INTEREST INCOME	1,303	1,643	
INTEREST EARNED ON FUNDS HELD FOR OTHERS				
9	SOY CASH BALANCE	117,000	127,000	
10	EOY CASH BALANCE	127,000	133,000	
11	AVERAGE CASH BALANCE	122,000	130,000	
12	INTEREST INCOME (LN 11 X LN 6)**	1,896	2,917	2,917
13	TOTAL ANNUAL INTEREST INCOME (LN 7+8+12)	9,625	13,460	11,299

**Includes additional \$200k for trustee interest income from lease financing

6. INTEREST RATES AND PRICE DEFLATORS

6.1 Introduction

Interest rates on bonds issued by BPA to Treasury are used in development of repayment studies and projections of Federal interest expense in revenue requirements.

6.2 Source of Forecasts

To project interest rates on bonds issued to Treasury, BPA uses Treasury yield curve forecasts provided by the IHS Global Insights Group (GI). GI is also the source of price deflators that BPA treats as escalators for purposes of developing spending levels. GI develops the price deflators taking into account projections of Gross Domestic Product (GDP). The GDP consists of the sum of consumption, investment, government purchases, and net exports, excluding transfers to foreigners.

6.3 Interest Rate Projections

Projected interest rates for BPA bonds issued to Treasury are based on GI's yield curve projections of Treasury market rates, plus a markup of up to 222 basis points, depending on the length of time to maturity and call options. The markup estimate reflects an interagency agreement that Treasury will price BPA bonds at a level comparable to the price for securities (bonds) issued by U.S. government corporations. The markup estimate reflects the average basis point markup on recent intermediate and long-term bonds issued by BPA.

6.4 Deflators

The current and cumulative price deflators used to escalate midyear dollars are derived from the fiscal and calendar year price deflators provided by GI. They are calculated as follows:

$$[(FY1/100) \times 0.5] + 1 = \text{Cumulative Price Deflator}_1$$

Thus, the fiscal year GDP price deflator for the current year is divided by one hundred and multiplied by one-half. The result, when added to one, yields the cumulative price deflator for the first year.

$$[1 + (FY_t/100)] \times \text{Cumulative Price Deflator}_{t-1} = \text{Cumulative Price Deflator}_t, \text{ when } t > 1$$

Thus, the fiscal year GDP price deflator for a future year is divided by one hundred and added to one. The result, when multiplied by the cumulative price deflator from the previous year, yields the cumulative price deflator for the each successive year.

When deflators are used in developing the FY 2014–2015 spending levels, they are based on the price deflators from the September 2012 GI Base Case forecast.

United States Government

Department of Energy
Bonneville Power Administration

memorandum

DATE: November 23, 2012

REPLY TO
ATTN OF: FTC-2

SUBJECT: FY 2013 Interest Rate and Inflation Forecast

TO: See Attached "cc:" List

Please see the attached BPA interest rate and inflation forecast for the period FY 2013 through 2042.

These forecasts provide an internally consistent basis for BPA decisions regarding: debt management, budget formulation and other financial analyses, as well as capital budgeting and strategic planning efforts. The FY 2013 forecast is summarized in the following tables:

- Table 1: 30 Year Treasury Yields and BPA Borrowing Rates
- Table 2: Forecast Comparison – 30 Year BPA Borrowing Rate – Callable at Par
- Table 3: 20 Year Treasury Yields and BPA Borrowing Rates
- Table 4: 15 Year Treasury Yields and BPA Borrowing Rates
- Table 5: BPA FY 2013 Appropriation Borrowing Rate Forecast
- Table 6: BPA FY 2013 BPA Borrowing Rate – No Premium
- Table 7: BPA FY 2013 BPA Borrowing Rate – Coupon Scale-Down Redemption Premium
- Table 8: BPA FY 2013 BPA Borrowing Rate – Callable at Par
- Table 9: BPA FY 2013 Third-Party Taxable Borrowing Rate Forecast
- Table 10: BPA FY 2013 Third-Party Tax-Exempt Borrowing Rate Forecast
- Table 11: BPA FY 2013 FERC Borrowing Rate (Bank Prime) Forecast
- Table 12: BPA FY 2013 May 3-Month LIBOR Rate Forecast
- Table 13: Comparison of FY 2013 Inflation Forecast Components

Borrowing Rate Forecast Methodology

The FY 2013 forecast is based on the IHS Global Insight (GI) Third Quarter September 2012 Long-Term Economic Outlook.

Tables 1, 3 and 4 illustrate the components of BPA's Treasury borrowing rate forecasts. GI calendar year (CY) projections of 30, 15 and 20-year Treasury bond yields are shown in Column A of the corresponding Tables. BPA fiscal year (FY) projections are shown in Column B. Column C, D and E reflect BPA's Treasury borrowing rate options.

BPA borrowing rates from the U.S. Treasury reflect a credit spread over the Treasury yield curve. Table 6 is the Government Agency borrowing rate and reflects the rate BPA would borrow at without a call premium. The other two rates (Table 7 and Table 8) reflect the two additional borrowing options BPA can exercise with Treasury; callable at par and coupon scale-down. Callable at par allows BPA to redeem the bond before maturity without paying a call

premium at the time of the call. The cost of this call option results in a spread over the coupon rate, resulting in higher interest expense paid over the life of the bond. With a coupon scale-down call option the call premium is determined at the time of bond issuance for each option call date over the bond's term; the call premium is only paid if the bond is called. In addition to paying a call premium at the time the bond is called, there is also a spread over the coupon rate for the coupon scale-down option. These two options are calculated using historical spread premiums.

Table Descriptions

Tables 1, 3 and 4: Shows the steps involved to arrive at the BPA borrowing rate.

Table 2: Shows the difference between the BPA borrowing rate - callable at par between last year and this year.

Table 5: Forecasts a rate equivalent to the Treasury yield curve.

Table 6: Forecasts the rate at which Bonneville would borrow from Treasury when using Borrowing Authority, without including any premiums (make-whole call).

Table 7: Forecasts the rate at which Bonneville would borrow from Treasury for a bullet bond with a coupon scale-down redemption premium.

Table 8: Forecasts the rate at which Bonneville would borrow from Treasury for a bullet bond callable at par.

Table 9: Forecasts the rate at which Bonneville would back third-party bonds on a taxable basis, as with Bonneville-backed Port of Morrow bonds.

Table 10: Forecasts the rate at which Bonneville would back third-party bonds on a tax-exempt basis, as with Bonneville-backed Energy Northwest bonds.

Table 11: Forecasts the Prime rate, the rate at which banks charge interest for their most creditworthy customers.

Table 12: Forecasts the 3-month LIBOR rate, the rate charged by London banks, used as a benchmark rate worldwide.

Table 13: Forecasts the projected change in the Gross Domestic Product (GDP) price deflator and compares to the FY 2012 inflation forecast. The table also forecasts future inflation rates.

Inflation Forecast

BPA inflation assumptions reflect projected changes in the U.S. GDP Price Deflator. The GDP Price Deflator is a broad measure of inflation in the U.S. economy. GDP reflects the value of all goods and services produced by domestic and foreign capital and labor within the United States. Major components of GDP include: total consumption, investment, government purchases, and net exports. The real GDP calculations reflect both the changing mix of the components in GDP and the relative price changes in these components.

This index assumes a base year of 2005. The projected change in the GDP price deflator and comparison with the FY 2012 inflation forecast is summarized in Table 13. Column A shows the projected trend in GDP inflation rates between 2013-2042 on a calendar year basis and in column B by BPA fiscal year. Column C provides the cumulative price index projections. The forecast expresses fiscal year dollar values as mid-year dollar values.

If you have questions, or suggestions concerning the FY 2013 Common Agency Assumptions, please contact Anna-Lisa Miller at (503) 230-4243.



Anna-Lisa Miller
Financial Analyst, Debt and Investment Management

Attachment

Table 1
30 Year Treasury Yields and BPA Borrowing Rates
 FY 2013 Forecast of BPA Borrowing Rates

Calendar/Fiscal Years 2013-2042

Year	A	B	C	D	E
	Bond Rate 1/ <u>Calendar Year</u>	Bond Rate <u>Fiscal Year</u>	BPA Rate 2/ No Premium <u>Fiscal Year</u>	BPA Rate 3/ Coupon Scale-Down <u>Fiscal Year</u>	BPA Rate 4/ Callable at Par <u>Fiscal Year</u>
2012	3.90				
2013	3.22	3.39	4.11	5.31	5.61
2014	4.05	3.84	4.51	5.51	5.76
2015	4.58	4.45	5.06	5.91	6.11
2016	5.27	5.09	5.65	6.20	6.37
2017	5.38	5.35	5.85	6.25	6.40
2018	5.38	5.38	5.88	6.33	6.43
2019	5.38	5.38	5.88	6.33	6.43
2020	5.38	5.38	5.88	6.33	6.43
2021	5.38	5.38	5.88	6.33	6.43
2022	5.38	5.38	5.88	6.33	6.43
2023	5.38	5.38	5.88	6.33	6.43
2024	5.38	5.38	5.88	6.33	6.43
2025	5.38	5.38	5.88	6.33	6.43
2026	5.38	5.38	5.88	6.33	6.43
2027	5.38	5.38	5.88	6.33	6.43
2028	5.38	5.38	5.88	6.33	6.43
2029	5.38	5.38	5.88	6.33	6.43
2030	5.38	5.38	5.88	6.33	6.43
2031	5.38	5.38	5.88	6.33	6.43
2032	5.38	5.38	5.88	6.33	6.43
2033	5.38	5.38	5.88	6.33	6.43
2034	5.38	5.38	5.88	6.33	6.43
2035	5.38	5.38	5.88	6.33	6.43
2036	5.38	5.38	5.88	6.33	6.43
2037	5.38	5.38	5.88	6.33	6.43
2038	5.38	5.38	5.88	6.33	6.43
2039	5.38	5.38	5.88	6.33	6.43
2040	5.38	5.38	5.88	6.33	6.43
2041	5.38	5.38	5.88	6.33	6.43
2042	5.38	5.38	5.88	6.33	6.43

1/ Global Insight: The U.S. Economy: 30-Year Focus, August 2012 Forecast, Base Case.

2/ Column C = Column B + U.S. Treasury borrowing markup, no premium

3/ Column D = Column B + U.S. Treasury borrowing markup + Coupon Scale-Down premium

4/ Column E = Column B + U.S. Treasury borrowing markup + Callable at Par premium

Table 2
Forecast Comparison - 30 Year BPA Borrowing Rate - Callable at Par
 BPA FY 2013 vs. BPA FY 2012

Calendar/Fiscal Years 2013-2042

<u>Year</u>	A FY 2013 Forecast BPA Rate 1/ <u>Callable at Par</u>	B FY 2012 Forecast BPA Rate 2/ <u>Callable at Par</u>	C Difference <u>(A-B)</u>
2013	5.61	5.91	-0.30
2014	5.76	6.02	-0.26
2015	6.11	6.20	-0.09
2016	6.37	6.31	0.06
2017	6.40	6.32	0.08
2018	6.43	6.32	0.11
2019	6.43	6.32	0.11
2020	6.43	6.32	0.11
2021	6.43	6.32	0.11
2022	6.43	6.32	0.11
2023	6.43	6.32	0.11
2024	6.43	6.32	0.11
2025	6.43	6.32	0.11
2026	6.43	6.32	0.11
2027	6.43	6.32	0.11
2028	6.43	6.32	0.11
2029	6.43	6.32	0.11
2030	6.43	6.32	0.11
2031	6.43	6.32	0.11
2032	6.43	6.32	0.11
2033	6.43	6.32	0.11
2034	6.43	6.32	0.11
2035	6.43	6.32	0.11
2036	6.43	6.32	0.11
2037	6.43	6.32	0.11
2038	6.43	6.32	0.11
2039	6.43	6.32	0.11
2040	6.43	6.32	0.11
2041	6.43	6.32	0.11
2042	6.43		

1/ Global Insight: The U.S. Economy: 30-Year Focus, August 2012 Forecast, Base Case.

2/ Global Insight The U.S. Economy: 30-year Focus, September 2011 Forecast, Base Case.

Table 3
20 Year Treasury Yields and BPA Borrowing Rates
 FY 2013 Forecast of BPA Borrowing Rates

Calendar/Fiscal Years 2013-2042

<u>Year</u>	A	B	C	D	E
	Bond Rate 1/ <u>Calendar Year</u>	Bond Rate <u>Fiscal Year</u>	BPA Rate 2/ No Premium <u>Fiscal Year</u>	BPA Rate 3/ Coupon Scale-Down <u>Fiscal Year</u>	BPA Rate 4/ Callable at Par <u>Fiscal Year</u>
2012	3.29				
2013	2.69	2.84	3.44	4.47	4.77
2014	3.54	3.33	3.90	4.75	5.00
2015	4.25	4.07	4.62	5.37	5.57
2016	5.00	4.81	5.34	5.78	5.95
2017	5.13	5.10	5.59	5.88	6.04
2018	5.13	5.13	5.63	5.95	6.08
2019	5.13	5.13	5.63	5.95	6.08
2020	5.13	5.13	5.63	5.95	6.08
2021	5.13	5.13	5.63	5.95	6.08
2022	5.13	5.13	5.63	5.95	6.08
2023	5.13	5.13	5.63	5.95	6.08
2024	5.13	5.13	5.63	5.95	6.08
2025	5.13	5.13	5.63	5.95	6.08
2026	5.13	5.13	5.63	5.95	6.08
2027	5.13	5.13	5.63	5.95	6.08
2028	5.13	5.13	5.63	5.95	6.08
2029	5.13	5.13	5.63	5.95	6.08
2030	5.13	5.13	5.63	5.95	6.08
2031	5.13	5.13	5.63	5.95	6.08
2032	5.13	5.13	5.63	5.95	6.08
2033	5.13	5.13	5.63	5.95	6.08
2034	5.13	5.13	5.63	5.95	6.08
2035	5.13	5.13	5.63	5.95	6.08
2036	5.13	5.13	5.63	5.95	6.08
2037	5.13	5.13	5.63	5.95	6.08
2038	5.13	5.13	5.63	5.95	6.08
2039	5.13	5.13	5.63	5.95	6.08
2040	5.13	5.13	5.63	5.95	6.08
2041	5.13	5.13	5.63	5.95	6.08
2042	5.13	5.13	5.63	5.95	6.08

1/ Global Insight: The U.S. Economy: 30-Year Focus, August 2012 Forecast, Base Case.

2/ Column C = Column B + U.S. Treasury borrowing markup, no premium

3/ Column D = Column B + U.S. Treasury borrowing markup + Coupon Scale-Down premium

4/ Column E = Column B + U.S. Treasury borrowing markup + Callable at Par premium

Table 4
15 Year Treasury Yields and BPA Borrowing Rates
 FY 2013 Forecast of BPA Borrowing Rates

Calendar/Fiscal Years 2013-2042

Year	A	B	C	D	E
	Bond Rate 1/ <u>Calendar Year</u>	Bond Rate <u>Fiscal Year</u>	BPA Rate 2/ No Premium <u>Fiscal Year</u>	BPA Rate 3/ Coupon Scale-Down <u>Fiscal Year</u>	BPA Rate 4/ Callable at Par <u>Fiscal Year</u>
2012	2.99				
2013	2.42	2.57	3.11	4.05	4.35
2014	3.28	3.07	3.60	4.38	4.63
2015	4.08	3.88	4.40	5.10	5.30
2016	4.87	4.67	5.18	5.56	5.73
2017	5.00	4.97	5.47	5.70	5.87
2018	5.00	5.00	5.50	5.76	5.90
2019	5.00	5.00	5.50	5.76	5.90
2020	5.00	5.00	5.50	5.76	5.90
2021	5.00	5.00	5.50	5.76	5.90
2022	5.00	5.00	5.50	5.76	5.90
2023	5.00	5.00	5.50	5.76	5.90
2024	5.00	5.00	5.50	5.76	5.90
2025	5.00	5.00	5.50	5.76	5.90
2026	5.00	5.00	5.50	5.76	5.90
2027	5.00	5.00	5.50	5.76	5.90
2028	5.00	5.00	5.50	5.76	5.90
2029	5.00	5.00	5.50	5.76	5.90
2030	5.00	5.00	5.50	5.76	5.90
2031	5.00	5.00	5.50	5.76	5.90
2032	5.00	5.00	5.50	5.76	5.90
2033	5.00	5.00	5.50	5.76	5.90
2034	5.00	5.00	5.50	5.76	5.90
2035	5.00	5.00	5.50	5.76	5.90
2036	5.00	5.00	5.50	5.76	5.90
2037	5.00	5.00	5.50	5.76	5.90
2038	5.00	5.00	5.50	5.76	5.90
2039	5.00	5.00	5.50	5.76	5.90
2040	5.00	5.00	5.50	5.76	5.90
2041	5.00	5.00	5.50	5.76	5.90
2042	5.00	5.00	5.50	5.76	5.90

1/ Global Insight: The U.S. Economy: 30-Year Focus, August 2012 Forecast, Base Case.

2/ Column C = Column B + U.S. Treasury borrowing markup, no premium

3/ Column D = Column B + U.S. Treasury borrowing markup + Coupon Scale-Down premium

4/ Column E = Column B + U.S. Treasury borrowing markup + Callable at Par premium

Table 5
BPA FY 2013 Appropriation Borrowing Rate Forecast 1/

Fiscal Years 2013-2042
 (continued on next page)

Maturity

<u>Year</u>	<u>1 Year</u>	<u>2 Year</u>	<u>3 Year</u>	<u>4 Year</u>	<u>5 Year</u>	<u>6 Year</u>	<u>7 Year</u>	<u>8 Year</u>	<u>9 Year</u>	<u>10 Year</u>	<u>11 Year</u>	<u>12 Year</u>	<u>13 Year</u>	<u>14 Year</u>	<u>15 Year</u>
2013 2/	0.23	0.29	0.41	0.57	0.79	1.01	1.23	1.44	1.63	1.78	1.89	2.00	2.08	2.13	2.24
2014	0.41	0.68	0.98	1.28	1.59	1.83	2.08	2.32	2.57	2.81	2.86	2.91	2.97	3.02	3.07
2015	1.80	2.05	2.27	2.49	2.72	2.91	3.11	3.30	3.50	3.69	3.73	3.77	3.81	3.84	3.88
2016	3.50	3.65	3.77	3.89	4.01	4.12	4.22	4.32	4.43	4.53	4.56	4.59	4.61	4.64	4.67
2017	4.05	4.15	4.25	4.35	4.44	4.52	4.60	4.68	4.76	4.84	4.87	4.89	4.92	4.94	4.97
2018	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2019	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2020	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2021	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2022	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2023	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2024	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2025	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2026	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2027	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2028	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2029	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2030	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2031	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2032	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2033	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2034	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2035	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2036	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2037	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2038	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2039	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2040	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2041	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00
2042	4.10	4.19	4.29	4.38	4.48	4.56	4.64	4.72	4.80	4.88	4.90	4.93	4.95	4.98	5.00

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

2\ FY 2012 Appropriation rates are determined in accordance with BPA Appropriations Refinancing Act, 16 U.S.C. 8381 enacted on April 26, 1996, and are independent of the Global Insight Treasury Yield forecasts.

Table 5
BPA FY 2013 Appropriation Borrowing Rate Forecast 1/

Fiscal Years 2013-2042

<u>Maturity</u>																
<u>16 Year</u>	<u>17 Year</u>	<u>18 Year</u>	<u>19 Year</u>	<u>20 Year</u>	<u>21 Year</u>	<u>22 Year</u>	<u>23 Year</u>	<u>24 Year</u>	<u>25 Year</u>	<u>26 Year</u>	<u>27 Year</u>	<u>28 Year</u>	<u>29 Year</u>	<u>30 Year</u>	<u>50 Year</u>	<u>Year</u>
2.27	2.38	2.38	2.47	2.50	2.50	2.56	2.63	2.63	2.63	2.75	2.75	2.77	2.88	2.88	2.88	2013 2/
3.12	3.17	3.22	3.28	3.33	3.38	3.43	3.48	3.53	3.59	3.64	3.69	3.74	3.79	3.84	3.84	2014
3.92	3.96	4.00	4.03	4.07	4.11	4.15	4.18	4.22	4.26	4.30	4.33	4.37	4.41	4.45	4.45	2015
4.70	4.73	4.76	4.78	4.81	4.84	4.87	4.90	4.92	4.95	4.98	5.01	5.04	5.07	5.09	5.09	2016
4.99	5.02	5.05	5.07	5.10	5.12	5.15	5.17	5.20	5.22	5.25	5.27	5.30	5.32	5.35	5.35	2017
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2018
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2019
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2020
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2021
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2022
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2023
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2024
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2025
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2026
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2027
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2028
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2029
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2030
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2031
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2032
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2033
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2034
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2035
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2036
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2037
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2038
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2039
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2040
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2041
5.03	5.05	5.08	5.10	5.13	5.15	5.18	5.20	5.23	5.25	5.28	5.30	5.33	5.35	5.38	5.38	2042

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

2\ FY 2012 Appropriation rates are determined in accordance with BPA Appropriations Refinancing Act, 16 U.S.C. 8381 enacted on April 26, 1996, and are independent of the Global Insight Treasury Yield forecasts.

Table 6
BPA FY 2013 BPA Borrowing Rate - No Premium 1/

Fiscal Years 2013-2042
 (continued on next page)

Maturity

<u>Year</u>	<u>1 Year</u>	<u>2 Year</u>	<u>3 Year</u>	<u>4 Year</u>	<u>5 Year</u>	<u>6 Year</u>	<u>7 Year</u>	<u>8 Year</u>	<u>9 Year</u>	<u>10 Year</u>	<u>11 Year</u>	<u>12 Year</u>	<u>13 Year</u>	<u>14 Year</u>	<u>15 Year</u>
2013	0.33	0.58	0.90	1.22	1.54	1.79	2.03	2.28	2.53	2.78	2.84	2.91	2.98	3.04	3.11
2014	0.56	0.89	1.25	1.60	1.96	2.23	2.50	2.76	3.03	3.30	3.36	3.42	3.48	3.54	3.60
2015	1.98	2.29	2.57	2.84	3.12	3.33	3.54	3.76	3.97	4.18	4.23	4.27	4.32	4.36	4.40
2016	3.72	3.93	4.10	4.27	4.44	4.56	4.67	4.79	4.91	5.02	5.05	5.09	5.12	5.15	5.18
2017	4.30	4.47	4.61	4.75	4.89	4.98	5.07	5.16	5.25	5.34	5.36	5.39	5.42	5.44	5.47
2018	4.35	4.51	4.65	4.78	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2019	4.35	4.51	4.65	4.78	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2020	4.35	4.51	4.65	4.78	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2021	4.35	4.51	4.65	4.78	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2022	4.35	4.51	4.65	4.78	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2023	4.35	4.51	4.65	4.78	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2024	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2025	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2026	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2027	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2028	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2029	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2030	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2031	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2032	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2033	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2034	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2035	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2036	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2037	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2038	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2039	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2040	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2041	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50
2042	4.35	4.51	4.65	4.79	4.92	5.01	5.10	5.19	5.29	5.38	5.40	5.43	5.45	5.48	5.50

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 6
BPA FY 2013 BPA Borrowing Rate - No Premium 1/

Fiscal Years 2013-2042

<u>Maturity</u>																
<u>16 Year</u>	<u>17 Year</u>	<u>18 Year</u>	<u>19 Year</u>	<u>20 Year</u>	<u>21 Year</u>	<u>22 Year</u>	<u>23 Year</u>	<u>24 Year</u>	<u>25 Year</u>	<u>26 Year</u>	<u>27 Year</u>	<u>28 Year</u>	<u>29 Year</u>	<u>30 Year</u>	<u>50 Year</u>	<u>Year</u>
3.18	3.24	3.31	3.38	3.44	3.51	3.58	3.64	3.71	3.78	3.84	3.91	3.98	4.04	4.11	4.11	2013
3.66	3.72	3.78	3.84	3.90	3.97	4.03	4.09	4.15	4.21	4.27	4.33	4.39	4.45	4.51	4.51	2014
4.45	4.49	4.53	4.58	4.62	4.67	4.71	4.75	4.80	4.84	4.88	4.93	4.97	5.02	5.06	5.06	2015
5.21	5.24	5.27	5.30	5.34	5.37	5.40	5.43	5.46	5.49	5.52	5.56	5.59	5.62	5.65	5.65	2016
5.49	5.52	5.54	5.57	5.59	5.62	5.65	5.67	5.70	5.72	5.75	5.77	5.80	5.82	5.85	5.85	2017
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2018
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2019
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2020
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2021
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2022
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2023
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2024
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2025
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2026
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2027
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2028
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2029
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2030
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2031
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2032
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2033
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2034
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2035
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2036
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2037
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2038
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2039
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2040
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2041
5.53	5.55	5.58	5.60	5.63	5.65	5.68	5.70	5.73	5.75	5.78	5.80	5.83	5.85	5.88	5.88	2042

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 7
BPA FY 2013 BPA Borrowing Rate - Coupon Scale-Down Redemption Premium 1/

Fiscal Years 2013-2042
 (continued on next page)

<u>Maturity</u>															
<u>Year</u>	<u>1 Year</u>	<u>2 Year</u>	<u>3 Year</u>	<u>4 Year</u>	<u>5 Year</u>	<u>6 Year</u>	<u>7 Year</u>	<u>8 Year</u>	<u>9 Year</u>	<u>10 Year</u>	<u>11 Year</u>	<u>12 Year</u>	<u>13 Year</u>	<u>14 Year</u>	<u>15 Year</u>
2013	0.42	0.75	1.15	1.56	1.96	2.30	2.63	2.96	3.29	3.63	3.71	3.79	3.88	3.96	4.05
2014	0.63	1.03	1.46	1.88	2.31	2.65	2.99	3.32	3.66	4.00	4.07	4.15	4.22	4.30	4.38
2015	2.05	2.42	2.76	3.10	3.44	3.72	4.00	4.28	4.56	4.83	4.89	4.94	5.00	5.05	5.10
2016	3.75	3.99	4.20	4.40	4.60	4.75	4.90	5.05	5.20	5.35	5.39	5.44	5.48	5.52	5.56
2017	4.32	4.50	4.66	4.82	4.98	5.09	5.20	5.30	5.41	5.52	5.56	5.59	5.63	5.67	5.70
2018	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2019	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2020	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2021	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2022	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2023	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2024	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2025	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2026	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2027	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2028	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2029	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2030	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2031	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2032	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2033	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2034	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2035	4.37	4.55	4.71	4.87	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2036	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2037	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2038	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2039	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2040	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2041	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76
2042	4.37	4.55	4.71	4.86	5.02	5.13	5.24	5.35	5.47	5.58	5.61	5.65	5.69	5.73	5.76

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 7
 BPA FY 2013 BPA Borrowing Rate - Coupon Scale-Down Redemption Premium 1/

Fiscal Years 2013-2042

<u>Maturity</u>																
<u>16 Year</u>	<u>17 Year</u>	<u>18 Year</u>	<u>19 Year</u>	<u>20 Year</u>	<u>21 Year</u>	<u>22 Year</u>	<u>23 Year</u>	<u>24 Year</u>	<u>25 Year</u>	<u>26 Year</u>	<u>27 Year</u>	<u>28 Year</u>	<u>29 Year</u>	<u>30 Year</u>	<u>50 Year</u>	<u>Year</u>
4.13	4.22	4.30	4.38	4.47	4.55	4.64	4.72	4.81	4.89	4.97	5.06	5.14	5.23	5.31	5.31	2013
4.45	4.53	4.60	4.68	4.75	4.83	4.91	4.98	5.06	5.13	5.21	5.28	5.36	5.44	5.51	5.51	2014
5.16	5.21	5.26	5.32	5.37	5.43	5.48	5.53	5.59	5.64	5.69	5.75	5.80	5.86	5.91	5.91	2015
5.61	5.65	5.69	5.73	5.78	5.82	5.86	5.90	5.95	5.99	6.03	6.07	6.12	6.16	6.20	6.20	2016
5.74	5.77	5.81	5.85	5.88	5.92	5.96	5.99	6.03	6.07	6.10	6.14	6.18	6.21	6.25	6.25	2017
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2018
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2019
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2020
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2021
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2022
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2023
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2024
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2025
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2026
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2027
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2028
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2029
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2030
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2031
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2032
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2033
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2034
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2035
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2036
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2037
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2038
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2039
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2040
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2041
5.80	5.84	5.88	5.91	5.95	5.99	6.03	6.06	6.10	6.14	6.18	6.21	6.25	6.29	6.33	6.33	2042

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 8
BPA FY 2013 BPA Borrowing Rate - Callable at Par 1/

Fiscal Years 2013-2042
 (continued on next page)

Maturity

<u>Year</u>	<u>1 Year</u>	<u>2 Year</u>	<u>3 Year</u>	<u>4 Year</u>	<u>5 Year</u>	<u>6 Year</u>	<u>7 Year</u>	<u>8 Year</u>	<u>9 Year</u>	<u>10 Year</u>	<u>11 Year</u>	<u>12 Year</u>	<u>13 Year</u>	<u>14 Year</u>	<u>15 Year</u>
2013	0.45	0.81	1.24	1.68	2.11	2.48	2.84	3.20	3.56	3.93	4.01	4.09	4.18	4.26	4.35
2014	0.65	1.08	1.53	1.98	2.44	2.80	3.16	3.52	3.89	4.25	4.32	4.40	4.47	4.55	4.63
2015	2.07	2.46	2.82	3.18	3.54	3.84	4.14	4.44	4.74	5.03	5.09	5.14	5.20	5.25	5.30
2016	3.77	4.03	4.25	4.47	4.69	4.86	5.02	5.19	5.36	5.52	5.56	5.61	5.65	5.69	5.73
2017	4.34	4.54	4.71	4.89	5.06	5.19	5.31	5.44	5.56	5.69	5.72	5.76	5.80	5.83	5.87
2018	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2019	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2020	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2021	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2022	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2023	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2024	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2025	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2026	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2027	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2028	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2029	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2030	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2031	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2032	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2033	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2034	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2035	4.38	4.58	4.75	4.93	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2036	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2037	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2038	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2039	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2040	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2041	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90
2042	4.38	4.58	4.75	4.92	5.10	5.22	5.35	5.47	5.60	5.73	5.76	5.80	5.83	5.87	5.90

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 8
BPA FY 2013 BPA Borrowing Rate - Callable at Par 1/

Fiscal Years 2013-2042

<u>Maturity</u>																
<u>16 Year</u>	<u>17 Year</u>	<u>18 Year</u>	<u>19 Year</u>	<u>20 Year</u>	<u>21 Year</u>	<u>22 Year</u>	<u>23 Year</u>	<u>24 Year</u>	<u>25 Year</u>	<u>26 Year</u>	<u>27 Year</u>	<u>28 Year</u>	<u>29 Year</u>	<u>30 Year</u>	<u>50 Year</u>	<u>Year</u>
4.43	4.52	4.60	4.68	4.77	4.85	4.94	5.02	5.11	5.19	5.27	5.36	5.44	5.53	5.61	5.61	2013
4.70	4.78	4.85	4.93	5.00	5.08	5.16	5.23	5.31	5.38	5.46	5.53	5.61	5.69	5.76	5.76	2014
5.36	5.41	5.46	5.52	5.57	5.63	5.68	5.73	5.79	5.84	5.89	5.95	6.00	6.06	6.11	6.11	2015
5.78	5.82	5.86	5.90	5.95	5.99	6.03	6.07	6.12	6.16	6.20	6.24	6.29	6.33	6.37	6.37	2016
5.90	5.94	5.97	6.01	6.04	6.08	6.12	6.15	6.19	6.22	6.26	6.29	6.33	6.36	6.40	6.40	2017
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2018
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2019
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2020
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2021
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2022
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2023
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2024
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2025
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2026
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2027
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2028
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2029
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2030
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2031
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2032
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2033
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2034
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2035
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2036
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2037
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2038
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2039
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2040
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2041
5.94	5.97	6.01	6.04	6.08	6.11	6.15	6.18	6.22	6.25	6.29	6.32	6.36	6.39	6.43	6.43	2042

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 9

BPA FY 2012 Third-Party Taxable Borrowing Rate Forecast 1/

Fiscal Years 2012-2041

(continued on next page)

Maturity

<u>Year</u>	<u>1 Year</u>	<u>2 Year</u>	<u>3 Year</u>	<u>4 Year</u>	<u>5 Year</u>	<u>6 Year</u>	<u>7 Year</u>	<u>8 Year</u>	<u>9 Year</u>	<u>10 Year</u>	<u>11 Year</u>	<u>12 Year</u>	<u>13 Year</u>	<u>14 Year</u>	<u>15 Year</u>
2013	0.57	0.74	1.07	1.41	1.74	2.03	2.32	2.61	2.90	3.19	3.27	3.35	3.43	3.51	3.59
2014	0.92	1.10	1.49	1.88	2.27	2.60	2.92	3.24	3.56	3.89	3.97	4.05	4.13	4.21	4.29
2015	3.39	2.91	3.19	3.47	3.75	4.01	4.27	4.53	4.79	5.04	5.11	5.17	5.23	5.30	5.36
2016	4.34	4.23	4.41	4.59	4.77	4.92	5.06	5.21	5.35	5.50	5.54	5.58	5.62	5.67	5.71
2017	4.54	4.60	4.76	4.92	5.09	5.20	5.32	5.44	5.56	5.67	5.71	5.75	5.78	5.82	5.86
2018	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2019	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2020	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2021	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2022	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2023	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2024	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2025	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2026	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2027	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2028	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2029	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2030	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2031	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2032	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2033	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2034	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2035	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2036	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2037	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2038	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2038	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2040	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2041	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89
2042	4.58	4.64	4.80	4.96	5.12	5.24	5.36	5.48	5.60	5.71	5.75	5.79	5.82	5.86	5.89

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 9
BPA FY 2012 Third-Party Taxable Borrowing Rate Forecast 1/

Fiscal Years 2012-2041

<u>Maturity</u>																
<u>16 Year</u>	<u>17 Year</u>	<u>18 Year</u>	<u>19 Year</u>	<u>20 Year</u>	<u>21 Year</u>	<u>22 Year</u>	<u>23 Year</u>	<u>24 Year</u>	<u>25 Year</u>	<u>26 Year</u>	<u>27 Year</u>	<u>28 Year</u>	<u>29 Year</u>	<u>30 Year</u>	<u>50 Year</u>	<u>Year</u>
3.67	3.75	3.83	3.91	3.99	4.07	4.15	4.23	4.31	4.38	4.46	4.54	4.62	4.70	4.78	4.78	2013
4.37	4.44	4.52	4.60	4.68	4.76	4.84	4.92	5.00	5.08	5.16	5.24	5.32	5.40	5.48	5.48	2014
5.42	5.49	5.55	5.62	5.68	5.74	5.81	5.87	5.93	6.00	6.06	6.12	6.19	6.25	6.31	6.31	2015
5.75	5.80	5.84	5.88	5.93	5.97	6.01	6.05	6.10	6.14	6.18	6.23	6.27	6.31	6.35	6.35	2016
5.89	5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.19	6.22	6.26	6.30	6.33	6.37	6.41	6.41	2017
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2018
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2019
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2020
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2021
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2022
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2023
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2024
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2025
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2026
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2027
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2028
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2029
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2030
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2031
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2032
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2033
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2034
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2035
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2036
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2037
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2038
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2038
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2040
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2041
5.93	5.97	6.00	6.04	6.08	6.11	6.15	6.18	6.22	6.26	6.29	6.33	6.37	6.40	6.44	6.44	2042

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 10
BPA FY 2012 Third-Party Tax-Exempt Borrowing Rate Forecast 1/

Fiscal Years 2012-2041
 (continued on next page)

Maturity

Year	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	11 Year	12 Year	13 Year	14 Year	15 Year
2013	0.38	0.55	0.77	1.00	1.23	1.45	1.67	1.89	2.11	2.33	2.39	2.46	2.52	2.58	2.65
2014	0.55	0.78	1.04	1.31	1.58	1.83	2.07	2.32	2.57	2.81	2.88	2.94	3.00	3.06	3.12
2015	1.73	1.94	2.15	2.36	2.56	2.78	2.99	3.21	3.42	3.64	3.69	3.74	3.79	3.84	3.89
2016	2.70	2.85	2.99	3.13	3.27	3.41	3.54	3.68	3.81	3.95	3.99	4.03	4.06	4.10	4.14
2017	3.00	3.11	3.23	3.36	3.49	3.60	3.72	3.84	3.96	4.07	4.11	4.14	4.18	4.21	4.24
2018	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2019	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2020	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2021	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2022	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2023	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2024	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2025	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2026	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2027	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2028	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2029	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2030	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2031	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2032	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2033	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2034	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2035	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2036	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2037	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2038	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2038	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2040	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2041	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27
2042	3.03	3.13	3.26	3.39	3.51	3.63	3.75	3.87	3.99	4.10	4.14	4.17	4.20	4.24	4.27

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 10
 BPA FY 2012 Third-Party Tax-Exempt Borrowing Rate Forecast 1/

Fiscal Years 2012-2041

Maturity

<u>16 Year</u>	<u>17 Year</u>	<u>18 Year</u>	<u>19 Year</u>	<u>20 Year</u>	<u>21 Year</u>	<u>22 Year</u>	<u>23 Year</u>	<u>24 Year</u>	<u>25 Year</u>	<u>26 Year</u>	<u>27 Year</u>	<u>28 Year</u>	<u>29 Year</u>	<u>30 Year</u>	<u>50 Year</u>	<u>Year</u>
2.71	2.77	2.83	2.90	2.96	3.02	3.09	3.15	3.21	3.27	3.34	3.40	3.46	3.52	3.59	3.59	2013
3.18	3.24	3.31	3.37	3.43	3.49	3.55	3.61	3.67	3.74	3.80	3.86	3.92	3.98	4.04	4.04	2014
3.94	3.99	4.04	4.09	4.14	4.19	4.24	4.29	4.34	4.39	4.45	4.50	4.55	4.60	4.65	4.65	2015
4.18	4.21	4.25	4.29	4.33	4.36	4.40	4.44	4.48	4.51	4.55	4.59	4.63	4.66	4.70	4.70	2016
4.28	4.31	4.34	4.38	4.41	4.44	4.48	4.51	4.55	4.58	4.61	4.65	4.68	4.71	4.75	4.75	2017
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2018
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2019
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2020
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2021
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2022
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2023
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2024
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2025
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2026
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2027
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2028
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2029
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2030
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2031
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2032
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2033
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2034
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2035
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2036
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2037
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2038
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2038
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2040
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2041
4.30	4.34	4.37	4.40	4.44	4.47	4.50	4.54	4.57	4.60	4.64	4.67	4.70	4.74	4.77	4.77	2042

1\Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 11
BPA FY 2013 FERC Borrowing Rate (Bank Prime) Forecast 1/

Calendar/Fiscal Years 2013-2042

<u>Year</u>	<u>A</u> <u>FERC Rate</u> <u>Calendar Year</u>	<u>B</u> <u>FERC Rate</u> <u>Fiscal Year</u>
2013	3.25	3.25
2014	3.32	3.30
2015	4.81	4.44
2016	6.67	6.20
2017	7.00	6.92
2018	7.00	7.00
2019	7.00	7.00
2020	7.00	7.00
2021	7.00	7.00
2022	7.00	7.00
2023	7.00	7.00
2024	7.00	7.00
2025	7.00	7.00
2026	7.00	7.00
2027	7.00	7.00
2028	7.00	7.00
2029	7.00	7.00
2030	7.00	7.00
2031	7.00	7.00
2032	7.00	7.00
2033	7.00	7.00
2034	7.00	7.00
2035	7.00	7.00
2036	7.00	7.00
2037	7.00	7.00
2038	7.00	7.00
2039	7.00	7.00
2040	7.00	7.00
2041	7.00	7.00
2042	7.00	7.00

1/ Global Insight: The U.S. Economy: 30-Year Focus, September 2012
Forecast, Base Case.

Table 12

BPA FY 2013 May 3-Month LIBOR Rate Forecast 1/

Calendar/Fiscal Years 2013-2042

<u>Year</u>	<u>A</u> 3-Mo LIBOR <u>Calendar Year</u>	<u>B</u> 3-Mo LIBOR <u>Fiscal Year</u>
2013	0.45	0.45
2014	0.58	0.55
2015	2.10	1.72
2016	3.95	3.49
2017	4.25	4.17
2018	4.25	4.25
2019	4.25	4.25
2020	4.25	4.25
2021	4.25	4.25
2022	4.25	4.25
2023	4.25	4.25
2024	4.25	4.25
2025	4.25	4.25
2026	4.25	4.25
2027	4.25	4.25
2028	4.25	4.25
2029	4.25	4.25
2030	4.25	4.25
2031	4.25	4.25
2032	4.25	4.25
2033	4.25	4.25
2034	4.25	4.25
2035	4.25	4.25
2036	4.25	4.25
2037	4.25	4.25
2038	4.25	4.25
2039	4.25	4.25
2040	4.25	4.25
2041	4.25	4.25
2042	4.25	4.25

1/ Global Insight: The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

Table 13
Comparison of FY 2013 Inflation Forecast Components
 Calendar/Fiscal Year Forecasts 2013 vs. 2012

Calendar/Fiscal Years 2013-2042

YEAR	A	B	C	D	E	F	G
	CY 2013 1/ Calendar Year GDP Price Deflator (%)	FY 2013 1/ Fiscal Year GDP Price Deflator (%)	FY 2013 2/ Fiscal Year Cumulative Price Deflator (Base Year 2012)	FY 2012 3/ Fiscal Year FY Price Deflator (%)	FY 2012 3/ Fiscal Year FY Cumulative Price Deflator (Base Year 2011)	Change in the FY Price Deflator (B-D)	Change in the FY Cumulative Price Deflator (C-E)
2013	1.78%	1.78%	1.009	1.32%	1.018	0.45%	-0.009
2014	1.54%	1.60%	1.027	1.76%	1.032	-0.16%	-0.005
2015	1.61%	1.59%	1.044	1.88%	1.050	-0.29%	-0.006
2016	1.65%	1.64%	1.060	1.88%	1.070	-0.23%	-0.009
2017	1.60%	1.61%	1.078	1.83%	1.090	-0.22%	-0.012
2018	1.68%	1.66%	1.095	1.76%	1.110	-0.10%	-0.015
2019	1.63%	1.64%	1.113	1.69%	1.129	-0.05%	-0.016
2020	1.67%	1.66%	1.132	1.65%	1.148	0.01%	-0.017
2021	1.71%	1.70%	1.150	1.63%	1.167	0.07%	-0.017
2022	1.74%	1.74%	1.170	1.66%	1.186	0.08%	-0.016
2023	1.74%	1.74%	1.190	1.67%	1.206	0.07%	-0.016
2024	1.71%	1.72%	1.211	1.67%	1.226	0.05%	-0.015
2025	1.71%	1.71%	1.232	1.68%	1.247	0.03%	-0.015
2026	1.72%	1.72%	1.253	1.71%	1.268	0.01%	-0.015
2027	1.73%	1.73%	1.274	1.72%	1.289	0.01%	-0.015
2028	1.74%	1.74%	1.296	1.73%	1.312	0.01%	-0.015
2029	1.79%	1.78%	1.319	1.76%	1.334	0.02%	-0.015
2030	1.81%	1.80%	1.343	1.77%	1.358	0.03%	-0.015
2031	1.85%	1.84%	1.367	1.81%	1.382	0.02%	-0.015
2032	1.82%	1.83%	1.392	1.82%	1.407	0.01%	-0.015
2033	1.81%	1.82%	1.417	1.81%	1.432	0.00%	-0.015
2034	1.83%	1.83%	1.443	1.83%	1.458	0.00%	-0.015
2035	1.82%	1.82%	1.469	1.80%	1.485	0.03%	-0.016
2036	1.83%	1.82%	1.496	1.75%	1.512	0.08%	-0.015
2037	1.84%	1.84%	1.523	1.73%	1.538	0.11%	-0.015
2038	1.86%	1.85%	1.551	1.74%	1.565	0.11%	-0.013
2039	1.86%	1.86%	1.580	1.76%	1.592	0.09%	-0.012
2040	1.84%	1.85%	1.609	1.76%	1.620	0.09%	-0.010
2041	1.85%	1.85%	1.639	1.76%	1.648	0.09%	-0.009
2042	1.85%	1.85%	1.670				

1/ BPA FY 2013 Forecast: Global Insight CY 2012.Q3 long-term outlook. The U.S. Economy: 30-Year Focus, September 2012 Forecast, Base Case.

2/ Fiscal Year Cumulative Price Deflator escalates to midyear dollars. The first year, 2013, is determined as follows: $1.009 = \{(1.78/100)^{.5}\} + 1$. An example of subsequent year cumulative growth such as in 2014 is found as: $1.027 = \{1 + (1.604/100)\} * 1.009$

3/ Global Insight The U.S. Economy: 30-year Focus, September 2011 Forecast, Base Case.

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7. HISTORICAL AND PROJECTED NEW BONDS ISSUED TO TREASURY

7.1 Purpose

This chapter documents all the bonds that BPA has issued and those it projects it will issue to the U.S. Treasury to finance capital investments.

7.2 Method

New long-term debt consists of bonds issued by BPA to Treasury reflecting projected outlays for BPA transmission, construction, and environmental programs during the cost evaluation period (FY 2013–2015). All bonds projected for issuance are entered into the projected portions of the repayment study.

New bonds projected to be issued for the cost evaluation period are based on Integrated Program Review capital program outlays.

TABLE 7-1: PROJECTED FEDERAL BORROWING FOR FY 2013 - 2015
(\$000s)

	A	B	C	D	E
	FISCAL YEAR	DESCRIPTION	INTEREST RATE	TERM	TOTAL BORROWING
1	2013	Environment	3.10%	15	540
2		Environment	3.10%	15	510
3		Environment	5.00%	15	5,000
4		Construction	1.10%	6	8,700
5		Construction	1.80%	6	10,500
6		Construction	1.80%	6	13,650
7		Construction	5.70%	30	55,000
8		Construction	6.00%	30	30,000
9		Construction	6.00%	30	15,000
10		Construction	6.00%	30	18,000
11		Construction	4.10%	30	42,110
12		Construction	4.10%	30	39,950
13		Construction	4.10%	30	42,110
14		Construction	4.10%	30	40,010
15		Construction	4.10%	30	60,016
16		Construction	4.10%	30	<u>66,330</u>
17					447,426
18					
19	2014	Environment	4.40%	15	780
20		Environment	3.60%	15	1,250
21		Environment	3.60%	15	1,430
22		Environment	3.60%	15	1,920
23		Construction	2.20%	6	5,260
24		Construction	2.20%	6	6,140
25		Construction	2.20%	6	5,640
26		Construction	2.20%	6	6,540
27		Construction	4.50%	30	28,630
28		Construction	4.50%	30	20,040
29		Construction	4.50%	30	40,700
30		Construction	4.50%	30	48,470
31		Construction	4.50%	30	49,700
32		Construction	4.50%	30	45,810

TABLE 7-1: PROJECTED FEDERAL BORROWING FOR FY 2013 - 2015
(\$000s)

	A	B	C	D	E
	FISCAL YEAR	DESCRIPTION	INTEREST RATE	TERM	TOTAL BORROWING
33		Construction	4.50%	30	55,830
34		Construction	4.50%	30	52,970
35		Construction	4.50%	30	55,830
36		Construction	4.50%	30	53,170
37		Construction	4.50%	30	79,760
38		Construction	4.50%	30	<u>87,940</u>
39					647,810
40					
41	2015	Environment	4.40%	15	780
42		Environment	4.40%	15	1,250
43		Environment	4.40%	15	1,430
44		Environment	4.40%	15	1,920
45		Construction	3.30%	6	5,390
46		Construction	3.30%	6	6,290
47		Construction	3.30%	6	5,780
48		Construction	3.30%	6	6,700
49		Construction	5.10%	30	27,530
50		Construction	5.10%	30	19,270
51		Construction	5.10%	30	39,140
52		Construction	5.10%	30	46,610
53		Construction	5.10%	30	47,790
54		Construction	5.10%	30	44,050
55		Construction	5.10%	30	53,690
56		Construction	5.10%	30	50,940
57		Construction	5.10%	30	53,690
58		Construction	5.10%	30	51,130
59		Construction	5.10%	30	76,700
60		Construction	5.10%	30	<u>84,570</u>
61					624,650

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8. NON-FEDERAL PAYMENT OBLIGATIONS

8.1 Introduction

There are two forms of non-Federal payment obligations associated with transmission assets in this rate proposal. One is a lease-purchase arrangement for capitalized asset purchases. The other is the functional reassignment to transmission of debt service payment obligations associated with non-Federal, Energy Northwest (EN) bonds.

8.2 Capital Leases

BPA entered into a lease-purchase agreement with the Northwest Infrastructure Financing Corporation (NIFC) to provide for the construction of the 500-kV Schultz-Wautoma transmission line. Since the completion of that project, BPA has entered into additional lease-purchase agreements with other NIFC entities and the Port of Morrow for other capital projects. The resulting payment streams are treated as debt service in the repayment study. BPA also has several legacy capital leases such as those for the Teton-Swan Valley and the Goshen-Drummond lines. Table 8-1 displays the consolidated payment stream.

Table 8-1: Lease-Purchase Payment Stream

(\$000s)

		A	B	C
		Lease Financing	Port of Morrow	Other Capital Leases
1	2013	20,261	3,082	4,784
2	2014	24,263	3,320	4,737
3	2015	28,306	3,831	4,739
4	2016	32,048	4,079	4,742
5	2017	35,632	4,110	4,743
6	2018	35,630	4,111	4,704
7	2019	41,016	4,111	4,495
8	2020	42,857	5,357	4,471
9	2021	42,819	5,966	4,164
10	2022	42,810	6,030	3,091
11	2023	42,818	6,030	2,973
12	2024	42,866	6,029	2,972
13	2025	42,828	6,028	2,976
14	2026	42,820	6,027	2,976
15	2027	42,828	6,027	2,977
16	2028	42,877	6,026	2,966
17	2029	42,840	6,025	2,936
18	2030	42,832	6,024	2,920
19	2031	47,347	6,023	2,921
20	2032	48,614	6,022	2,922
21	2033	137,892	6,021	2,923
22	2034	72,812	6,020	2,924
23	2035	40,910	6,019	2,925
24	2036	36,068	10,281	2,926
25	2037	184,436	11,570	2,928
26	2038	150,620	11,261	2,929
27	2039	43,090	10,908	2,930
28	2040	46,085	10,556	2,931
29	2041	212,233	17,264	2,933
30	2042	38,623	93,268	2,934
31	2043	-	3,990	2,463
32	2044	-	106	286
33	Total	1,747,081	291,522	106,241

8.3 Debt Service Reassignment

Debt Service Reassignment (DSR) is an accounting and ratemaking mechanism created to make full use of the Debt Optimization Program (DOP). It allows the use of cash flows generated by DOP actions for advanced amortization payments of transmission debt. In return, DSR ensures that Transmission revenues repay the full cost of the associated EN debt.

Under DOP, the proceeds from EN refinancing bonds are used to pay principal on the currently maturing EN bonds in a given fiscal year. Since BPA power rates were set to recover the originally expected EN principal payments on the maturing bonds, and the associated debt service requirement was expected to decrease the EN budget (when the principal was paid from the proceeds of the newly issued refinancing bonds), funds in the BPA Fund then became available for other purposes. The amount made available equals the principal of the amortized EN bonds. BPA uses these funds to amortize Federal obligations associated with generation and transmission assets ahead of schedule, thereby replenishing or creating future opportunities to replenish BPA's available Treasury borrowing authority.

DSR is applicable when BPA uses the funds made available from DOP to early-amortize Federal Transmission obligations. The stream of annual all-in costs from the DSR transaction is assigned to Transmission Services and recovered in transmission rates. The all-in costs include debt service on tax-exempt and taxable bonds and other costs associated with the DSR transaction, which are described later. Conversely, the costs attached to these EN refinancing bonds are no longer assigned for recovery from Power revenues.

The next section is an explanation of how the debt service stream associated with DSR is calculated. The allocation of DOP cash flows to transmission and generation can be different each fiscal year. For illustration purposes, the following explanation of the process for determining the transmission payment obligation uses data from the 2008 EN bond issuance.

8.4 Calculation of Debt Service Reassignment

Prior to calculating the transmission DSR obligation, two sets of data are required. First, the final pricing data from the EN refunding forms the basis of all calculations. Second, the amount of debt service assigned to the transmission function for repayment is determined based on the allocation of the Federal principal payment between transmission and generation.

Step 1: Determine the Total Base Debt Service. The total debt service is the sum of the debt service on the newly issued EN bonds assigned to Transmission plus the transaction costs associated with the issuance of the bonds, as shown on Table 8-2.

Table 8-2: Base Debt Service for Transmission

EN	Fiscal Year	A New EN Bonds		C Transaction Costs		E		F Total	G
		Principal	Interest	Principal	Interest	Principal	Interest	Total	
1	2010	-	8,033,890	-	107,845	-	-	8,141,735	8,141,735
2	2011	-	6,633,488	-	89,046	-	-	6,722,534	6,722,534
3	2012	-	6,633,488	-	89,046	-	-	6,722,534	6,722,534
4	2013	-	6,633,488	-	89,046	-	-	6,722,534	6,722,534
5	2014	41,650,000	6,633,488	1,940,000	89,046	43,590,000	-	6,722,534	50,312,534
6	2015	79,175,000	4,908,088	-	-	79,175,000	-	4,908,088	84,083,088
7	2016	10,000,000	1,098,950	-	-	10,000,000	-	1,098,950	11,098,950
8	2017	5,000,000	662,200	-	-	5,000,000	-	662,200	5,662,200
9	2018	10,000,000	412,200	-	-	10,000,000	-	412,200	10,412,200
10	Total	145,825,000	41,649,278	1,940,000	464,029	147,765,000	-	42,113,307	189,878,307

Step 2: Convert the Base Debt Service to BPA Fiscal Years. The debt service on the newly issued EN bonds is based on the EN July-June fiscal year. The debt service stream is converted into BPA’s October-September fiscal year, as shown on Table 8-3.

Table 8-3: Convert to BPA Fiscal Year

EN	Fiscal Year	BPA FY Conversion		
		A Principal	B Interest	C Total
1	2010	-	2,288,538	2,288,538
2	2011	-	1,234,621	1,234,621
3	2012	-	1,234,621	1,234,621
4	2013	1,912,118	1,234,621	3,146,739
5	2014	7,046,351	1,228,800	8,275,151
6	2015	6,429,992	1,183,240	7,613,233
7	2016	8,750,000	989,763	9,739,763
8	2017	6,250,000	599,700	6,849,700
9	2018	7,500,000	309,150	7,809,150
10	Total	37,888,462	10,303,054	48,191,516

Step 3: Calculate the “Carrying Charge” and “Taxable Note Charge.” The “carrying charge” and “taxable note charge” are necessary because the debt service expense on the newly issued EN bonds begins on July 1, but Transmission’s Federal principal payment is not made until September 30. On October 1, the day after the Federal payment has been made, all debt service and other costs associated with DSR are assigned to Transmission. The carrying charge is the interest accrued and debt service payments made from July 1 to October 1. The interest accrued portion of the carrying charge is calculated by multiplying the sum of the Federal Transmission principal retired and the EN transaction costs by one-twelfth of BPA’s weighted average cost of capital, then compounding this monthly amount for three months. The carrying charge is treated like a bond with interest at BPA’s weighted average cost of capital and spread on a pro-rata basis through the final maturities of the newly issued EN bonds. The taxable note charge represents the interest costs associated with a loan taken out by EN in order to facilitate the refinancing of EN debt on a tax-exempt basis. The taxable note charge is spread using the same methodology as is used for the carrying charge. The carrying charge and taxable note charge are reflected in Table 8-4.

Step 4: Calculate the Total Payment Obligation for Transmission. The total payment obligation for Transmission is the sum of the base debt service converted from an EN fiscal year to a BPA fiscal year in Table 8-3, the carrying charge, and the taxable note charge, as shown on Table 8-4.

Table 8-4: Total Payment Obligation

EN Fiscal Year	A Carrying Charge		C Taxable Note Charge		E Total Payment Obligation		G Total
	Principal	Interest	Principal	Interest	Principal	Interest	
1 2010	-	30,636	-	-	-	2,319,174	2,319,174
2 2011	-	30,636	-	-	-	1,265,257	1,265,257
3 2012	-	30,636	-	-	-	1,265,257	1,265,257
4 2013	28,213	30,636	-	-	1,940,331	1,265,257	3,205,588
5 2014	103,969	29,090	-	-	7,150,320	1,257,890	8,408,210
6 2015	94,875	23,392	-	-	6,524,867	1,206,632	7,731,499
7 2016	129,107	18,193	-	-	8,879,107	1,007,955	9,887,062
8 2017	92,219	11,118	-	-	6,342,219	610,818	6,953,037
9 2018	110,663	6,064	-	-	7,610,663	315,214	7,925,877
10 Total	559,045	210,400	-	-	38,447,507	10,513,454	48,960,961

Step 5: Reshape the Debt Service. The total principal payment obligation is reshaped to equal the total Federal Transmission principal retired in advance due to DSR. The EN principal maturing can differ from the principal on the newly issued EN bonds because municipal bonds are often sold at a premium or discount, based on the market conditions at the time of the sale. With premium bonds, a lower aggregate par amount is issued to pay off the maturing bonds. The opposite is true with discount bonds. BPA made a policy decision that requires the DSR-related Transmission principal obligation to equal the amount of Federal Transmission principal repaid due to DSR.

The calculation of the EN bonds increases or decreases the total principal payments, with corresponding changes to interest. The principal is proportionately recalculated using the ratio of annual principal payments to the total, displayed previously in Table 8-4. The EN principal maturities that were issued at a premium or a discount are adjusted on a pro-rata basis to equal the total amount of Federal Transmission principal repaid. The Solver function in Microsoft Excel 2003® (Excel) is used to calculate the new interest stream for the adjusted principal. The total debt service does not change. See Table 8-5.

Table 8-5: Calculate the Debt Service

	EN Fiscal Year	A	B	C
		Principal	Transmission DSR Interest	Total
1	2010	-	1,304,780	1,304,780
2	2011	-	1,304,780	1,304,780
3	2012	-	1,304,780	1,304,780
4	2013	2,018,681	1,304,780	3,323,461
5	2014	7,439,047	1,238,932	8,677,979
6	2015	6,788,338	996,274	7,784,612
7	2016	9,237,641	774,841	10,012,482
8	2017	6,598,315	473,514	7,071,829
9	2018	7,917,978	258,280	8,176,258
10	Total	40,000,000	8,960,961	48,960,961

Refinancing for Savings. Since DOP, EN and BPA have done traditional refinancing for savings, which included bonds that had been issued as part of DOP, providing a benefit to both Power and Transmission through debt service savings. As a part of these issuances, taxable portions were also attributed to Transmission to pay for the bond issuance costs incurred through the financing. When a refinancing for savings effects bonds issued as part of DOP, all savings for those bonds are attributed to interest for the purposes of the DSR bonds. For illustration purposes, the following uses data from the 2011 EN bond issuance to demonstrate savings attributed to Transmission.

Table 8-6: Refinancing for Savings Impact to Transmission’s DSR Obligation

	EN Fiscal Year	A B C		
		Refinancing for Savings Impact		
		Principal	Interest	Total
1	2011	-	154,323	154,323
2	2012	-	(573,960)	(573,960)
3	2013	-	(798,710)	(798,710)
4	2014	-	(798,547)	(798,547)
5	2015	-	(800,064)	(800,064)
6	2016	-	(798,591)	(798,591)
7	2017	-	(592,204)	(592,204)
8	2018	-	141,572	141,572
9	2019	-	378,991	378,991
	Total	-	(3,687,190)	(3,687,190)

Transmission’s total DSR payment obligation and the related relief of Generation’s payment obligations are shown in Table 8-7. Transmission’s total principal obligation can be higher or lower than the total principal relief for Generation if premium or discount bonds are issued.

Table 8-7: FY 2003–2009 Relief of Generation & Transmission’s DSR Obligation

BPA FY	A Relief of Generation Obligation			D Transmission DSR Payment Obligation		
	Principal	Interest	Total	Principal	Interest	Total
	2004	-	16,418,815	16,418,815	-	15,227,105
1 2005	-	27,558,861	27,558,861	-	25,380,111	25,380,111
2 2006	-	35,834,302	35,834,302	-	32,802,639	32,802,639
3 2007	674,279	45,866,305	46,540,584	715,562	42,574,359	43,289,921
4 2008	4,270,748	57,123,915	61,394,663	4,510,058	51,137,080	55,647,138
5 2009	9,949,905	61,873,003	71,822,908	10,407,168	55,971,071	66,378,239
6 2010	11,769	62,518,250	62,530,019	11,965	56,780,635	56,792,600
7 2011	147,244	61,618,043	61,765,286	153,700	56,934,386	57,088,085
8 2012	39,286,733	59,498,146	98,784,879	41,117,683	54,657,776	95,775,458
9 2013	157,985,315	56,054,509	214,039,825	165,627,723	51,498,256	217,125,978
10 2014	166,422,937	46,396,082	212,819,019	175,093,490	44,123,337	219,216,827
11 2015	176,718,625	39,560,049	216,278,674	185,172,925	36,994,666	222,167,591
12 2016	176,521,125	32,408,051	208,929,176	185,370,455	28,741,629	214,112,083
13 2017	189,929,527	24,186,652	214,116,179	200,052,881	20,497,987	220,550,869
14 2018	183,299,124	14,607,025	197,906,149	191,648,503	12,308,978	203,957,481
15 2019	5,327,409	5,271,424	10,598,832	4,836,620	5,705,372	10,541,992
16 2020	19,267,636	5,011,368	24,279,004	19,588,444	4,881,472	24,469,916
17 2021	20,230,102	4,049,516	24,279,619	20,566,936	3,944,552	24,511,488
18 2022	21,238,338	3,039,618	24,277,956	21,591,959	2,960,830	24,552,789
19 2023	22,302,805	1,979,388	24,282,193	22,674,149	1,928,082	24,602,231
20 2024	17,347,934	866,019	18,213,953	17,636,779	843,571	18,480,350
21 Total	1,210,931,555	661,739,341	1,872,670,895	1,266,777,000	605,893,894	1,872,670,894

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9. REPAYMENT PERIOD REPLACEMENTS

9.1 Introduction

Consistent with the requirements of Department of Energy Order RA 6120.2, each repayment study includes funding for replacements to the transmission system during the repayment period. The purpose of these investments is to maintain the existing revenue-generating capability of the system. This schedule is expressed in midyear dollars for the study year and is assigned the interest rates of the projected long-term borrowing for the study year.

9.2 Transmission Replacements

BPA's Transmission replacement methodology combines the Iowa Curve methodology, the Handy-Whitman Index, and BPA's expected service lives of its assets to produce projected replacements through the cost evaluation period. The Iowa Curves are a set of curves with different shapes corresponding to how much of an initial asset survives as a function of time. They are described in the book "Statistical Analyses of Industrial Property Retirements" by Robley Winfrey, Bulletin 125 Revised, Engineering Research Institute, Iowa State University, April 1967. The specific curves are assigned to FERC Accounts in BPA's depreciation study.

BPA's total plant is analyzed, by FERC account and in-service date, and assigned the various FERC accounts Iowa Curves as determined by the depreciation study. A table from Winfrey's book, TABLE 22 – TOTAL RENEWALS FOR TYPE CURVES, tells what fraction of plant represented by a given curve will have to be replaced each tenth of a lifetime to maintain the initial plant. A data file with the contents of Table 22 accurate to 12 lifetimes is used in calculating repayment period transmission replacements. For each of the Iowa Curves, Table 22 identifies a percentage of plant to be replaced for each tenth of a lifetime.

The Handy-Whitman Index provides cost trends for electric, gas, telephone, and water utilities in geographical regions of generally similar characteristics. The Handy-Whitman Index numbers are widely used in the industry to trend original cost records to estimate reproduction cost at prices prevailing at a later date. The cost trends for each of the utilities are further subdivided by type of plant. In particular, the cost trends provided by the Index for electrical utilities include trends for total transmission plant and trends for the major FERC accounts within transmission plant. BPA uses the trends for individual FERC accounts when they are available. When the Handy-Whitman Index does not provide a cost trend for a specific account, BPA used the trends for total transmission plant.

To determine replacement costs, BPA also must determine the expected service life of its assets. BPA assigns most assets an expected service life based on its periodic depreciation studies. The service life determined by the depreciation studies reflects early retirements that may occur as a result of facility upgrades to expand the system for load growth and other system conditions. However, for assets that are more likely to be retired early to facilitate upgrades, replacements are based on the expected physical life of the asset, not on a lifetime that is shortened by early retirements. The purpose of repayment period replacements is to maintain the *existing* system's revenue-producing capability over the repayment period. These assets are retired early to

facilitate expansion of the system. If service life was used for determining replacements for these assets, we would be forecasting replacements for an expanded system and therefore overstating costs.

BPA has long assumed that transmission towers and fixtures (FERC Account 354) have an expected service life that matches their expected physical life of 100 years, despite the depreciation study assigning that account a service life of 65 years. For other accounts, this study uses the service life developed by the latest BPA depreciation study produced in 2012.

Transmission plant investment by FERC account and in-service year was obtained from BPA's plant investment records. Based on the year plant was placed in service and the year of the cost evaluation period being analyzed, BPA calculated the number of tenths of a lifetime since the plant was placed in service. The result was then indexed using the appropriate survival curve in Table 22 to identify the portion of plant that would be replaced in a given tenth of a lifetime. Next, the original plant investment was inflated to study-year dollars using the Handy-Whitman Index and BPA's inflation forecast. Projected plant investment was added for the rate period. The result was multiplied by the portion of plant that should be replaced, as indicated by Table 22, and the portion of the expected service life to yield a cost of replacement in the cost evaluation year for a given year's investment. The product is the replacement cost for FERC account and in-service year. Finally, these replacement costs were accumulated by future year and FERC account.

BPA's capital program includes a replacement program that recognizes that some historical plant is retired over time. If future replacements were calculated for the planned replacement program, a double counting would occur. Therefore, the projections for a cost evaluation year were reduced by the amount calculated for replacements for the same year. Future replacements were then calculated for only the remaining net initial investment of that year.

9.3 Replacement Credits

Replacement credits are calculated for two sets of customer-funded plant, the AC Intertie and facilities constructed for the dedicated use of a customer through the Projects Funded in Advance mechanism.

The cost evaluation period data for the AC Intertie is determined by multiplying the replacements for each account calculated for each year by the proportion of actual plant for that account that is attributed to the AC Intertie. The results are the future replacements for the total AC Intertie. These replacements are multiplied by the appropriate percentage representing the amount that will be allocated to the capacity owners to obtain the future contributions required from capacity owners. The future replacement costs for the cost evaluation period are included in the repayment study, and the associated contributions from capacity owners are also included as negative expenses.

BPA receives funds from customers for the construction of facilities that are dedicated to the use of those customers, known as Projects Funded in Advance (PFIA). Although the customer-financed facilities are BPA assets, the customer is responsible for the future cost of replacement of these facilities. As with the AC Intertie, BPA calculates the future replacement cost of customer-financed facilities. Because the customer will provide the upfront funding for the replacements, that funding is applied as a credit against future replacement costs in the repayment study. The replacement credit for these facilities is calculated as a percentage of the total replacement cost for each account based on the portion of plant in each account that has been funded through customer advances.

TABLE 9-1: FUTURE REPLACEMENTS FOR FY 2014				
(\$000s)				
		A	B	C
	FY	AMOUNT	RATE	DUE
1	2015	177,753	5.510%	2050
2	2016	185,811	5.510%	2051
3	2017	193,085	5.510%	2052
4	2018	199,431	5.510%	2053
5	2019	204,100	5.510%	2054
6	2020	210,564	5.510%	2055
7	2021	216,398	5.510%	2056
8	2022	221,403	5.510%	2057
9	2023	226,273	5.510%	2058
10	2024	230,147	5.510%	2059
11	2025	234,570	5.510%	2060
12	2026	237,736	5.510%	2061
13	2027	241,278	5.510%	2062
14	2028	244,918	5.510%	2063
15	2029	248,752	5.510%	2064
16	2030	253,103	5.510%	2065
17	2031	257,207	5.510%	2066
18	2032	261,465	5.510%	2067
19	2033	266,389	5.510%	2068
20	2034	271,374	5.510%	2069
21	2035	274,987	5.510%	2070
22	2036	279,135	5.510%	2071
23	2037	283,794	5.510%	2072
24	2038	288,220	5.510%	2073
25	2039	291,085	5.510%	2074
26	2040	295,065	5.510%	2075
27	2041	299,576	5.510%	2076
28	2042	303,690	5.510%	2077
29	2043	308,578	5.510%	2078
30	2044	312,135	5.510%	2079
31	2045	314,836	5.510%	2080
32	2046	318,263	5.510%	2081
33	2047	322,781	5.510%	2082
34	2048	326,031	5.510%	2083
35	2049	328,462	5.510%	2084

TABLE 9-2: FUTURE REPLACEMENTS FOR FY 2015				
(\$000s)				
		A	B	C
	FY	AMOUNT	RATE	DUE
1	2016	189,512	5.910%	2051
2	2017	196,922	5.910%	2052
3	2018	203,574	5.910%	2053
4	2019	208,629	5.910%	2054
5	2020	215,471	5.910%	2055
6	2021	221,414	5.910%	2056
7	2022	226,804	5.910%	2057
8	2023	232,252	5.910%	2058
9	2024	236,640	5.910%	2059
10	2025	241,160	5.910%	2060
11	2026	244,724	5.910%	2061
12	2027	248,878	5.910%	2062
13	2028	253,053	5.910%	2063
14	2029	256,959	5.910%	2064
15	2030	261,392	5.910%	2065
16	2031	265,934	5.910%	2066
17	2032	270,853	5.910%	2067
18	2033	276,407	5.910%	2068
19	2034	281,566	5.910%	2069
20	2035	285,629	5.910%	2070
21	2036	290,425	5.910%	2071
22	2037	295,659	5.910%	2072
23	2038	300,168	5.910%	2073
24	2039	303,420	5.910%	2074
25	2040	308,011	5.910%	2075
26	2041	313,067	5.910%	2076
27	2042	317,258	5.910%	2077
28	2043	322,295	5.910%	2078
29	2044	326,338	5.910%	2079
30	2045	329,605	5.910%	2080
31	2046	333,499	5.910%	2081
32	2047	338,102	5.910%	2082
33	2048	341,663	5.910%	2083
34	2049	344,541	5.910%	2084
35	2050	347,044	5.910%	2085

TABLE 9-3: REPLACEMENT CREDITS

(\$000s)

		A	B	C	D	E	F
		AC INTERTIE		PFIA		TOTAL	
		2014 STUDY	2015 STUDY	2014 STUDY	2015 STUDY	2014 STUDY	2015 STUDY
1	2015	(2,805,750)		(2,990,096)		(5,795,846)	-
2	2016	(2,936,212)	(2,994,790)	(3,100,396)	(3,162,712)	(6,036,608)	(6,157,502)
3	2017	(3,052,479)	(3,113,243)	(3,194,986)	(3,259,080)	(6,247,466)	(6,372,324)
4	2018	(3,152,347)	(3,218,463)	(3,276,502)	(3,345,748)	(6,428,849)	(6,564,211)
5	2019	(3,227,799)	(3,300,934)	(3,348,226)	(3,424,652)	(6,576,025)	(6,725,586)
6	2020	(3,330,806)	(3,410,668)	(3,456,239)	(3,539,687)	(6,787,045)	(6,950,356)
7	2021	(3,415,484)	(3,496,938)	(3,556,170)	(3,641,497)	(6,971,654)	(7,138,435)
8	2022	(3,486,719)	(3,574,938)	(3,642,665)	(3,735,269)	(7,129,384)	(7,310,207)
9	2023	(3,555,065)	(3,653,463)	(3,733,802)	(3,837,610)	(7,288,867)	(7,491,073)
10	2024	(3,610,607)	(3,717,840)	(3,817,376)	(3,931,330)	(7,427,984)	(7,649,169)
11	2025	(3,681,918)	(3,790,601)	(3,901,959)	(4,017,783)	(7,583,876)	(7,808,384)
12	2026	(3,721,746)	(3,837,508)	(3,976,269)	(4,100,084)	(7,698,015)	(7,937,591)
13	2027	(3,767,955)	(3,894,789)	(4,056,441)	(4,192,390)	(7,824,397)	(8,087,179)
14	2028	(3,817,509)	(3,954,004)	(4,138,692)	(4,285,279)	(7,956,201)	(8,239,283)
15	2029	(3,876,101)	(4,013,697)	(4,215,045)	(4,363,068)	(8,091,146)	(8,376,765)
16	2030	(3,935,526)	(4,074,239)	(4,297,541)	(4,447,115)	(8,233,067)	(8,521,354)
17	2031	(3,980,750)	(4,127,072)	(4,378,801)	(4,536,941)	(8,359,551)	(8,664,014)
18	2032	(4,035,941)	(4,194,194)	(4,456,499)	(4,627,446)	(8,492,440)	(8,821,640)
19	2033	(4,098,128)	(4,267,155)	(4,548,823)	(4,731,946)	(8,646,951)	(8,999,101)
20	2034	(4,164,220)	(4,335,096)	(4,625,486)	(4,811,577)	(8,789,705)	(9,146,673)
21	2035	(4,211,327)	(4,389,920)	(4,683,712)	(4,878,335)	(8,895,039)	(9,268,254)
22	2036	(4,264,873)	(4,455,136)	(4,747,471)	(4,954,398)	(9,012,343)	(9,409,534)
23	2037	(4,323,854)	(4,524,349)	(4,827,801)	(5,045,741)	(9,151,654)	(9,570,090)
24	2038	(4,375,480)	(4,576,946)	(4,906,202)	(5,125,616)	(9,281,681)	(9,702,562)
25	2039	(4,410,167)	(4,618,520)	(4,952,286)	(5,179,061)	(9,362,453)	(9,797,581)
26	2040	(4,455,919)	(4,675,181)	(5,012,371)	(5,250,742)	(9,468,289)	(9,925,923)
27	2041	(4,505,149)	(4,733,935)	(5,089,060)	(5,337,828)	(9,594,209)	(10,071,764)
28	2042	(4,550,957)	(4,780,605)	(5,159,468)	(5,409,560)	(9,710,425)	(10,190,165)
29	2043	(4,603,408)	(4,834,470)	(5,248,021)	(5,500,876)	(9,851,429)	(10,335,346)
30	2044	(4,635,491)	(4,873,575)	(5,311,372)	(5,573,475)	(9,946,863)	(10,447,050)
31	2045	(4,662,907)	(4,910,663)	(5,356,450)	(5,629,425)	(10,019,357)	(10,540,088)
32	2046	(4,695,154)	(4,951,064)	(5,421,157)	(5,703,211)	(10,116,311)	(10,654,274)
33	2047	(4,738,967)	(4,995,700)	(5,499,616)	(5,783,145)	(10,238,583)	(10,778,845)
34	2048	(4,764,884)	(5,026,769)	(5,558,932)	(5,848,434)	(10,323,816)	(10,875,203)
35	2049	(4,783,039)	(5,052,783)	(5,610,358)	(5,908,657)	(10,393,396)	(10,961,440)
36	2050		(5,075,298)		(5,958,001)	-	(11,033,299)

**TABLE 9-4: SUMMARY OF HISTORICAL PLANT INVESTMENT
AS OF 9/30/2011**

	A	B	C	D	E
	FERC ACCOUNT	ACCOUNT NAME	TOTAL PLANT	AC INTERTIE	ALL OTHER
1	352	STRUCTURES & IMPROVEMENTS	291,785,322	18,466,977	273,318,345
2	353	STATION EQUIPMENT	2,811,990,545	239,359,824	2,572,630,721
3	354	TOWERS & FIXTURES	1,020,026,759	34,417,791	985,608,968
4	355	POLES & FIXTURES	294,246,656	1,728,256	292,518,400
5	356	CONDUCTOR & CLEARING ROW	1,098,085,514	43,183,016	1,054,902,498
6	358	UNDERGROUND CONDUCTOR & DEVICES	21,816,189	-	21,816,189
7	359	ROADS & TRAILS	125,872,175	5,801,644	120,070,531
8	397	COMMUNICATION EQUIPMENT	<u>538,710,913</u>	<u>17,684,446</u>	<u>521,026,467</u>
9		TOTAL	6,202,534,073	360,641,954	5,841,892,119

Table 9-5: Plant Investment by Account and Year of Investment

1	A	B	C	D	E	F	G	H	I	J
	ACCOUNT	352	353	354	355	356	358	359	397	
2	NAME	STRUCTURES & IMPROVEMENTS	STATION EQUIPMENT	TOWERS & FIXTURES	POLES & FIXTURES	CONDUCTOR & CLEARING ROW	UNDERGROUND CONDUCTOR & DEVICES	ROADS & TRAILS	COMMUNICATION EQUIPMENT	TOTAL
3	CURVE	R2.5	S1	R3	R2.5	R4	S3	R3	S2	
4	SERVICE LIFE	65	43	100	55	100	40	75	19	
5	1940	476,062	1,812,502	926,103	25,606	1,079,234	-	91,782		4,411,289
6	1941	927,550	917,191	3,730,079	433,380	6,515,414	-	144,555		12,668,169
7	1942	655,363	1,339,495	67,986	210,246	1,257,105	-	289,447		3,819,642
8	1943	587,688	1,105,707	4,226,245	36,859	2,895,795	-	381,085		9,233,379
9	1944	14,066	8,933	918	16,690	305,568	-	131,489		477,664
10	1945	32,032	268,695	536,141	136,702	742,578	-	129,005		1,845,152
11	1946	153,424	318,920	602,984	50,451	299,611	-	41,441		1,466,831
12	1947	64,746	20,890	9,107	183,835	547,687	-	112,439		938,704
13	1948	282,743	1,351,847	324,789	398,494	1,761,543	-	160,519		4,279,935
14	1949	88,566	1,994,547	393,538	899,670	1,575,879	-	114,243		5,066,444
15	1950	657,081	1,797,360	3,994,408	707,803	5,500,526	-	949,689		13,606,867
16	1951	420,867	2,705,453	2,043,375	713,559	4,276,588	-	11,879		10,171,722
17	1952	355,096	2,054,048	7,179,525	479,848	7,133,967	193,932	9,140		17,405,556
18	1953	1,394,228	8,777,672	9,406,359	3,090,439	10,927,304	-	231,375		33,827,378
19	1954	835,601	2,876,027	13,091,368	1,303,062	12,296,500	-	1,581,255		31,983,813
20	1955	841,817	4,918,080	2,126,071	386,867	2,605,388	-	49,245		10,927,468
21	1956	711,374	7,184,829	16,294,005	349,009	12,765,653	-	355,213		37,660,084
22	1957	1,039,728	7,209,196	1,477,666	991,206	3,641,597	-	299,050		14,658,443
23	1958	577,916	4,155,308	5,493,794	1,759,261	6,958,712	-	738,896		19,683,887
24	1959	308,063	6,755,886	2,159,559	1,035,953	3,358,277	-	236,348	-	13,854,086
25	1960	121,487	2,517,503	756,488	336,802	1,104,808	-	38,778		4,875,865
26	1961	378,023	3,682,537	3,183,277	717,643	4,168,609	-	283,261		12,413,350
27	1962	513,912	2,532,676	11,358,446	1,232,702	9,760,967	-	529,044		25,927,747
28	1963	257,014	1,831,817	1,222,631	411,811	1,840,281	-	405,707		5,969,261
29	1964	545,408	2,295,248	12,142,615	193,118	1,538,415	-	52,736		16,767,540
30	1965	164,570	2,574,919	8,881,139	277,461	23,513,104	-	538,436		35,949,629
31	1966	534,437	6,448,389	4,065,177	1,078,563	6,173,805	-	264,808	-	18,565,178
32	1967	1,082,426	7,662,147	11,213,131	775,955	11,962,679	284,507	235,346		33,216,190
33	1968	2,586,901	14,631,972	34,619,212	398,131	36,706,310	-	1,035,661	-	89,978,187
34	1969	1,929,033	14,902,901	25,131,430	1,128,553	27,655,524	-	487,407	-	71,234,847
35	1970	11,392,850	38,007,381	26,607,338	1,132,938	28,490,386	-	943,394		106,574,287
36	1971	1,339,043	8,888,950	15,948,455	724,414	14,206,774	-	328,307	-	41,435,943
37	1972	2,187,552	12,490,376	14,909,761	1,182,298	18,851,150	-	878,608		50,499,745
38	1973	2,032,890	11,860,844	28,621,272	507,773	26,205,327	1,493,582	1,613,013	-	72,334,701
39	1974	955,300	12,475,644	6,503,689	1,527,927	7,245,614	-	1,101,600		29,809,774

Table 9-5: Plant Investment by Account and Year of Investment

1	A	B	C	D	E	F	G	H	I	J
2	ACCOUNT	352	353	354	355	356	358	359	397	
3	NAME	STRUCTURES & IMPROVEMENTS	STATION EQUIPMENT	TOWERS & FIXTURES	POLES & FIXTURES	CONDUCTOR & CLEARING ROW	UNDERGROUND CONDUCTOR & DEVICES	ROADS & TRAILS	COMMUNICATION EQUIPMENT	TOTAL
4	SERVICE LIFE	65	43	100	55	100	40	75	19	
5	CURVE	R2.5	S1	R3	R2.5	R4	S3	R3	S2	
40	1975	3,411,759	21,707,421	20,932,602	1,555,515	14,493,367	-	1,319,642	-	63,420,306
41	1976	1,730,520	20,019,399	32,771,629	2,029,686	29,176,322	1,317,799	860,285	-	87,905,640
42	1977	2,211,926	22,288,765	52,128,905	1,432,076	57,076,176	64,799	946,696	-	136,149,343
43	1978	1,156,144	33,453,208	7,713,140	1,381,584	7,584,533	43,378	50,708	-	51,382,695
44	1979	829,125	13,900,487	9,161,554	1,970,345	12,018,086	-	1,336,894	-	39,216,491
45	1980	1,553,847	18,000,316	14,400,660	780,350	16,022,767	-	201,487	-	50,959,427
46	1981	2,361,683	33,936,118	61,360,719	1,234,848	64,049,936	-	526,795	-	163,470,099
47	1982	1,831,205	31,235,190	3,575,782	662,029	5,060,449	-	355,871	-	42,720,526
48	1983	4,938,306	37,003,778	28,577,207	2,931,584	28,663,225	-	826,879	-	102,940,979
49	1984	6,818,386	52,095,432	76,260,479	3,244,293	78,997,002	-	8,388,752	-	225,804,344
50	1985	7,875,754	49,228,437	286,797	1,929,796	1,561,203	4,573,403	59,347	-	65,514,737
51	1986	4,967,389	21,648,043	7,491,442	8,485,733	16,210,096	-	742,455	-	59,545,158
52	1987	7,506,190	32,340,604	100,490,771	13,847,331	145,470,634	-	40,286,606	-	339,942,136
53	1988	8,268,167	19,372,113	4,837,575	2,508,510	6,810,774	-	309,066	-	42,106,205
54	1989	25,777,277	105,837,423	2,055,601	3,645,863	2,294,160	-	141,340	-	139,751,664
55	1990	3,704,482	51,930,584	3,377,301	1,341,163	2,590,241	-	-	-	62,943,771
56	1991	6,621,529	93,186,876	1,304,831	1,493,504	3,257,771	-	-	-	105,864,511
57	1992	3,157,930	118,942,933	11,015,954	2,025,109	20,029,162	-	2,021,035	-	157,192,123
58	1993	8,269,431	77,266,995	14,158,498	2,859,084	23,645,239	-	4,253,512	-	130,452,759
59	1994	28,174,069	231,481,549	5,806,581	3,641,305	4,863,220	-	117,722	-	274,084,446
60	1995	11,104,797	66,685,299	825,569	996,873	5,071,877	-	201,091	21,205,386	106,090,892
61	1996	6,766,302	80,581,744	1,685,145	198,282	3,844,738	-	1,925	39,790,978	132,869,114
62	1997	7,022,574	86,057,649	15,093,318	2,160,086	12,029,703	13,996	2,634,641	46,458,040	171,470,007
63	1998	11,205,585	52,296,087	8,932,174	2,860,997	12,737,573	7,328	1,782,782	49,096,462	138,918,988
64	1999	5,425,683	75,801,415	(644,635)	7,715,074	121,378	-	416,353	79,012,124	167,847,392
65	2000	1,548,591	39,830,312	89,833	2,071,939	654,477	-	428	7,811,984	52,007,564
66	2001	2,901,840	58,925,772	1,404,165	4,261,666	2,921,401	-	1,197,852	7,643,129	79,255,825
67	2002	6,639,600	85,493,827	1,956,554	23,741,448	14,693,786	5,548,135	806,409	29,960,602	168,840,362
68	2003	7,172,199	113,387,384	23,211,669	7,159,904	19,106,084	9,405	1,152,777	33,722,915	204,922,337
69	2004	6,305,985	147,315,945	44,017,733	12,557,226	16,120,192	26,853	1,148,355	27,587,094	255,079,382
70	2005	6,785,951	98,550,784	65,512,047	18,608,221	49,892,215	-	14,830	24,301,368	263,665,415
71	2006	12,062,449	82,574,783	74,122,412	9,641,185	45,701,248	8,218,798	697,144	48,718,944	281,736,963
72	2007	8,059,402	73,468,007	1,340,875	15,000,211	9,620,210	20,273	5,069,935	23,600,950	136,179,863
73	2008	6,165,343	93,138,841	4,094,580	28,467,955	13,219,453	-	4,455,860	25,811,888	175,353,920
74	2009	8,144,329	107,550,433	482,741	7,908,823	3,621,393	-	3,120,294	11,254,036	142,082,050
75	2010	7,820,685	142,473,362	31,433,761	43,086,120	23,975,563	-	12,891,176	35,067,066	296,747,733
76	2011	9,044,032	122,607,342	9,274,022	23,975,907	18,771,527	-	12,736,052	27,667,948	224,076,829
77	Total	291,785,322	2,811,990,545	1,020,026,759	294,246,656	1,098,085,514	21,816,189	125,872,175	538,710,913	6,202,534,073

TABLE 9-6: PLANT INVESTMENT BY ACCOUNT FOR REPLACEMENT CALCULATIONS					
(\$000s)					
		A	B	C	
	ACCOUNTS	2013	2014	2015	
1	LINES	121,938	224,097	96,893	
2	354	94,638	173,925	75,200	
3	356	27,300	50,172	21,693	
4	SUBS				
5	353	<u>210,150</u>	<u>278,874</u>	<u>240,368</u>	
6	TOTAL	332,088	502,971	337,261	

TABLE 9-7: PROPORTION OF PLANT THAT IS PFIA					
		A	B	C	D
		FERC ACCOUNT	ENDING BALANCE FY 2011	INCLUDES PFIA OF	PERCENT PFIA INVESTMENT
1	STATION EQUIPMENT	353	2,811,990,545	54,833,816	1.950%
2	TOWERS & FIXTURES	354	912,058,112	17,400,658	1.908%
3	POLES & FIXTURES	355	222,451,748	13,379,067	6.014%
4	OVERHEAD CONDUCTOR	356	1,018,173,808	15,440,803	1.517%

TABLE 9-8: "STATISTICAL ANALYSIS OF INDUSTRIAL PROPERTY RETIREMENTS," TABLE 22

Tenth of Life	L0	L1	L2	L3	L4	L5	S0	S1	S2	S3	S4	S5	S6	R0.5	R1	R2	R2.5	R3	R4	R5	O1
1	2.93	0.95	0.11	-	-	-	1.17	0.16	-	-	-	-	-	2.42	2.78	1.14	0.65	0.15	0.02	-	2.53
2	4.82	2.09	0.68	0.08	-	-	2.68	0.89	0.12	-	-	-	-	3.49	3.23	1.57	0.99	0.40	0.06	-	5.25
3	5.92	3.64	1.60	0.47	-	-	3.84	2.03	0.58	0.06	-	-	-	4.29	3.69	2.12	1.50	0.88	0.19	-	5.52
4	6.72	5.35	2.78	1.22	0.16	-	4.83	3.36	1.59	0.38	-	-	-	4.98	4.18	2.81	2.21	1.60	0.51	-	5.80
5	7.32	6.90	4.83	2.40	0.95	0.01	5.71	4.78	3.16	1.34	0.10	-	-	5.64	4.76	3.67	3.13	2.59	1.18	0.05	6.10
6	7.77	7.95	7.42	4.63	2.64	0.46	6.52	6.17	5.18	3.32	0.79	0.02	-	6.31	5.47	4.73	4.28	3.83	2.45	0.46	6.41
7	8.18	8.45	9.50	8.28	5.00	2.64	7.25	7.48	7.39	6.36	3.28	0.46	-	7.01	6.31	6.01	5.69	5.37	4.53	1.96	6.74
8	8.54	8.82	10.62	12.11	8.66	6.70	7.94	8.63	9.49	10.00	8.66	4.05	0.36	7.75	7.25	7.50	7.50	7.50	7.49	5.59	7.09
9	8.87	9.16	10.85	14.12	16.35	14.73	8.56	9.61	11.20	13.32	15.88	15.63	8.93	8.48	8.25	9.17	9.78	10.38	11.23	13.40	7.45
10	9.16	9.47	10.58	13.60	20.53	28.50	9.14	10.37	12.30	15.36	21.28	29.85	40.71	9.20	9.24	10.85	12.21	13.57	17.14	24.92	7.83
11	9.41	9.73	10.20	11.66	16.77	23.71	9.67	10.92	12.71	15.52	21.28	29.85	40.71	9.85	10.16	12.32	14.13	15.94	21.62	29.98	8.23
12	9.62	9.93	9.93	9.80	11.27	12.45	10.14	11.24	12.45	13.88	15.91	15.63	8.93	10.41	10.94	13.23	14.72	16.20	18.76	18.70	8.66
13	9.78	10.08	9.86	8.80	7.93	6.23	10.54	11.34	11.68	11.17	8.80	4.05	0.36	10.84	11.52	13.26	13.53	13.79	11.69	4.71	9.10
14	9.92	10.18	9.94	8.70	6.40	3.26	10.86	11.24	10.64	8.49	3.79	0.47	-	11.12	11.84	12.34	11.16	9.97	5.69	0.49	9.57
15	10.01	10.24	10.06	9.14	6.00	2.09	11.08	10.96	9.61	6.79	2.20	0.14	-	11.20	11.86	10.85	9.24	7.63	3.08	0.65	10.06
16	10.08	10.25	10.16	9.76	6.57	2.78	11.20	10.54	8.84	6.50	3.31	0.74	0.01	11.10	11.56	9.54	7.94	6.34	3.94	1.78	10.57
17	10.12	10.24	10.19	10.26	8.12	5.42	11.17	10.05	8.52	7.44	6.10	2.95	0.30	10.81	10.97	8.66	7.49	6.31	5.87	4.13	11.11
18	10.15	10.21	10.16	10.48	10.34	9.68	10.95	9.55	8.69	8.99	9.76	8.16	3.18	10.37	10.18	8.04	7.86	7.68	8.19	8.17	11.68
19	10.15	10.16	10.09	10.42	12.28	14.97	10.48	9.17	9.23	10.50	13.32	15.90	14.83	9.85	9.39	8.17	8.65	9.13	10.67	13.68	12.28
20	10.14	10.11	10.02	10.18	12.93	18.28	9.55	9.08	9.89	11.51	15.55	22.11	31.68	9.36	8.87	8.94	9.70	10.46	12.94	18.94	12.91
21	10.12	10.06	9.96	9.94	12.22	16.98	8.86	9.43	10.38	11.87	15.61	22.11	31.68	9.12	8.74	9.66	10.57	11.48	14.43	20.78	11.01
22	10.10	10.01	9.93	9.80	11.27	12.84	9.22	9.81	10.62	11.60	13.57	15.90	14.83	9.41	9.15	10.24	11.12	12.00	14.40	17.13	8.76
23	10.08	9.97	9.92	9.80	9.62	8.75	9.51	10.06	10.62	10.91	10.39	8.19	3.18	9.66	9.52	10.62	11.27	11.92	12.67	10.08	8.93
24	10.05	9.95	9.94	9.89	8.78	5.94	9.73	10.20	10.48	10.07	7.45	3.11	0.30	9.87	9.84	10.79	11.04	11.29	10.00	4.35	9.10
25	10.03	9.94	9.96	10.00	8.47	4.73	9.90	10.26	10.25	9.37	5.82	1.35	0.02	10.02	10.08	10.77	10.56	10.35	7.64	2.27	9.26
26	10.01	9.94	9.99	10.07	8.69	5.25	10.02	10.25	10.02	8.99	5.88	2.06	0.15	10.13	10.25	10.58	10.01	9.44	6.54	3.02	9.41
27	10.00	9.94	10.00	10.10	9.33	7.28	10.10	10.20	9.84	8.99	7.34	4.82	1.23	10.20	10.34	10.30	9.57	8.84	6.85	5.40	9.56
28	9.98	9.96	10.02	10.07	10.12	10.24	10.15	10.13	9.75	9.31	9.53	9.42	5.79	10.21	10.36	10.00	9.35	8.70	8.11	8.85	9.69
29	9.98	9.97	10.02	10.03	10.73	13.08	10.17	10.05	9.74	9.78	11.62	14.70	16.08	10.19	10.31	9.76	9.37	8.97	9.70	12.74	9.82
30	9.98	9.99	10.02	9.98	10.96	14.53	10.16	9.99	9.79	10.23	12.94	18.34	26.73	10.15	10.23	9.61	9.55	9.49	11.13	15.91	9.93
31	9.98	10.00	10.01	9.96	10.79	13.98	10.14	9.94	9.89	10.52	13.10	18.35	26.73	10.10	10.13	9.59	9.83	10.06	12.06	16.93	10.03
32	9.98	10.01	10.00	9.96	10.38	11.95	10.10	9.91	9.99	10.59	12.15	14.73	16.08	10.03	10.02	9.67	10.09	10.50	12.29	15.07	10.11
33	9.98	10.01	10.00	9.98	9.93	9.53	10.06	9.91	10.07	10.47	10.54	9.55	5.79	9.98	9.93	9.82	10.28	10.73	11.77	11.12	10.17
34	9.99	10.01	10.00	10.00	9.60	7.61	10.02	9.92	10.12	10.22	8.92	5.26	1.24	9.93	9.86	9.98	10.35	10.71	10.70	7.04	10.21
35	9.99	10.01	10.00	10.01	9.46	6.72	9.98	9.95	10.12	9.96	7.86	3.21	0.22	9.91	9.84	10.11	10.31	10.50	9.49	4.65	10.24
36	10.00	10.01	10.00	10.02	9.52	7.04	9.94	9.98	10.09	9.76	7.67	3.60	0.51	9.91	9.84	10.19	10.19	10.18	8.57	4.54	10.23
37	10.00	10.00	10.00	10.01	9.75	8.36	9.92	10.01	10.04	9.67	8.33	6.01	2.36	9.92	9.88	10.20	10.03	9.86	8.26	6.24	10.20
38	10.00	10.00	10.00	10.01	10.02	10.19	9.92	10.03	10.00	9.70	9.49	9.73	7.47	9.95	9.93	10.17	9.90	9.63	8.58	8.94	10.14
39	10.00	10.00	10.00	10.00	10.23	11.82	9.93	10.04	9.96	9.82	10.70	13.56	16.07	9.98	9.99	10.10	9.82	9.54	9.33	11.83	10.05
40	10.00	10.00	10.00	9.99	10.32	12.63	9.96	10.04	9.95	9.97	11.53	16.02	23.53	10.01	10.03	9.82	9.61	10.18	14.02	9.92	
41	10.00	10.00	10.00	9.99	10.28	12.36	9.99	10.02	9.95	10.10	11.73	16.04	23.53	10.03	10.06	9.96	9.87	9.77	10.86	14.74	9.78
42	10.00	10.00	10.00	10.00	10.15	11.24	10.02	10.01	9.96	10.17	11.30	13.66	16.07	10.04	10.07	9.92	9.95	9.97	11.18	13.67	9.80
43	10.00	10.00	10.00	10.00	9.99	9.80	10.03	10.00	9.98	10.18	10.47	10.02	7.48	10.04	10.06	9.90	10.03	10.15	11.09	11.21	9.85
44	10.00	10.00	10.00	10.00	9.87	8.60	10.03	9.99	10.00	10.13	9.56	6.70	2.39	10.03	10.04	9.91	10.08	10.25	10.66	8.43	9.89
45	10.00	10.00	10.00	10.00	9.81	8.02	10.03	9.99	10.02	10.05	8.91	4.88	0.70	10.02	10.02	9.94	10.10	10.26	10.06	6.47	9.93
46	10.00	10.00	10.00	10.00	9.83	8.19	10.02	10.00	10.02	9.97	8.71	5.02	1.05	10.01	10.00	9.98	10.09	10.20	9.51	6.01	9.96
47	10.00	10.00	10.00	10.00	9.90	9.00	10.01	10.00	10.02	9.92	8.99	6.89	3.38	10.00	9.99	10.01	10.05	10.09	9.18	7.01	9.99
48	10.00	10.00	10.00	10.00	10.00	10.10	10.01	10.00	10.02	9.90	9.59	9.76	8.49	9.99	9.98	10.04	10.01	9.97	9.16	8.95	10.00
49	10.00	10.00	10.00	10.00	10.07	11.07	10.00	10.00	10.01	9.91	10.26	12.63	15.66	9.99	9.97	10.05	9.97	9.88	9.42	11.09	10.02
50	10.00	10.00	10.00	10.00	10.11	11.55	9.99	10.00	10.00	9.95	10.77	14.42	21.26	9.98	9.97	10.04	9.84	9.84	9.84	12.73	10.03
51	10.00	10.00	10.00	10.00	10.10	11.42	9.99	10.00	9.99	10.00	10.95	14.47	21.26	9.99	9.98	10.01	9.93	9.85	10.26	13.32	10.03
52	10.00	10.00	10.00	10.00	10.06	10.77	9.99	10.00	9.99	10.04	10.78	12.81	15.66	9.99	9.98	9.99	9.95	9.90	10.54	12.69	10.03
53	10.00	10.00	10.00	10.00	10.00	9.92	9.99	10.00	9.99	10.06	10.35	10.19	8.50	9.99	9.99	9.98	9.98	9.98	10.61	11.10	10.02
54	10.00	10.00	10.00	10.00	9.96	9.18	10.00	10.00	9.99	10.05	9.85	7.67	3.46	10.00	10.00	9.97	10.01	10.04	10.47	9.18	10.01
55	10.00	10.00	10.00	10.00	9.94	8.81	10.00	10.00	10.00	10.04	9.46	6.19	1.40	10.01	10.01	9.97	10.03	10.08	10.20	7.70	10.00
56	10.00	10.00	10.00	10.00	9.94	8.90	10.00	10.00	10.00	10.01	9.30	6.20	1.72	10.01	10.01	9.98	10.04	10.10	9.90	7.18	9.99
57	10.00	10.00	10.00	10.00	9.96	9.39	10.00	10.00	10.00	9.98	9.40	7.57	4.25	10.01	10.01	10.00	10.04	10.08	9.66	7.72	9.98
58	10.00	10.00	10.00	10.00	10.00	10.05	10.00	10.00	10.00	9.97	9.70	9.75	9.09	10.01	10.01	10.01	10.03	10.04	9.53	9.03	9.97

TABLE 9-8: "STATISTICAL ANALYSIS OF INDUSTRIAL PROPERTY RETIREMENTS," TABLE 22

Tenth of Life	L0	L1	L2	L3	L4	L5	S0	S1	S2	S3	S4	S5	S6	R0.5	R1	R2	R2.5	R3	R4	R5	O1
61	10.00	10.00	10.00	10.00	10.04	10.85	10.00	10.00	10.00	9.99	10.52	13.34	19.53	10.00	10.00	10.01	9.98	9.94	10.02	12.34	9.96
62	10.00	10.00	10.00	10.00	10.02	10.48	10.00	10.00	10.00	10.00	10.46	12.16	15.14	10.00	9.99	10.01	9.98	9.94	10.20	11.98	9.97
63	10.00	10.00	10.00	10.00	10.00	9.97	10.00	10.00	10.00	10.01	10.24	10.24	9.12	10.00	9.99	10.00	9.98	9.96	10.30	10.94	9.98
64	10.00	10.00	10.00	10.00	9.99	9.52	10.00	10.00	10.00	10.02	9.97	8.35	4.39	10.00	9.99	10.00	9.99	9.98	10.29	9.61	9.99
65	10.00	10.00	10.00	10.00	9.98	9.29	10.00	10.00	10.00	10.02	9.74	7.18	2.18	10.00	9.99	9.99	10.00	10.01	10.18	8.51	9.99
66	10.00	10.00	10.00	10.00	9.98	9.34	10.00	10.00	10.00	10.01	9.62	7.12	2.44	10.00	10.00	9.99	10.01	10.03	10.03	8.03	9.99
67	10.00	10.00	10.00	10.00	9.99	9.62	10.00	10.00	10.00	10.00	9.65	8.12	4.97	10.00	10.00	9.99	10.01	10.03	9.88	8.30	9.99
68	10.00	10.00	10.00	10.00	10.00	10.02	10.00	10.00	10.00	9.99	9.80	9.74	9.44	10.00	10.00	10.00	10.02	10.03	9.79	9.16	9.99
69	10.00	10.00	10.00	10.00	10.01	10.37	10.00	10.00	10.00	9.99	10.00	11.38	14.60	10.00	10.00	10.00	10.01	10.02	9.78	10.26	9.99
70	10.00	10.00	10.00	10.00	10.01	10.55	10.00	10.00	10.00	9.99	10.18	12.42	18.17	10.00	10.00	10.00	10.00	10.00	9.84	11.19	9.99
71	10.00	10.00	10.00	10.00	10.01	10.51	10.00	10.00	10.00	9.99	10.28	12.51	18.17	10.00	10.00	10.00	10.00	9.99	9.94	11.63	9.99
72	10.00	10.00	10.00	10.00	10.01	10.29	10.00	10.00	10.00	10.00	10.26	11.66	14.62	10.00	10.00	10.00	9.99	9.98	10.05	11.46	9.99
73	10.00	10.00	10.00	10.00	10.00	9.99	10.00	10.00	10.00	10.00	10.16	10.25	9.50	10.00	10.00	10.00	9.99	9.98	10.13	10.77	9.98
74	10.00	10.00	10.00	10.00	10.00	9.72	10.00	10.00	10.00	10.00	10.01	8.82	5.18	10.00	10.00	10.00	9.99	9.98	10.16	9.85	9.98
75	10.00	10.00	10.00	10.00	9.99	9.58	10.00	10.00	10.00	10.00	9.88	7.92	2.98	10.00	10.00	10.00	10.00	9.99	10.13	9.04	9.98
76	10.00	10.00	10.00	10.00	9.99	9.60	10.00	10.00	10.00	10.00	9.80	7.83	3.18	10.00	10.00	10.00	10.00	10.00	10.06	8.63	9.98
77	10.00	10.00	10.00	10.00	9.99	9.77	10.00	10.00	10.00	10.00	9.80	8.54	5.58	10.00	10.00	10.00	10.01	10.01	9.98	8.74	9.98
78	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.87	9.75	9.64	10.00	10.00	10.00	10.01	10.01	9.91	9.30	9.98
79	10.00	10.00	10.00	10.00	10.00	10.22	10.00	10.00	10.00	10.00	9.98	10.99	14.09	10.00	10.00	10.00	10.01	10.01	9.88	10.08	9.98
80	10.00	10.00	10.00	10.00	10.00	10.33	10.00	10.00	10.00	10.00	10.08	11.79	17.06	10.00	10.00	10.00	10.01	10.01	9.89	10.76	9.98
81	10.00	10.00	10.00	10.00	10.00	10.31	10.00	10.00	10.00	10.00	10.14	11.88	17.06	10.00	10.00	10.00	10.00	10.00	9.91	11.13	9.98
82	10.00	10.00	10.00	10.00	10.00	10.18	10.00	10.00	10.00	10.00	10.15	11.28	14.12	10.00	10.00	10.00	10.00	10.00	9.97	11.07	9.99
83	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.10	10.24	11.07	10.00	10.00	10.00	10.00	10.00	10.03	10.62	9.99
84	10.00	10.00	10.00	10.00	10.00	9.84	10.00	10.00	10.00	10.00	10.02	9.16	4.51	10.00	10.00	10.00	10.00	10.00	10.08	9.98	9.99
85	10.00	10.00	10.00	10.00	10.00	9.75	10.00	10.00	10.00	10.00	9.94	8.46	3.75	10.00	10.00	10.00	10.00	10.00	10.09	9.39	9.99
86	10.00	10.00	10.00	10.00	10.00	9.76	10.00	10.00	10.00	10.00	9.90	8.37	3.88	10.00	10.00	10.00	10.00	10.00	10.07	9.06	9.99
87	10.00	10.00	10.00	10.00	10.00	9.86	10.00	10.00	10.00	10.00	9.89	8.88	6.10	10.00	10.00	10.00	10.00	10.00	10.02	9.09	9.99
88	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.92	9.77	9.75	10.00	10.00	10.00	10.00	10.00	9.98	9.44	9.98
89	10.00	10.00	10.00	10.00	10.00	10.12	10.00	10.00	10.00	10.00	9.98	10.70	13.62	10.00	10.00	10.00	10.00	10.00	9.95	9.98	9.98
90	10.00	10.00	10.00	10.00	10.00	10.19	10.00	10.00	10.00	10.00	10.04	11.32	16.13	10.00	10.00	10.00	10.00	10.00	9.94	10.48	9.98
91	10.00	10.00	10.00	10.00	10.00	10.19	10.00	10.00	10.00	10.00	10.08	11.42	16.17	10.00	10.00	10.00	10.00	10.00	9.95	10.78	9.98
92	10.00	10.00	10.00	10.00	10.00	10.11	10.00	10.00	10.00	10.00	10.08	10.98	13.94	10.00	10.00	10.00	10.00	10.00	9.98	10.78	9.98
93	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.06	10.21	10.23	10.00	10.00	10.00	10.00	10.00	10.02	10.49	9.98
94	10.00	10.00	10.00	10.00	10.00	9.90	10.00	10.00	10.00	10.00	10.02	9.41	6.06	10.00	10.00	10.00	10.00	10.00	10.04	10.05	9.98
95	10.00	10.00	10.00	10.00	10.00	9.85	10.00	10.00	10.00	10.00	9.98	8.86	4.18	10.00	10.00	10.00	10.00	10.00	10.05	9.62	9.98
96	10.00	10.00	10.00	10.00	10.00	9.85	10.00	10.00	10.00	10.00	9.95	8.77	4.52	10.00	10.00	10.00	10.00	10.00	10.04	9.36	9.98
97	10.00	10.00	10.00	10.00	10.00	9.91	10.00	10.00	10.00	10.00	9.94	9.14	6.55	10.00	10.00	10.00	10.00	10.00	10.01	9.34	9.98
98	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.95	9.80	9.81	10.00	10.00	10.00	10.00	10.00	9.98	9.56	9.98
99	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	9.98	10.50	13.19	10.00	10.00	10.00	10.00	10.00	9.99	9.93	9.98
100	10.00	10.00	10.00	10.00	10.00	10.12	10.00	10.00	10.00	10.00	10.01	10.97	15.36	10.00	10.00	10.00	10.00	10.00	10.01	10.30	9.98
101	10.00	10.00	10.00	10.00	10.00	10.11	10.00	10.00	10.00	10.00	10.04	11.06	15.45	10.00	10.00	10.00	10.00	10.00	10.01	10.53	9.98
102	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.05	10.76	13.46	10.00	10.00	10.00	10.00	10.00	10.02	10.56	9.98
103	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.04	10.19	10.12	10.00	10.00	10.00	10.00	10.00	10.02	10.38	9.98
104	10.00	10.00	10.00	10.00	10.00	9.94	10.00	10.00	10.00	10.00	10.02	9.57	6.74	10.00	10.00	10.00	10.00	10.00	10.02	10.08	9.98
105	10.00	10.00	10.00	10.00	10.00	9.91	10.00	10.00	10.00	10.00	9.99	9.16	4.89	10.00	10.00	10.00	10.00	10.00	10.01	9.77	9.98
106	10.00	10.00	10.00	10.00	10.00	9.91	10.00	10.00	10.00	10.00	9.97	9.08	5.07	10.00	10.00	10.00	10.00	10.00	10.00	9.56	9.98
107	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	9.96	9.34	6.94	10.00	10.00	10.00	10.00	10.00	9.99	9.53	9.98
108	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.97	9.83	9.85	10.00	10.00	10.00	10.00	10.00	9.98	9.66	9.98
109	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	9.99	10.35	12.81	10.00	10.00	10.00	10.00	10.00	9.99	9.91	9.98
110	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.00	10.72	14.70	10.00	10.00	10.00	10.00	10.00	10.00	10.18	9.98

TABLE 9-8: "STATISTICAL ANALYSIS OF INDUSTRIAL PROPERTY RETIREMENTS," TABLE 22

Tenth of Life	L0	L1	L2	L3	L4	L5	S0	S1	S2	S3	S4	S5	S6	R0.5	R1	R2	R2.5	R3	R4	R5	O1
107	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	9.96	9.34	6.94	10.00	10.00	10.00	10.00	10.00	9.99	9.53	9.98
108	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.97	9.83	9.85	10.00	10.00	10.00	10.00	10.00	9.98	9.66	9.98
109	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	9.99	10.35	12.81	10.00	10.00	10.00	10.00	10.00	9.99	9.91	9.98
110	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.00	10.72	14.70	10.00	10.00	10.00	10.00	10.00	10.00	10.18	9.98
111	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.02	10.80	14.79	10.00	10.00	10.00	10.00	10.00	10.00	10.36	9.98
112	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	10.03	10.58	13.04	10.00	10.00	10.00	10.00	10.00	10.01	10.40	9.98
113	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.02	10.16	10.11	10.00	10.00	10.00	10.00	10.00	10.01	10.29	9.98
114	10.00	10.00	10.00	10.00	10.00	9.97	10.00	10.00	10.00	10.00	10.01	9.70	7.21	10.00	10.00	10.00	10.00	10.00	10.01	10.09	9.98
115	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	10.00	9.38	5.53	10.00	10.00	10.00	10.00	10.00	10.00	9.87	9.98
116	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	9.99	9.31	5.61	10.00	10.00	10.00	10.00	10.00	9.99	9.71	9.98
117	10.00	10.00	10.00	10.00	10.00	9.97	10.00	10.00	10.00	10.00	9.98	9.49	7.27	10.00	10.00	10.00	10.00	10.00	9.99	9.66	9.98
118	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.98	9.85	9.86	10.00	10.00	10.00	10.00	10.00	9.99	9.74	9.98
119	10.00	10.00	10.00	10.00	10.00	10.02	10.00	10.00	10.00	10.00	9.99	10.25	12.47	10.00	10.00	10.00	10.00	10.00	10.00	9.91	9.98
120	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	10.53	14.13		10.00	10.00	10.00	10.00	10.00	10.10		9.98

Table 9-9: Handy-Whitman Index – Pacific Region – January 1, 2012

	A	B	C	D	E	F	G
	YEAR	TOTAL PLANT	STATION	TOWERS	POLES	OVERHEAD	UNDERGROUND
	ACCOUNT	300	EQUIPMENT	& FIXTURES	& FIXTURES	CONDUCTOR	CONDUCTOR
			353	354	355	356	358
1	1940	22	35	17	15	22	22
2	1941	23	36	19	17	23	25
3	1942	25	37	20	18	25	26
4	1943	25	36	20	19	26	26
5	1944	25	35	21	21	26	25
6	1945	26	35	21	22	26	25
7	1946	29	39	24	24	30	30
8	1947	34	47	28	29	35	35
9	1948	37	49	31	32	39	42
10	1949	38	52	32	32	39	46
11	1950	40	56	34	33	41	49
12	1951	45	63	37	36	47	61
13	1952	46	64	39	37	49	63
14	1953	49	68	41	39	51	62
15	1954	50	69	42	40	52	63
16	1955	52	70	43	42	55	66
17	1956	56	77	46	44	61	65
18	1957	57	81	48	47	63	57
19	1958	59	84	51	49	63	57
20	1959	60	83	53	50	62	60
21	1960	60	77	55	52	63	61
22	1961	59	70	57	53	63	61
23	1962	59	69	57	54	65	61
24	1963	59	65	59	55	61	61
25	1964	61	69	61	56	64	66
26	1965	64	73	63	58	67	72
27	1966	67	75	67	61	70	73
28	1967	70	79	71	63	73	75
29	1968	73	83	74	65	73	73
30	1969	78	85	78	69	80	79
31	1970	83	89	82	76	89	82
32	1971	89	91	87	81	98	82
33	1972	93	94	92	87	99	92
34	1973	100	100	100	100	100	100
35	1974	123	124	123	126	117	134
36	1975	145	148	145	144	146	137
37	1976	158	157	149	150	172	143
38	1977	170	170	155	160	187	158
39	1978	175	182	169	171	179	160
40	1979	190	197	187	189	193	189

Table 9-9: Handy-Whitman Index – Pacific Region – January 1, 2012

41	1980	213	218	210	211	220	221
42	1981	231	237	225	233	241	244
43	1982	244	253	229	252	251	269
44	1983	251	256	234	258	268	273
45	1984	252	259	247	260	258	267
46	1985	253	260	256	256	252	254
47	1986	255	262	261	258	252	275
48	1987	257	269	267	261	243	278
49	1988	281	281	278	281	311	293
50	1989	295	295	287	301	320	314
51	1990	304	312	288	312	323	364
52	1991	309	315	281	333	333	407
53	1992	311	324	284	350	318	416
54	1993	323	337	296	360	330	423
55	1994	337	352	312	378	340	424
56	1995	353	364	322	392	368	436
57	1996	359	366	333	407	374	441
58	1997	365	372	341	420	379	446
59	1998	375	382	347	428	391	450
60	1999	396	388	354	419	354	463
61	2000	395	415	368	422	398	458
62	2001	398	419	373	425	399	468
63	2002	411	429	384	450	416	462
64	2003	415	438	388	454	411	474
65	2004	424	437	415	466	419	481
66	2005	465	493	434	487	463	533
67	2006	503	528	455	509	537	590
68	2007	544	580	472	431	595	603
69	2008	588	618	513	567	657	782
70	2009	623	654	526	593	657	782
71	2010	610	684	520	616	604	837
72	2011	622	708	542	599	598	890

Table 9-10: 2014 Replacements by Account

		A	B	C	D	E	F	G	H	I
		352	353	354	355	356	358	359	397	Total
1	2015	7,527,128	101,729,620	12,132,901	9,250,569	9,953,839	1,288,890	2,346,951	33,523,540	177,753,438
2	2016	7,937,505	105,658,849	12,657,583	9,460,520	10,444,654	1,297,838	2,419,244	35,934,995	185,811,189
3	2017	8,095,650	109,124,392	13,135,068	9,599,825	10,976,380	1,370,087	2,622,869	38,160,280	193,084,551
4	2018	8,285,828	112,004,679	13,596,383	9,667,055	11,691,152	1,402,857	2,796,136	39,986,805	199,430,896
5	2019	8,426,256	114,647,122	13,893,625	9,764,332	12,181,792	1,382,176	2,845,184	40,959,138	204,099,626
6	2020	8,676,398	118,554,411	14,399,779	9,912,502	12,919,994	1,361,185	2,881,986	41,857,567	210,563,822
7	2021	8,878,269	121,583,034	15,100,167	10,025,465	14,177,361	1,352,367	2,950,517	42,330,639	216,397,819
8	2022	9,429,533	124,215,215	15,652,570	10,151,339	15,008,136	1,427,358	3,132,022	42,387,322	221,403,495
9	2023	9,620,560	126,963,213	16,568,270	10,193,257	16,068,806	1,414,347	3,197,744	42,246,425	226,272,622
10	2024	9,814,554	129,666,678	17,340,152	10,248,081	16,814,304	1,373,103	3,248,634	41,641,853	230,147,359
11	2025	9,917,447	133,219,277	17,697,159	10,181,916	17,586,098	1,295,279	3,533,073	41,139,362	234,569,611
12	2026	9,994,703	135,476,278	18,412,572	10,256,880	18,349,319	1,424,659	3,625,807	40,195,535	237,735,753
13	2027	10,269,269	137,642,015	19,034,297	10,416,298	19,289,662	1,422,673	3,673,573	39,530,045	241,277,831
14	2028	10,490,268	140,151,847	19,625,098	10,472,018	20,402,668	1,378,974	3,746,903	38,649,967	244,917,743
15	2029	10,968,723	142,821,987	20,001,321	10,498,391	21,167,314	1,264,893	3,897,340	38,132,078	248,752,046
16	2030	11,142,912	145,556,748	20,641,729	10,477,872	22,272,973	1,439,106	3,967,888	37,603,830	253,103,059
17	2031	11,269,210	147,023,131	21,487,375	10,572,971	24,235,319	1,446,737	4,022,884	37,149,346	257,206,974
18	2032	11,373,499	148,951,266	22,241,563	10,681,426	25,443,470	1,417,450	4,263,581	37,092,436	261,464,691
19	2033	11,588,733	150,948,200	23,373,253	10,784,494	27,015,434	1,307,766	4,345,479	37,025,847	266,389,205
20	2034	11,765,560	153,045,116	24,405,751	10,757,145	28,088,191	1,491,691	4,395,874	37,424,505	271,373,833
21	2035	12,256,897	154,342,437	24,877,310	10,804,034	29,214,590	1,504,072	4,429,379	37,558,222	274,986,940
22	2036	12,428,833	155,674,031	25,824,855	10,836,620	30,292,033	1,497,302	4,502,532	38,079,224	279,135,428
23	2037	12,639,412	157,267,397	26,624,429	10,990,537	31,810,961	1,427,262	4,631,628	38,402,338	283,793,964
24	2038	12,691,029	158,774,648	27,427,651	11,143,685	33,396,616	1,571,448	4,679,764	38,535,522	288,220,363
25	2039	12,764,518	159,575,124	27,935,996	11,201,521	34,497,266	1,583,445	4,697,021	38,829,881	291,084,771
26	2040	13,013,949	160,475,783	28,703,439	11,250,743	36,005,863	1,597,017	4,966,110	39,052,176	295,065,081
27	2041	13,261,485	161,359,000	29,600,306	11,391,668	38,105,804	1,582,481	4,998,891	39,276,086	299,576,320
28	2042	13,444,049	162,405,206	30,554,808	11,487,954	39,722,746	1,644,845	5,030,695	39,400,104	303,690,408
29	2043	13,607,793	163,523,970	31,767,193	11,672,332	41,778,581	1,652,809	5,073,466	39,501,493	308,577,637
30	2044	13,727,327	163,808,667	33,020,912	11,803,906	43,427,042	1,676,694	5,117,644	39,553,209	312,135,401
31	2045	13,841,768	164,310,794	33,617,095	11,820,066	44,878,473	1,713,178	5,159,629	39,495,429	314,836,433
32	2046	14,045,437	164,711,720	34,739,388	11,981,720	46,467,390	1,678,311	5,172,940	39,465,753	318,262,659
33	2047	14,156,893	165,435,136	35,786,477	12,147,048	48,678,193	1,681,042	5,567,616	39,328,198	322,780,602
34	2048	14,273,842	165,412,093	36,818,283	12,285,643	50,708,780	1,704,849	5,499,308	39,328,539	326,031,339
35	2049	14,385,344	165,534,543	37,477,609	12,531,407	52,078,302	1,771,250	5,531,930	39,151,794	328,462,178

Table 9-11: 2015 Replacements by Account

		A	B	C	D	E	F	G	H	I
		352	353	354	355	356	358	359	397	Total
1	2016	8,086,730	107,807,564	12,940,101	9,638,378	10,641,881	1,322,238	2,464,726	36,610,573	189,512,190
2	2017	8,247,849	111,338,259	13,426,563	9,780,302	11,183,603	1,395,844	2,672,179	38,877,693	196,922,291
3	2018	8,441,602	114,458,270	13,896,551	9,848,795	11,911,813	1,429,231	2,848,703	40,738,557	203,573,523
4	2019	8,584,670	117,449,509	14,199,381	9,947,902	12,411,677	1,408,161	2,898,674	41,729,169	208,629,143
5	2020	8,839,514	121,686,183	14,715,050	10,098,858	13,163,757	1,386,775	2,936,167	42,644,490	215,470,795
6	2021	9,045,180	124,771,744	15,428,606	10,213,944	14,444,762	1,377,791	3,005,987	43,126,455	221,414,470
7	2022	9,606,808	127,743,212	15,991,394	10,342,184	15,291,156	1,454,192	3,190,904	43,184,203	226,804,054
8	2023	9,801,426	131,009,989	16,944,302	10,384,890	16,371,767	1,440,936	3,257,862	43,040,658	232,251,831
9	2024	9,999,068	134,163,947	17,770,537	10,440,745	17,132,651	1,398,917	3,309,709	42,424,720	236,640,294
10	2025	10,103,895	137,783,336	18,148,680	10,373,336	17,919,319	1,319,630	3,599,495	41,912,782	241,160,472
11	2026	10,182,603	140,420,870	18,877,543	10,449,710	18,696,888	1,451,442	3,693,972	40,951,211	244,724,240
12	2027	10,462,331	143,172,292	19,510,956	10,612,124	19,654,909	1,449,419	3,742,636	40,273,210	248,877,877
13	2028	10,687,485	146,195,589	20,112,865	10,668,892	20,788,839	1,404,899	3,817,345	39,376,587	253,052,500
14	2029	11,174,935	148,915,927	20,496,161	10,695,760	21,567,860	1,288,673	3,970,610	38,848,961	256,958,888
15	2030	11,352,399	151,702,102	21,148,609	10,674,856	22,694,307	1,466,161	4,042,485	38,310,782	261,391,700
16	2031	11,481,071	153,557,034	22,010,153	10,771,743	24,693,544	1,473,936	4,098,514	37,847,754	265,933,750
17	2032	11,587,321	156,103,265	22,778,519	10,882,237	25,924,409	1,444,098	4,343,736	37,789,774	270,853,359
18	2033	11,806,601	158,635,574	23,969,871	10,987,242	27,525,925	1,332,353	4,427,174	37,721,933	276,406,673
19	2034	11,986,752	160,771,912	25,098,276	10,959,379	28,623,308	1,519,735	4,478,516	38,128,086	281,565,965
20	2035	12,487,326	162,446,977	25,606,396	11,007,150	29,772,062	1,532,348	4,512,652	38,264,316	285,629,227
21	2036	12,662,495	164,373,159	26,571,754	11,040,348	30,869,761	1,525,451	4,587,179	38,795,113	290,425,261
22	2037	12,877,033	166,483,796	27,386,361	11,197,159	32,417,245	1,454,094	4,718,703	39,124,302	295,658,693
23	2038	12,929,621	168,019,383	28,204,683	11,353,187	34,032,710	1,600,991	4,767,744	39,259,990	300,168,308
24	2039	13,004,491	169,167,926	28,722,585	11,412,110	35,154,053	1,613,213	4,785,325	39,559,883	303,419,584
25	2040	13,258,612	170,622,291	29,504,457	11,462,257	36,691,012	1,627,041	5,059,473	39,786,357	308,011,499
26	2041	13,510,801	171,981,381	30,418,796	11,605,831	38,830,430	1,612,231	5,092,870	40,014,477	313,066,817
27	2042	13,696,798	173,047,256	31,390,631	11,703,928	40,477,772	1,675,769	5,125,272	40,140,825	317,258,250
28	2043	13,863,620	174,187,052	32,683,388	11,891,772	42,572,256	1,683,882	5,168,847	40,244,121	322,294,938
29	2044	13,985,401	174,769,445	34,075,420	12,025,820	44,262,681	1,708,216	5,213,855	40,296,809	326,337,647
30	2045	14,101,994	175,752,227	34,724,356	12,042,283	45,744,300	1,745,386	5,256,630	40,237,943	329,605,119
31	2046	14,309,491	176,563,864	35,867,748	12,206,976	47,363,089	1,709,863	5,270,191	40,207,709	333,498,932
32	2047	14,423,042	177,300,880	36,934,522	12,375,412	49,615,455	1,712,645	5,672,288	40,067,568	338,101,812
33	2048	14,542,191	177,526,532	37,985,726	12,516,613	51,684,217	1,736,900	5,602,695	40,067,916	341,662,791
34	2049	14,655,788	178,052,840	38,657,447	12,766,997	53,079,486	1,804,550	5,635,931	39,887,847	344,540,886
35	2050	14,834,020	178,250,664	39,493,296	12,878,079	54,490,827	1,690,176	5,661,183	39,745,298	347,043,544

Table 9-12: 2014 AC Intertie Replacements

		A	B	C	D	E	F	G	H	I
		352	353	354	355	356	358	359	397	Total
1	2015	476,389	8,657,191	409,389	54,333	391,442	-	108,175	2,656,489	12,753,407
2	2016	502,362	8,991,568	427,093	55,566	410,744	-	111,507	2,847,578	13,346,418
3	2017	512,371	9,286,486	443,204	56,385	431,654	-	120,892	3,023,916	13,874,907
4	2018	524,407	9,531,598	458,770	56,779	459,763	-	128,878	3,168,654	14,328,850
5	2019	533,294	9,756,470	468,799	57,351	479,058	-	131,139	3,245,704	14,671,815
6	2020	549,126	10,088,980	485,878	58,221	508,088	-	132,835	3,316,898	15,140,026
7	2021	561,902	10,346,716	509,511	58,885	557,535	-	135,994	3,354,385	15,524,928
8	2022	596,791	10,570,715	528,150	59,624	590,206	-	144,360	3,358,877	15,848,722
9	2023	608,881	10,804,569	559,047	59,870	631,918	-	147,389	3,347,712	16,159,387
10	2024	621,159	11,034,634	585,092	60,192	661,235	-	149,735	3,299,804	16,411,851
11	2025	627,671	11,336,961	597,138	59,803	691,586	-	162,845	3,259,985	16,735,990
12	2026	632,561	11,529,031	621,278	60,244	721,600	-	167,119	3,185,194	16,917,027
13	2027	649,938	11,713,335	642,256	61,180	758,580	-	169,321	3,132,459	17,127,070
14	2028	663,925	11,926,922	662,191	61,507	802,350	-	172,701	3,062,720	17,352,315
15	2029	694,206	12,154,151	674,886	61,662	832,420	-	179,634	3,021,681	17,618,640
16	2030	705,230	12,386,879	696,494	61,542	875,901	-	182,886	2,979,821	17,888,754
17	2031	713,224	12,511,668	725,028	62,100	953,072	-	185,421	2,943,807	18,094,320
18	2032	719,824	12,675,753	750,476	62,737	1,000,583	-	196,515	2,939,297	18,345,185
19	2033	733,446	12,845,692	788,661	63,343	1,062,402	-	200,290	2,934,020	18,627,854
20	2034	744,638	13,024,139	823,500	63,182	1,104,589	-	202,613	2,965,611	18,928,271
21	2035	775,734	13,134,541	839,411	63,457	1,148,885	-	204,157	2,976,207	19,142,393
22	2036	786,616	13,247,860	871,383	63,649	1,191,256	-	207,529	3,017,493	19,385,786
23	2037	799,943	13,383,456	898,363	64,553	1,250,989	-	213,479	3,043,097	19,653,880
24	2038	803,210	13,511,723	925,465	65,452	1,313,346	-	215,698	3,053,651	19,888,545
25	2039	807,861	13,579,843	942,618	65,792	1,356,630	-	216,493	3,076,976	20,046,214
26	2040	823,648	13,656,489	968,513	66,081	1,415,957	-	228,896	3,094,592	20,254,175
27	2041	839,314	13,731,651	998,795	66,909	1,498,539	-	230,407	3,112,335	20,477,949
28	2042	850,869	13,820,683	1,030,982	67,474	1,562,126	-	231,873	3,122,162	20,686,169
29	2043	861,232	13,915,890	1,071,890	68,557	1,642,973	-	233,844	3,130,197	20,924,583
30	2044	868,797	13,940,118	1,114,193	69,330	1,707,800	-	235,880	3,134,295	21,070,413
31	2045	876,040	13,982,849	1,134,310	69,425	1,764,879	-	237,815	3,129,716	21,195,034
32	2046	888,930	14,016,967	1,172,178	70,375	1,827,364	-	238,429	3,127,364	21,341,608
33	2047	895,984	14,078,530	1,207,509	71,346	1,914,306	-	256,620	3,116,464	21,540,759
34	2048	903,386	14,076,569	1,242,324	72,160	1,994,160	-	253,472	3,116,491	21,658,562
35	2049	910,443	14,086,990	1,264,571	73,603	2,048,017	-	254,975	3,102,486	21,741,085

Table 9-13: 2014 AC Intertie Replacements

		A	B	C	D	E	F	G	H	I
		352	353	354	355	356	358	359	397	Total
1	2016	511,806	9,174,424	436,626	56,611	418,500	-	113,603	2,901,113	13,612,682
2	2017	522,003	9,474,886	453,040	57,445	439,803	-	123,165	3,080,765	14,151,107
3	2018	534,266	9,740,399	468,898	57,847	468,441	-	131,301	3,228,225	14,629,376
4	2019	543,320	9,994,953	479,116	58,429	488,098	-	133,604	3,306,723	15,004,245
5	2020	559,449	10,355,494	496,516	59,316	517,674	-	135,333	3,379,256	15,503,037
6	2021	572,466	10,618,075	520,593	59,992	568,051	-	138,551	3,417,448	15,895,175
7	2022	608,011	10,870,947	539,582	60,745	601,336	-	147,074	3,422,024	16,249,719
8	2023	620,328	11,148,950	571,735	60,996	643,832	-	150,160	3,410,649	16,606,650
9	2024	632,837	11,417,352	599,614	61,324	673,754	-	152,550	3,361,840	16,899,271
10	2025	639,472	11,725,362	612,374	60,928	704,690	-	165,906	3,321,273	17,230,005
11	2026	644,453	11,949,816	636,967	61,376	735,269	-	170,261	3,245,076	17,443,218
12	2027	662,157	12,183,962	658,340	62,330	772,944	-	172,504	3,191,349	17,703,586
13	2028	676,407	12,441,245	678,649	62,664	817,536	-	175,947	3,120,299	17,972,747
14	2029	707,257	12,672,745	691,582	62,821	848,172	-	183,012	3,078,488	18,244,078
15	2030	718,489	12,909,849	713,597	62,699	892,470	-	186,324	3,035,842	18,519,270
16	2031	726,632	13,067,704	742,668	63,268	971,092	-	188,907	2,999,150	18,759,420
17	2032	733,357	13,284,388	768,594	63,917	1,019,496	-	200,210	2,994,556	19,064,517
18	2033	747,235	13,499,887	808,793	64,534	1,082,477	-	204,055	2,989,180	19,396,161
19	2034	758,637	13,681,690	846,867	64,370	1,125,633	-	206,422	3,021,364	19,704,982
20	2035	790,318	13,824,238	864,012	64,650	1,170,808	-	207,995	3,032,160	19,954,181
21	2036	801,404	13,988,156	896,585	64,845	1,213,976	-	211,430	3,074,221	20,250,618
22	2037	814,982	14,167,771	924,072	65,766	1,274,832	-	217,492	3,100,307	20,565,223
23	2038	818,311	14,298,449	951,684	66,683	1,338,361	-	219,753	3,111,059	20,804,300
24	2039	823,049	14,396,190	969,159	67,029	1,382,459	-	220,563	3,134,824	20,993,273
25	2040	839,132	14,519,957	995,541	67,324	1,442,901	-	233,199	3,152,770	21,250,823
26	2041	855,093	14,635,616	1,026,392	68,167	1,527,035	-	234,738	3,170,847	21,517,888
27	2042	866,865	14,726,321	1,059,184	68,743	1,591,818	-	236,232	3,180,859	21,730,022
28	2043	877,423	14,823,318	1,102,804	69,846	1,674,185	-	238,240	3,189,044	21,974,861
29	2044	885,130	14,872,880	1,149,774	70,634	1,740,662	-	240,315	3,193,219	22,152,615
30	2045	892,510	14,956,515	1,171,671	70,730	1,798,928	-	242,286	3,188,555	22,321,194
31	2046	905,642	15,025,585	1,210,251	71,698	1,862,588	-	242,911	3,186,159	22,504,834
32	2047	912,829	15,088,305	1,246,246	72,687	1,951,164	-	261,445	3,175,054	22,707,729
33	2048	920,369	15,107,508	1,281,716	73,516	2,032,520	-	258,237	3,175,081	22,848,948
34	2049	927,559	15,152,297	1,304,381	74,987	2,087,390	-	259,769	3,160,812	22,967,195
35	2050	938,839	15,169,131	1,332,585	75,639	2,142,892	-	260,933	3,149,516	23,069,535

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10. FINANCIAL RISK AND MITIGATION

10.1 Transmission Risk Analysis Model

The foundation of the risk analysis is a transmission financial spreadsheet model. This Excel spreadsheet, the Transmission Risk Analysis Model (TRAM), was developed to estimate the effects of risk and risk mitigation on end-of-year financial reserves and the likelihood of successful Treasury payment during the rate period. Financial reserve levels at the end of a fiscal year determine whether BPA is able to meet its Treasury payment obligation in that year. The model is one workbook with individual worksheets including an input matrix of revenues and expenses, an income statement, a cash flow statement, and worksheets for the risks analyzed using the model.

TRAM is a Monte Carlo model that produces 3,500 iterations of its calculations. Randomly sampled sets of input values are drawn for each game in a Monte Carlo simulation process that involves computing results of large numbers of games in order to create a probability distribution of outcomes, such as net revenues or financial reserves. In each iteration, or “game”, the calculation of financial reserves starts with historical data on financial reserves available for risk attributed to Transmission Services at the end of FY 2012 (which is the amount of reserves at the beginning of FY 2013). Cash flow for FY 2013 is built on the values from the Income Statement in the Study, and is modified by drawing randomly from probability distributions over possible values of the risk variables defined in it.

The structure of the income statement and cash flow statement used in the risk analysis is similar to the statements contained in the Study. The net cash flow, added to the start-of-year reserves balance, yields the year-end reserves balance. This flow of computations is repeated sequentially for each year from FY 2013 through FY 2015.

Simulating transmission cash flows in this manner allows forecasting a distribution of FY 2014 start-of-year reserves instead of defining FY 2014 start-of-year reserves as a deterministic input variable. The model forecasts the start-of-year FY 2014 financial reserves based on transmission function historical cash flows, current forecasts of expenses and revenues, and uncertainty in expenses and revenues explicitly modeled for FY 2013. The “most likely” forecasts are equal to the mode or peak of the underlying probability distribution for uncertain variables. The most likely (mode or peak) forecast will also equal the mean or expected value when the underlying distribution is symmetric or the value is a single point estimate. However, in a few cases the most likely forecast is greater or less than the expected (or mean) value when the underlying uncertainty distribution is not symmetric.

10.2 Risk Analysis Computer Software

The model used to perform the risk analysis was developed with Excel and @RISK Professional version 5.5 and 6.0 (@Palisade Corporation). Excel is a spreadsheet computer program, and @RISK is an Excel add-in computer program available from Palisade Corporation. The @RISK software allows the user to develop models incorporating uncertainty in a spreadsheet computer program environment. Uncertainty is incorporated by specifying model variables as probability

distributions over possible values that the variables of interest can take. @RISK samples values from the probability distributions in each game, and then carries out the spreadsheet computations, producing different results for each game. While @RISK provides tools that enable users to turn spreadsheet models into Monte Carlo simulation models, the users still must determine the input probability distributions for uncertain variables in the model. This is done in analyses external to the @RISK computer program.

10.3 Revenue Risk

Revenue risk is one of the uncertainties for which BPA determines probability distributions for modeling in TRAM. The amount of revenue earned during the rate period can vary from the revenue forecast due to uncertainty in the quantity of service sold. To capture the total transmission revenue variability, BPA models revenue drivers and the resulting revenue risk for those transmission products that generate significant revenues or that have significant revenue variability. The significant revenue-generating products include Network Integration (NT), long-term Point-to-Point (LT PTP), and long-term Southern Intertie (LT IS) transmission services, as well as the Ancillary Service, Scheduling, System Control, and Dispatch. The products that generate moderate revenues but have significant revenue variability are short-term Point-to-Point (ST PTP) and short-term Southern Intertie (ST IS) transmission services. In addition, BPA determines probability distributions for other transmission revenues (Delivery, Fiber & PCS Wireless, and Other Revenues and Credits) based on historical forecast variability. BPA models revenue risk based on the risk variables discussed below, and determines the revenue risk distribution and the expected value (mean) of revenue by running 3,500 revenue forecasting games using Excel and Palisade @RISK's Monte Carlo-based simulation.

10.3.1 Network Integration Service (NT) Revenue Risk

Risks in the NT revenue forecast arise with respect to the load forecast that is the basis for the NT sales and revenue forecast. The load forecast is based on predicted year-to-year NT load growth, which in turn can experience volatility due to the forecasted economic conditions, normalized for load center temperatures (that is, adjusted to reflect normal temperatures). To quantify the revenue risks, BPA models variance in the year-to-year load growth rate based on risk in economic outlook and temperature. For economic outlook risk in the growth rate, we apply a triangular risk distribution to the growth rate. A triangular distribution is used, defined by a high value, a low value, and a most likely value, or mode. For the risk of economic uncertainty, the most likely value is the forecast rate of year-to-year load growth. The high value is an optimistic load growth rate that serves as the 80th percentile of the triangular distribution, and the low value is a pessimistic load growth rate that serves as the 20th percentile of the distribution.

The optimistic load growth rate is determined by adding the predicted year-to-year NT load growth rate to an optimistic forecast of Gross Domestic Product (GDP) obtained from IHS Global Insights, an economic forecasting and analysis firm. Likewise, the pessimistic load growth rate is determined by adding the predicted year-to-year NT load growth rate to a pessimistic GDP forecast obtained from IHS Global Insights. The resulting distribution around growth rate serves as the first component of NT revenue risk.

The impact of temperature variability on the forecast year-to-year load growth rate is also modeled. The forecast growth rate is based on normalized temperature, so the risk arises from the variability of load center temperatures. Variability in these temperatures induces variability around the load growth rate. The distribution of temperatures in a 30-year period follows a normal distribution (bell curve symmetrical around the mean). The historical distribution around the long-range normalized temperature serves as the second component of NT revenue risk.

The addition of the economic stability impacts and temperature variance impacts to the load growth rates provides the basis for the NT revenue risk distribution. The NT revenue risk distribution results in standard deviations of \$4.3 million for FY 2014 and \$4.4 million for FY 2015.

10.3.2 Long-Term Network Point-to-Point Service (PTP) Revenue Risk

Risks regarding revenue from long-term PTP service are related to assumptions regarding new service and potential deferrals of the service commencement date, and exercise of renewals under BPA's Open Access Transmission Tariff (OATT); conversions of Formula Power Transmission (FPT) and Integration of Resources (IR) service to PTP service; and possible customer default. BPA also models revenue risk related to service has not been granted yet, but that might be granted during the rate period.

BPA models risk for forecast revenue from new transmission service (that is, service that has been offered but have not yet begun) because the customer has a right to defer the service commencement date for up to five years. A deferral delays the revenue from that service for the period of the deferral. The revenue risk associated with deferrals is based on a comparison of the service commencement date on the service reservation to the probable service commencement date after deferrals. BPA identifies possible deferrals by determining whether the service appears to be related to a Large Generator Interconnection Agreement (LGIA). If LGIA information is available, then risk is modeled around the forecast LGIA generation in-service date using a triangle distribution. A triangle distribution is defined by maximum, most likely, and minimum values. The actual transmission service commencement date is assumed to match the risk-adjusted generation in-service date (that is, the analysis assumes the customer would defer its transmission service commencement date to match the generation in-service date). If no LGIA information is available, the risk of deferral is identified based on information from BPA's account executive for the customer. The likelihood of deferral is based on the account executive's level of confidence that the request will begin on its current service commencement date.

BPA also models risk associated with revenue from new service to be offered as a result of new infrastructure. During the rate period two Network Open Season infrastructure projects are forecast to be completed (Big Eddy-Knight and Central Ferry-Lower Monumental). A PERT distribution is used to model possible delays in energization for these projects (and resulting delays in the start of service and receipt of revenue). For Big Eddy-Knight, risk of a delay up to one year was modeled. For Central Ferry-Lower Monumental, a delay of up to two years was modeled.

Risk is also modeled for service that is eligible to be renewed during the rate period. Historical data is gathered on the probability of renewal of long-term PTP service for service reservations that have been eligible for renewal over the past five years. A normal distribution is identified using the historical probability of renewals for service requests that are eligible for it. That distribution is applied to the service requests that are eligible for renewal during the rate period to identify the probability of the service being renewed.

Risk is modeled for service that is eligible to convert from a FPT or IR service to PTP service by gathering information from BPA's account executives for the customers on the likelihood that individual requests will convert either after the expiration or prior to the expiration of the FPT or IR contract. The likelihood of conversion is based on the account executives' level of confidence that the request will convert to PTP service during the rate period.

Risk of default is modeled for all existing and expected service. The probability of default for each customer is modeled using information from Standard & Poor. BPA applies Standard & Poor's credit rating for each entity and refers to Standard & Poor's Global Corporate Average Default Rate for the level of default risk associated with that credit rating. The Corporate Average Cumulative Default Rate is developed by Standard & Poor's. Standard & Poor's conducts its default studies on the basis of groupings called static pools. Static pools are formed by grouping issuers by rating category at the beginning of each year covered by the study. Annual default rates were calculated for each static pool: first in units and later as percentages with respect to the number of issuers in each rating category. Finally, these percentages were combined to obtain cumulative default rates for the 30 years covered by the study. If a default occurs in the model, we assume that the capacity held by the defaulting customer returns to inventory and is resold for a portion of the remaining months of the fiscal year. We assume the capacity is resold for a portion, not all, of the remaining months of the year to account for the time it takes to process and offer the new contract for the service.

Risk associated with additional sales of service that have not yet been requested (the risk that revenues will be higher than forecast due to these sales) is modeled based on three different sources: new sales associated with new generation that is forecast in the LGIA forecast but that has not yet requested long-term service, new sales out of transmission inventory that becomes available due to customer default, as described above, and new sales as a result of competitions performed in accordance with section 17.7 of the OATT (deferral competitions). Sales due to new generation are modeled using a pert distribution and information from Customer Service Engineering on expected in-service dates. Modeling of sales from inventory that becomes available due to customer default is described above. To model sales that occur after competitions, it is assumed that zero to six competitions can be performed a year. For each competition performed there is a 50% chance that the competition will be successful and result in additional revenue.

The Long-Term PTP revenue risk distribution results in standard deviations of \$7.0 million for FY 2014 and \$12.2 million for FY 2015.

10.3.3 Long-Term Southern Intertie Service Revenue Risk

Capacity for long-term service on the Southern Intertie is fully subscribed, meaning that the capacity is completely sold out. In addition, there is a queue of transmission service requests that are seeking long-term Southern Intertie service but that have not been granted service because no long-term Southern Intertie capacity is available for sale. Uncertainties in the revenue forecast are based primarily on transmission service contracts that will expire during the rate period and do not have service renewal rights. Requests in the queue are expected to replace any contracts that expire. Thus, we identified a high service commencement probability, with a normal distribution, for these requests. In addition, we model default risk for service on the Southern Intertie using the same method described for long-term PTP service. The Long-Term Southern Intertie risk distribution results in standard deviations of \$0.8 million for FY 2014 and \$1.4 million for FY 2015.

10.3.4 Short-Term Network Point-to-Point Service Revenue Risk

The short-term PTP revenue forecast carries significant variability risk due to the nature of the product. This service is not reserved far in advance with an existing contract, but instead is requested on an hourly, daily, weekly, or monthly basis. Short-term PTP service is sensitive to market conditions and streamflow, so we model the risks around the NP-15 minus Mid-C price spread, available flowgate or transfer capability (AFC or ATC) limitations, and streamflow. The short-term PTP forecast is developed using a regression analysis, so we also modeled risk of errors in correlation that is identified between historical sales, streamflow, and price spread. For a more in-depth discussion on the short-term PTP forecast and risk assessment process, see the Transmission Rates Study, Transmission Rates Study, BP-14-FS-BPA-07, section 2.2.2.2. The Short-Term PTP risk distribution resulting from the methodology outlined above results in standard deviations of \$13.0 million for FY 2014 and \$13.2 million for FY 2015.

10.3.5 Short-Term Southern Intertie Service Revenue Risk

The revenue forecast for short-term Southern Intertie service carries significant variability risk due to the nature of the product. This service is not reserved far in advance with an existing contract, but instead is requested on an hourly, daily, weekly, or monthly basis. Short-term Southern Intertie service is sensitive to market conditions and streamflow, so BPA models the risks around the NP-15 minus Mid-C price spread, available transfer capability (ATC) limitations, and streamflow. The forecast is developed using a regression analysis, so BPA also models risk of errors in correlations identified between historical sales, streamflow, and price spread. For a more in-depth discussion on the short-term IS forecast and risk assessment process, see the Transmission Rates Study. *Id.* section 2.3.1.2. The Short-Term Southern Intertie revenue risk distribution results in standard deviations of \$1.4 million for FY 2014 and \$1.6 million for FY 2015.

10.3.6 Other Transmission Revenue Risk

The revenue risk related to other transmission revenues includes risk associated with Utility Delivery and DSI Delivery revenues, revenues from fiber and wireless contracts and revenues from other fixed-price contracts. This risk is modeled based on the historical variance between rate case revenue forecasts for these products and actual revenue. Data from FY 2006 through

FY 2012 is used and a normal distribution is applied, resulting in a standard deviation of \$0.4 million per year for Utility and DSI Delivery revenue, \$0.9 million per year for fiber and wireless contract revenue and \$0.9 million per year for other fixed-price contract revenue.

10.3.7 Ancillary and Control Area Services Revenue Risk

BPA models the revenue risk associated with the ancillary service Scheduling, System Control, and Dispatch (SCD). SCD applies to customers taking both firm and non-firm transmission service. SCD revenue is based on sales of NT, long-term PTP, short-term PTP, long-term IS, and short-term IS. As such, the revenue variability for SCD follows the risk associated with those services, and SCD revenue risk is not modeled individually. Instead, the risk associated with SCD revenues is assumed to vary in a manner directly proportional to the uncertainty in the revenue from those services.

BPA does not model revenue risk associated with the Ancillary Service Reactive Supply and Voltage Control from Generation Sources (GSR) because that rate is a formula rate that is currently set at zero. As a result, it generates no revenue. The formula rate for GSR is calculated for each quarter but has been calculated to be zero in every quarter since 2009.

A separate risk module in TRAM incorporates the uncertainty in Variable Energy Resource Balancing Service (VERBS) revenue. In FY 2013–2015, Transmission Services will provide VERBS to wind and solar generators in the BPA balancing authority area. Generation Inputs Study, BP-14-FS-BPA-05, section 10.5. Transmission Services will charge generators for the VERBS they receive. Transmission Services will obtain from Power Services the generation inputs needed to support these services and will pay Power Services for these generation inputs.

VERBS comprises three components: regulation, following, and imbalance, with separate Base Service rates applying to each. *Id.* The costs of supplying these services have three components: embedded costs, direct costs, and variable costs.

The quantity of wind generation that will integrate into the BPA's balancing authority area during the rate period is not knowable now with certainty. There is financial risk due to the likelihood that the quantities will differ from the forecast, and therefore Transmission Services will receive either more or less revenue for VERBS than forecast. Transmission Services and Power Services will each bear half of the risk related to the recovery of embedded and direct costs. Power Services will bear the risk related to the recovery of variable costs, which is offset by an equal and opposite risk to net secondary revenue, as explained below.

The variable cost component reflects the deoptimization of the power system that results from setting aside some system capability to support the integration into the system of variable energy resources. If less VERBS than forecast is actually supplied to customers, Transmission Services will receive less revenue for such services, but Power Services will be able to generate greater net secondary revenue than forecast. The incremental net secondary revenue is expected to equal and therefore offset the decrease in Transmission Services' revenue. Transmission Services will pass to Power Services all actual revenue from sales of VERBS to wind generators that is intended to recover the variable costs of generation inputs provided by Power Services. In this

way, Transmission Services faces no risk due to variation in the total quantity of wind associated with the recovery of the variable costs of VERBS. Power Services bears the entire risk of deviations in the recovery of the variable cost component, but because this risk is offset by the corresponding impact on Power Services' net secondary revenue, Power Services faces no significant financial risk. Therefore, Power Services does not face significant risk for the recovery of the variable costs of generation inputs.

The recovery of embedded and direct costs, however, is subject to risk, and this risk will be shared equally by the two business lines. If the amount of installed wind capacity purchasing VERBS is lower than the rate case forecast, BPA will calculate the portion of the Transmission Services revenue shortfall that was intended to recover the embedded and direct costs of VERBS. Transmission Services' payments to Power Services for the embedded and direct costs of generation inputs will then equal the forecast amount minus half of the embedded- and direct-cost portions of the Transmission Services revenue shortfall. Similarly, if the amount of installed wind capacity purchasing VERBS exceeds the rate case forecast, Transmission Services' payments to Power Services for the embedded and direct costs of generation inputs for that year will equal the rate case forecast for that year plus half of the embedded- and direct-cost portions of the Transmission Services revenue increase.

Installed wind capacity is modeled using estimates of low, most-likely, and high quantities for FY 2013-2015, with the low and high representing the 10th and 90th percentile of capacity probability distributions. The years are modeled sequentially, such that the installed capacity drawn for one fiscal year impacts the most-likely capacity for the next fiscal year, and capacity does not decrease from one year to the next. Installed capacity for each fiscal year is drawn 3,500 times. The difference between the forecast and gamed values are multiplied by the embedded-cost portion of the appropriate VERBS rates, resulting in a negative or positive financial result.

Fifty percent of the financial result of these two risks is then applied to the net revenue for both Transmission Services and Power Services in their respective risk analyses. Between the time of completion of the Initial Proposal and the preparation of the Final Studies, the forecasts of installed capacity were revised, taking into account additional information from customers, and BPA determined that there is virtually no uncertainty to be modeled in the quantity of installed wind capacity. Therefore, the risk distributions have standard deviations of \$0 for both FY 2014 and FY 2015 for VERBS revenue.

10.3.8 Total Transmission Revenue Risk

The Transmission Revenue Risk worksheets compute the revenue risk and the resulting expected value for transmission revenues from these products. As a result of the inclusion of revenues from all transmission services, risk is pooled, which reduces the variability of the total transmission revenues as compared to evaluating and mitigating the risks of each service individually. The standard deviation of the distribution of total transmission revenue for the FY 2014 is \$19.0 million and for FY 2015 is \$22.2 million. In each game, the total transmission revenue is linked into the income statement in TRAM (worksheet "TS IS"). Uncertainty over VERBS revenue is incorporated into TRAM via a separate line item.

10.4 Expense Risk

The following expense items were modeled probabilistically in TRAM:

1. Transmission Operations
2. Transmission Maintenance
3. Agency Services General & Administrative
4. Interest on Long-Term Debt Issued to the U.S. Treasury
5. Transmission Acquisition and Ancillary Services

To obtain the data used to develop the probability distributions used by TRAM for these items, BPA risk staff interviewed subject matter experts for each expense item modeled. The experts were asked for their assessment of the risks concerning their cost estimates, including the possible range of outcomes and the associated probabilities of occurrence. In some instances, the experts were able to provide a complete probability distribution. For items in which the experts were unable to provide a complete probability distribution, BPA risk staff used the information they did provide to develop the probability distributions.

10.4.1 Transmission Operations

For this study, TRAM models variability in transmission operations expense. A PERT distribution of this risk is created and used for FY 2013 and for each of the two fiscal years in the rate period. A PERT distribution is a distribution in which maximum, most likely, and minimum values are defined for the distribution. For all of the years modeled, the most likely value in the distribution is the discrete forecast (that is, deterministic forecast) from the revenue requirement; the minimum value is 1.5 percent lower than the discrete forecast; and the maximum value is 1.5 percent higher than the discrete forecast. The resulting standard deviation of transmission operations expense is \$0.8 million per year.

10.4.2 Transmission Maintenance

For this study, TRAM models variability in transmission maintenance expense. A PERT distribution for this risk is created and used for FY 2011 and for each of the two fiscal years in the rate period. For all of the years modeled, the most likely value in the distribution is the discrete forecast from the revenue requirement; the minimum value is \$1 million lower; and the maximum value is \$3 million higher. The resulting standard deviation of transmission maintenance expense is \$0.4 million each year.

10.4.3 Agency Services General & Administrative

For this study, TRAM models variability in agency services general and administrative costs. A PERT distribution for this risk is created and used for FY 2011 and for each of the two fiscal years in the rate period. For all of the years modeled, the most likely value in the distribution is the discrete forecast from the revenue requirement; the minimum value is 5 percent lower; and the maximum value is 5 percent higher. The resulting standard deviation of G&A expense is \$1.5 million each year.

10.4.4 Interest on Long-Term Debt Issued to the U.S. Treasury

TRAM models the impact of interest rate risk on Federal debt issuance; the amounts of new debt issuance are assumed to be known with certainty. TRAM models the risk of interest rate fluctuation using potential interest rates for Federal debt that is forecast to be issued, which are based on planned debt issuance schedules. TRAM uses a gamma distribution of interest rates with autocorrelation for year-to-year results. This distribution is not symmetrical. The asymmetry in the distribution reflects the fact that there is no upper bound on interest rates and that it is possible (although unlikely) for rates to increase to a large extent. The lower bound on interest rates is 0 percent, meaning that simulated interest rates cannot go below 0 percent. Thus, the distribution for interest rates has a long tail to the right, reflecting the lower bound of 0 percent and unlimited upper bound.

Autocorrelation for year-to-year results means that the interest rate modeled in a given year impacts the interest rate modeled in following years. TRAM models interest rates with autocorrelation for year-to-year results so that rates for FY 2013 influence rates for FY 2014, which then influence rates for FY 2015. This prevents interest rates from varying unrealistically from one year to the next.

Debt issued in FY 2013 will also affect interest expense in FY 2014 and 2015; debt issued in FY 2014 will also affect interest expense in FY 2015. The difference in game-specific interest payments from the point forecast is calculated for every game run by TRAM. The resulting standard deviations of interest expense for long-term Treasury debt are \$5.2 million in FY 2014, and \$9.3 million in FY 2015.

10.4.5 Transmission Acquisition and Ancillary Services

TRAM reflects the uncertainty around the amount of certain purchases for ancillary services with a lognormal distribution. The mean value of these purchases is \$2.4 million per year. *Study*, section 2.5. The standard deviations of this variable are \$0.6 million in FY 2014 and \$0.7 million in FY 2015.

10.5 Calibration of TRAM Results to Historical Variability

The results from TRAM were calibrated to the historical variability in actual net revenues. We adjusted the net revenues for FY 2013, 2014, and 2015 based on the historical differences between rate case forecasts of net revenues and actual results for fiscal years 2008 through 2012. The standard deviation of the difference between the rate case forecasts and actual results was \$49.1 million. In the current rate proceeding, the unadjusted standard deviation of FY 2014 net revenue is \$20.130 million and the standard deviation of FY 2015 net revenue is \$25.207 million. The average standard deviation for the two years is \$22.669 million. A calibration multiplier of 2.166 was calculated by dividing the average simulated standard deviation by the average FY 2014–2015 standard deviation: $49.101 / 22.669 = 2.166$. This calibration multiplier is used to create adjusted net revenue for each game with the result that the average of the standard deviations of the adjusted net revenue for FY 2014 and 2015 equals the standard deviation of the historical difference between rate case forecasts of net revenues and actual net revenues.

TRAM is run once after any updating of data. The calibration multiplier is computed from the results of the initial TRAM run (2.166, as described above). The calibration multiplier is used to increase the variability in net revenue that is modeled by TRAM in the second run. To increase the variability by a factor equal to the calibration multiplier, the difference between the mean net revenue (NR) and the net revenue for each game needs to be increased by a factor equal to the calibration multiplier. This increases the standard deviation but leaves the mean the same. The unadjusted difference, the game-specific NR minus the Mean NR, can be called the OldGap. We want the adjusted difference, the NewGap, to be $2.166 * \text{OldGap}$. The calibration adjustment for the game should equal the NewGap minus the OldGap:

$$\text{CalibrationAdjustment} = \text{NewGap} - \text{OldGap}.$$

Since $\text{NewGap} = \text{Calibration Multiplier} \times \text{OldGap}$, that can be substituted into the formula for NewGap:

$$\begin{aligned} \text{CalibrationAdjustment} &= \text{Calibration Multiplier} \times \text{OldGap} - \text{OldGap}, \text{ or} \\ \text{CalibrationAdjustment} &= (\text{Calibration Multiplier} - 1) \times \text{OldGap}. \end{aligned}$$

That calibration adjustment is added to the net revenue calculated on the “TS IS” (income statement) worksheet to create a value for adjusted net revenue. The standard deviation of the adjusted net revenue line then matches the variability from the historical data. The adjusted net revenue is then used on the “TS CF” (cashflow) sheet, which passes results to the “TPP Calculation” sheet for the final calculation.

10.6 Risk Analysis Results

The transmission risk analysis simulation resulted in 3,496 games out of 3,500 in which end-of-year financial reserves were sufficient to pay Treasury on time and in full in the FY 2014–2015 rate period. This is a 99.9 percent TPP for the rate period.

10.7 Financial Reserves and PNRR

The expected values of year-end financial reserves available for risk for FYs 2013, 2014, and 2015 are \$470 million, \$448 million, and \$386 million, respectively. Since the TPP is above 95 percent for the rate period, no PNRR was needed.

Table 10-1: TRAM Transmission Income Statement
(\$ in millions)

	A	B	C	D	E	F	G	H	I
	FY 2013	FY13 EV	FY13 @ Risk	FY 2014	FY14 E.V.	FY14 @ Risk	FY 2015	FY15 E.V.	FY15 @ Risk
1 Operating Revenues									
2 Transmission Revenues									
3 Miscellaneous Revenues									
4 Reimbursable Revenues									
5 Plug for planned net revenue for risk									
6 Inter Business Line Revenues									
7 Total Operating Revenues	952.270	940.251	943.418	1,003.447	1,003.537	1,005.481	1,024.896	1,025.105	1,038.062
8									
9 VERBS Net Revenue Deviations		0.000	0.000		0.000	0.000		0.000	0.000
10									
11 Operating Expenses									
12 Transmission Operations	127.443	127.442	127.443	140.729	140.729	140.729	144.346	144.346	144.346
13 Transmission Maintenance	149.115	150.115	150.115	154.234	156.234	156.234	157.893	159.893	159.893
14 Transmission Engineering	40.934		40.934	41.638		41.638	41.769		41.769
15 Trans Services Transmission Acquisition and Ancillary Services	153.830		153.830	125.174	127.607	127.607	127.228	129.661	129.661
16 Agency Services G&A	78.315	78.315	78.315	78.428	78.428	78.428	80.902	80.902	80.902
17 Other Income, Expenses & Adjustments	0.443		0.443	0.000		0.000	0.000		0.000
18 Other	0.000		0.000	0.000		0.000	0.000		0.000
19 Total Transmission Operating Expense	550.080	551.080	551.080	540.203	544.636	544.636	552.138	556.571	556.571
20									
21 Net Operating Margin	402.190	389.172	392.338	463.244	458.901	460.845	472.758	468.534	481.491
22									
23 Federal Projects Depreciation	202.680		202.680	192.141	192.141	192.141	202.465	202.465	202.465
24									
25 Total Operating Expense & Depreciation	752.760	753.760	753.760	732.344	736.777	736.777	754.603	759.036	759.036
26									
27 Net Operating Revenue	199.510		189.658	271.103		271.137	270.293		281.460
28 Interest on Appropriated Funds	18.641	18.641	18.641	14.540	14.540	14.540	14.257	14.257	14.257
29 Capitalization Adjustment	(18.968)		(18.968)	(18.968)		(18.968)	(18.968)		(18.968)
30 Interest on Long-Term Debt Issued to Treasury	81.163	82.453	82.453	109.582	112.883	112.883	135.310	141.294	141.294
31 Amortization of Capitalized Bond Premiums	0.000		0.000	0.561		0.561	0.561		0.561
32 Debt Reassignment Interest Expense	51.498	51.498	51.498	44.124	44.124	44.124	36.995	36.995	36.995
33 Interest on Customer Advances	9.500		9.500			0.000			0.000
34 AFUDC	(30.000)		(30.000)	(36.477)		(36.477)	(39.234)		(39.234)
35 Non Federal Interest	30.112		30.112	43.371		43.371	47.967		47.967
36 Interest Credit on Cash Reserves	(14.472)		(14.472)	(9.643)		(9.643)	(13.666)		(13.666)
37 Net Interest Expense	127.474	128.764	128.764	147.091	150.392	150.392	163.222	169.205	169.205
38									
39 Total Operating & Net Interest Expenses	880.234	882.524	882.524	879.435	887.169	887.168	917.824	928.241	928.241
40									
41 Net Revenues	72.036	57.619	60.809	124.012	116.111	118.118	107.072	96.255	109.514
42 Calibration Adjustment		0.000	3.720		0.000	2.340		(0.000)	15.461
43 Adjusted Net Revenues		57.619	64.530		116.111	120.459		96.255	124.975

* The "@Risk" columns are needed for the actual calculations, but the values shown in those cells are not necessarily the actual expected values of the distributions created when @Risk runs. The adjacent columns, "True EV.", do not affect the calculation

Table 10-2: TRAM Transmission Services Statement of Cash Flows

(\$ in millions)

		A	B	C	D	E	F	G	H	I	J
		FY 2012	FY 2013	FY13 E.V.	FY13 @ Risk	FY 2014	FY14 E.V.	FY14 @ Risk	FY 2015	FY15 E.V.	FY15 @ Risk
1	Cash Provided by Current Operations										
2	Adjusted Net Revenues		72.036	57.619	64.530	124.012	116.111	120.459	107.072	96.255	124.975
3	Expenses not Requiring Cash										
4	Depreciation/Amortization		202.680		202.680	192.141		192.141	202.465		202.465
5	Transmission Credit Projects Net Interest (see Int on LGIA...)							0.000			0.000
6	Amort of Capitalized Bond Premiums		0.561		0.561	0.561		0.561	0.561		0.561
7	Capitalization Adjustment		(18.968)		(18.968)	(18.968)		(18.968)	(18.968)		(18.968)
8	Cash flow adjustment (reserve)/application				0.000	0.000		0.000	0.000		0.000
9	Draw down of Cash Reserves for Capital Funding										
10	Avista Settlement & B2H Cash Payments		(15.578)		(15.578)			0.000			0.000
11	Revenue Recognition (Third A/C)		(3.065)		(3.065)			0.000			0.000
12	Revenue Recognition (Fiberoptics)		(3.535)		(3.535)			0.000			0.000
13	MBS interest accrual net of cash received		31.268		31.268	0.000		0.000	0.000		0.000
14	Fiber Lease Pre Pay		0.000		0.000			0.000			0.000
15	Interest on LGIA Customer Advances (Trans Cred Proj Net Int)		10.500		10.500	5.297		5.297	5.331		5.331
16	Accrual Revenues (LGIA/AC Intertie/Fiber)		(41.568)		(41.568)	(48.292)		(48.292)	(48.397)		(48.397)
17	Cash Provided by Current Operations		234.331		226.825	254.751		251.198	248.063		265.966
18	Cash Used for Capital Investments										
19	Investment in										
20	Gross Utility Plant and CWIP		(627.722)		(627.722)	(662.693)		(662.693)	(639.534)		(639.534)
21	Cash Used for Capital Investments		(627.722)		(627.722)	(662.693)		(662.693)	(639.534)		(639.534)
22	Cash From Borrowing and Appropriations										
23	Cash from Borrowing & Appropriations 1/		612.722		612.722	647.693		647.693	624.534		624.534
24	Adjust DSR Accruals to Actual Cash Flow s		0.000		0.000	(175.093)		(175.093)	(185.173)		(185.173)
25	Repayment of Long-term Debt (Plus Advanced Refunding)		(165.717)		(165.717)	(1.217)		(1.217)	(1.298)		(1.298)
26	Repayment of Long-term Debt					(73.050)		(73.050)	0.000		0.000
27	Repayment of Capital Appropriations		(56.374)		(56.374)	(3.901)		(3.901)	(98.119)		(98.119)
28	Subtotal Cash from Borrowing & Approp		390.631		390.631	394.432		394.432	339.944		339.944
29	Annual Change in Cash Balance		(2.760)	(17.177)	(10.266)	(13.510)	(21.411)	(17.063)	(51.527)	(62.344)	(33.624)
30	Plus Beginning Cash Balance		486.900	486.900	486.900	484.140	469.723	476.634	470.630	448.312	459.570
31	Reserves For Risk	486.900	484.140	469.723	476.634	470.630	448.312	459.570	419.104	385.968	425.946
32											
33	Reserve Financing for Capital		15.000		15.000	15.000		15.000	15.000		15.000

*The "@Risk" columns are needed for the actual calculations, but the values shown in those cells are not necessarily the actual expected values of the distributions created when @Risk runs. The adjacent columns, "True EV.", do not affect the calculation

Table 10-3: TRAM TPP Calculation
(\$000s)

	A	B	C		D		E		F	
			2013		2014		2015			
			@Risk*	True E.V.*	@Risk*	True E.V.*	@Risk*	True E.V.*	@Risk*	True E.V.*
1	Starting Reserves for Risk		486,900		476,634	469,723	459,570	448,312		
2										
3	Decrease Starting Reserves for Add'l Liquidity for PS TPP									
4										
5	Revenues		943,418	940,251	1,005,481	1,003,537	1,038,062	1,025,105		
6	VERBS Net Revenue Deviations		-	-	-	-	-	-		
7	Expenses		(882,524)	(882,524)	(887,168)	(887,169)	(928,241)	(928,241)		
8	Game-specific Int. Credit Delta		(85)	(109)	(194)		(307)			
9	Calibration Adjustment		3,720	0	2,340	0	15,461	(0)		
10	Adjusted Net Revenue		64,530	57,619	120,459	116,111	124,975	96,255		
11										
12	Total Expenses Not Requiring Cash		162,295	162,295	130,739	130,739	140,991	140,991		
13	Cash Used for Capital Investment		(627,722)	(627,722)	(662,693)	(662,693)	(639,534)	(639,534)		
14	Cash From Borrowing and Appropriations		390,631	390,631	394,432	394,432	339,944	339,944		
15	Accrual-to-Cash Adjustment		(74,796)	(74,796)	(137,522)	(137,522)	(158,599)	(158,599)		
16										
17	Net Adjusted Cash Flow		(10,266)	(17,177)	(17,063)	(21,411)	(33,624)	(62,344)		
18										
19	Additional Use of Reserves					-		-		
20										
21	Ending Reserves for Risk		476,634	469,723	459,570	448,312	425,946	385,968		
22										
23	Required EOY Reserve Balance ("Liquidity Reserves")		20,000		20,000		20,000			
24										
25	Are Ending Reserves Higher than Liquidity Reserve level?		1		1		1			
26										
27	Test to See if TPP is Met in Rate Period						TRUE			
28	TPP Calculation						1.00			
29	TPP Percentage, 2-year value						99.89%			

* The "@Risk" columns are needed for the actual calculations, but the values shown in those cells are not necessarily the actual expected values of the distributions created when @Risk runs. The adjacent columns, "True E.V.", do not affect the calculations, but display the correct expected values of the variables in the "@Risk" columns. The "@Risk" columns are for the software; the "True E.V." columns are for the convenience of people reading the results.

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11. REPAYMENT STUDY INPUT DATA CURRENT STUDY

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
1	Bonneville Power Administration	6,812		0.025%	1985	N	1940	9	-	
2	Bonneville Power Administration	18,906		0.025%	1986	N	1941	9	-	
3	Bonneville Power Administration	461		0.025%	1986	N	1941	9	-	
4	Bonneville Power Administration	8,446		0.025%	1987	N	1942	9	-	
5	Bonneville Power Administration	1,052		0.025%	1987	N	1942	9	-	
6	Bonneville Power Administration	16,083		0.025%	1988	N	1943	9	-	
7	Bonneville Power Administration	4,538		0.025%	1988	N	1943	9	-	
8	Bonneville Power Administration	583		0.025%	1989	N	1944	9	-	
9	Bonneville Power Administration	249		0.025%	1989	N	1944	9	-	
10	Bonneville Power Administration	1,306		0.025%	1990	N	1945	9	-	
11	Bonneville Power Administration	3,366		0.025%	1990	N	1945	9	-	
12	Bonneville Power Administration	2,488		0.025%	1991	N	1946	9	-	
13	Bonneville Power Administration	732		0.025%	1991	N	1946	9	-	
14	Bonneville Power Administration	1,330		0.025%	1992	N	1947	9	-	
15	Bonneville Power Administration	1,773		0.025%	1992	N	1947	9	-	
16	Bonneville Power Administration	7,468		0.025%	1993	N	1948	9	-	
17	Bonneville Power Administration	2,290		0.025%	1993	N	1948	9	-	
18	Bonneville Power Administration	6,809		0.025%	1994	N	1949	9	-	
19	Bonneville Power Administration	2,719		0.025%	1994	N	1949	9	-	
20	Bonneville Power Administration	24,111		0.025%	1995	N	1950	9	-	
21	Bonneville Power Administration	6,124		0.025%	1995	N	1950	9	-	
22	Bonneville Power Administration	7,040		0.025%	1996	N	1951	9	-	
23	Bonneville Power Administration	13,266		0.025%	1996	N	1951	9	-	
24	Bonneville Power Administration	18,610		0.025%	1997	N	1952	9	-	
25	Bonneville Power Administration	8,979		0.025%	1997	N	1952	9	-	
26	Bonneville Power Administration	11,605		0.063%	1998	N	1953	9	-	
27	Bonneville Power Administration	23,550		0.063%	1998	N	1953	9	-	
28	Bonneville Power Administration	23,614		0.065%	1999	N	1954	9	-	
29	Bonneville Power Administration	17,370		0.065%	1999	N	1954	9	-	
30	Bonneville Power Administration	11,827		0.066%	2000	N	1955	9	-	
31	Bonneville Power Administration	10,283		0.066%	2000	N	1955	9	-	
32	Bonneville Power Administration	14,573		0.067%	2001	N	1956	9	-	
33	Bonneville Power Administration	32,221		0.067%	2001	N	1956	9	-	
34	Bonneville Power Administration	7,933		0.068%	2002	N	1957	9	-	
35	Bonneville Power Administration	15,980		0.068%	2002	N	1957	9	-	
36	Bonneville Power Administration	15,593		0.068%	2003	N	1958	9	-	
37	Bonneville Power Administration	10,654		0.068%	2003	N	1958	9	-	
38	Bonneville Power Administration	8,157		0.069%	2004	N	1959	9	-	
39	Bonneville Power Administration	8,863		0.069%	2004	N	1959	9	-	
40	Bonneville Power Administration	3,598		0.069%	2005	N	1960	9	-	
41	Bonneville Power Administration	4,218		0.069%	2005	N	1960	9	-	
42	Bonneville Power Administration	4,468		0.070%	2006	N	1961	9	-	
43	Bonneville Power Administration	11,271		0.070%	2006	N	1961	9	-	
44	Bonneville Power Administration	19,597		0.070%	2007	N	1962	9	-	
45	Bonneville Power Administration	4,877		0.070%	2007	N	1962	9	-	
46	Bonneville Power Administration	4,876		0.070%	2008	N	1963	9	-	
47	Bonneville Power Administration	4,330		0.070%	2008	N	1963	9	-	
48	Bonneville Power Administration	904		0.070%	2008	N	1963	9	-	
49	Bonneville Power Administration	803		0.070%	2008	N	1963	9	-	
50	Bonneville Power Administration	4,151		0.071%	2009	N	1964	9	-	
51	Bonneville Power Administration	5,738		0.071%	2009	N	1964	9	-	
52	Bonneville Power Administration	3,706		0.071%	2010	N	1965	9	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
53	Bonneville Power Administration	7,248		0.071%	2010	N	1965	9	-	
54	Bonneville Power Administration	5,202		0.071%	2010	N	1965	9	-	
55	Bonneville Power Administration	10,171		0.071%	2010	N	1965	9	-	
56	Bonneville Power Administration	11,830		0.071%	2011	N	1966	9	-	
57	Bonneville Power Administration	3,049		0.071%	2011	N	1966	9	-	
58	Bonneville Power Administration	6,647		0.071%	2011	N	1966	9	-	
59	Bonneville Power Administration	1,714		0.071%	2011	N	1966	9	-	
60	Bonneville Power Administration	19,003		0.072%	2012	N	1967	9	-	
61	Bonneville Power Administration	4,566		0.072%	2012	N	1967	9	-	
62	Bonneville Power Administration	14,300		0.072%	2012	N	1967	9	-	
63	Bonneville Power Administration	3,436		0.072%	2012	N	1967	9	-	
64	Bonneville Power Administration	41,070		0.072%	2013	N	1968	9	-	
65	Bonneville Power Administration	8,076		0.072%	2013	N	1968	9	-	
66	Bonneville Power Administration	23,202		0.072%	2013	N	1968	9	-	
67	Bonneville Power Administration	4,562		0.072%	2013	N	1968	9	-	
68	Bonneville Power Administration	42,237		0.072%	2014	N	1969	9	-	
69	Bonneville Power Administration	22,537		0.072%	2014	N	1969	9	-	
70	Bonneville Power Administration	384		0.072%	2014	N	1969	9	-	
71	Bonneville Power Administration	205		0.072%	2014	N	1969	9	-	
72	Bonneville Power Administration	64,977		0.073%	2015	N	1970	9	-	
73	Bonneville Power Administration	7,995		0.073%	2015	N	1970	9	-	
74	Bonneville Power Administration	24,412		0.073%	2015	N	1970	9	-	
75	Bonneville Power Administration	3,003		0.073%	2015	N	1970	9	-	
76	Bonneville Power Administration	12,025		0.073%	2016	N	1971	9	-	
77	Bonneville Power Administration	17,766		0.073%	2016	N	1971	9	-	
78	Bonneville Power Administration	12,051		0.073%	2016	N	1971	9	-	
79	Bonneville Power Administration	17,805		0.073%	2016	N	1971	9	-	
80	Bonneville Power Administration	29,326		0.073%	2017	N	1972	9	-	
81	Bonneville Power Administration	21,170		0.073%	2017	N	1972	9	-	
82	Bonneville Power Administration	3,980		0.073%	2017	N	1972	9	-	
83	Bonneville Power Administration	2,873		0.073%	2017	N	1972	9	-	
84	Bonneville Power Administration	33,788	15,769	0.073%	2018	N	1973	9	-	
85	Bonneville Power Administration	21,656	5,041	0.073%	2018	N	1973	9	-	
86	Bonneville Power Administration	16,368		0.073%	2018	N	1973	9	-	
87	Bonneville Power Administration	10,491		0.073%	2018	N	1973	9	-	
88	Bonneville Power Administration	12,079	12,079	0.073%	2019	N	1974	9	-	
89	Bonneville Power Administration	20,984	17,810	0.073%	2019	N	1974	9	-	
90	Bonneville Power Administration	12,563	12,563	0.073%	2019	N	1974	9	-	
91	Bonneville Power Administration	21,826		0.073%	2019	N	1974	9	-	
92	Bonneville Power Administration	32,026	32,026	0.073%	2020	N	1975	9	-	
93	Bonneville Power Administration	21,916	21,916	0.073%	2020	N	1975	9	-	
94	Bonneville Power Administration	17,158	17,158	0.073%	2020	N	1975	9	-	
95	Bonneville Power Administration	11,742	11,742	0.073%	2020	N	1975	9	-	
96	Bonneville Power Administration	61,025	61,025	0.072%	2021	N	1976	9	-	
97	Bonneville Power Administration	2,212	2,212	0.072%	2021	N	1976	9	-	
98	Bonneville Power Administration	3,948	3,948	0.072%	2022	N	1977	9	-	
99	Bonneville Power Administration	5,380	5,380	0.072%	2022	N	1977	9	-	
100	Bonneville Power Administration	33,702	33,702	0.072%	2022	N	1977	9	-	
101	Bonneville Power Administration	4,981	4,981	0.072%	2022	N	1977	9	-	
102	Construction	17,770		0.090%	2013	N	1978	9	-	
103	Construction	24,222		0.090%	2013	N	1978	9	-	
104	Construction	3,389		0.090%	2013	N	1978	9	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
105	Construction	4,619		0.090%	2013	N	1978	9	-	
106	Construction	7,010		0.095%	2014	N	1979	6	-	
107	Construction	9,804		0.095%	2014	N	1979	6	-	
108	Construction	26,690		0.095%	2014	N	1979	6	-	
109	Construction	21,977		0.095%	2014	N	1979	6	-	
110	Construction	6,026		0.095%	2014	N	1979	6	-	
111	Construction	21,228		0.099%	2014	N	1979	9	-	
112	Construction	14,340		0.099%	2014	N	1979	9	-	
113	Construction	10,610		0.099%	2014	N	1979	9	-	
114	Construction	2,888		0.099%	2014	N	1979	9	-	
115	Construction	1,371		0.095%	2014	N	1979	6	-	
116	Construction	1,870		0.095%	2014	N	1979	6	-	
117	Construction	150		0.095%	2014	N	1979	6	-	
118	Construction	102		0.095%	2014	N	1979	6	-	
119	Construction	98		0.099%	2014	N	1979	9	-	
120	Construction	66		0.099%	2014	N	1979	9	-	
121	Construction	605		0.099%	2014	N	1979	9	-	
122	Construction	165		0.099%	2014	N	1979	9	-	
123	Construction	39,696		0.130%	2015	N	1980	9	-	
124	Construction	10,806		0.130%	2015	N	1980	9	-	
125	Construction	44,811		0.130%	2015	N	1980	9	-	
126	Construction	1,469		0.130%	2015	N	1980	9	-	
127	Construction	9,292		0.130%	2015	N	1980	9	-	
128	Construction	4,253		0.130%	2015	N	1980	9	-	
129	Construction	2,263		0.130%	2015	N	1980	9	-	
130	Construction	616		0.130%	2015	N	1980	9	-	
131	Construction	1,707		0.130%	2015	N	1980	9	-	
132	Construction	56		0.130%	2015	N	1980	9	-	
133	Construction	21		0.130%	2015	N	1980	9	-	
134	Construction	10		0.130%	2015	N	1980	9	-	
135	Construction	119,775		0.166%	2016	N	1981	9	-	
136	Construction	54,821		0.166%	2016	N	1981	9	-	
137	Construction	277		0.166%	2016	N	1981	9	-	
138	Construction	127		0.166%	2016	N	1981	9	-	
139	Construction	34,221		0.144%	2017	N	1982	12	-	
140	Construction	15,663		0.144%	2017	N	1982	12	-	
141	Construction	9,975		0.144%	2017	N	1982	4	-	
142	Construction	4,566		0.144%	2017	N	1982	4	-	
143	Construction	46,980		0.144%	2017	N	1982	4	-	
144	Construction	37,455		0.144%	2017	N	1982	4	-	
145	Construction	3,677		0.142%	2017	N	1982	7	-	
146	Construction	2,932		0.142%	2017	N	1982	7	-	
147	Construction	77,807		0.142%	2017	N	1982	7	-	
148	Construction	80		0.144%	2017	N	1982	12	-	
149	Construction	36		0.144%	2017	N	1982	12	-	
150	Construction	23		0.144%	2017	N	1982	4	-	
151	Construction	11		0.144%	2017	N	1982	4	-	
152	Construction	551		0.144%	2017	N	1982	4	-	
153	Construction	439		0.144%	2017	N	1982	4	-	
154	Construction	43		0.142%	2017	N	1982	7	-	
155	Construction	34		0.142%	2017	N	1982	7	-	
156	Construction	402		0.142%	2017	N	1982	7	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
157	Construction	105		0.142%	2017	N	1982	7	-	
158	Construction	154		0.117%	2018	N	1983	6	-	
159	Construction	29,806		0.117%	2018	N	1983	6	-	
160	Construction	814		0.123%	2018	N	1983	9	-	
161	Construction	37,235		0.123%	2018	N	1983	9	-	
162	Construction	6,708		0.123%	2018	N	1983	9	-	
163	Construction	205		0.109%	2018	N	1983	11	-	
164	Construction	54		0.109%	2018	N	1983	11	-	
165	Construction	4		0.123%	2018	N	1983	9	-	
166	Construction	1		0.123%	2018	N	1983	9	-	
167	Construction	203		0.123%	2018	N	1983	9	-	
168	Construction	35		0.123%	2018	N	1983	9	-	
169	Construction	39,741		0.109%	2018	N	1983	11	-	
170	Construction	40		0.117%	2018	N	1983	6	-	
171	Construction	25,283		0.123%	2019	N	1984	11	-	
172	Construction	4,555		0.123%	2019	N	1984	11	-	
173	Construction	50,567		0.131%	2019	N	1984	9	-	
174	Construction	9,109		0.131%	2019	N	1984	9	-	
175	Construction	138		0.123%	2019	N	1984	11	-	
176	Construction	24		0.123%	2019	N	1984	11	-	
177	Construction	276		0.131%	2019	N	1984	9	-	
178	Construction	48		0.131%	2019	N	1984	9	-	
179	Construction	15,182		0.113%	2029	N	1985	6	-	
180	Construction	460		0.113%	2029	N	1985	6	-	
181	Construction	80		0.113%	2029	N	1985	6	-	
182	Construction	84,278		0.113%	2030	N	1985	6	-	
183	Construction	870		0.082%	1996	N	1986	3	-	
184	Construction	157		0.082%	1996	N	1986	3	-	
185	Construction	30,161		0.082%	1996	N	1986	3	-	
186	Construction	68,194		0.082%	1996	N	1986	3	-	
187	Construction	5		0.082%	1996	N	1986	3	-	
188	Construction	1		0.082%	1996	N	1986	3	-	
189	Construction	443		0.082%	1996	N	1986	3	-	
190	Construction	169		0.082%	1996	N	1986	3	-	
191	Construction	5,161		0.090%	2031	N	1986	6	-	
192	Construction	11,668		0.090%	2031	N	1986	6	-	
193	Construction	180,054		0.090%	2031	N	1986	6	-	
194	Construction	3,117		0.090%	2031	N	1986	6	-	
195	Construction	40,000		0.090%	2031	N	1986	6	-	
196	Construction	57,354		0.090%	2031	N	1986	6	-	
197	Construction	76		0.090%	2031	N	1986	6	-	
198	Construction	29		0.090%	2031	N	1986	6	-	
199	Construction	1,819		0.090%	2031	N	1986	6	-	
200	Construction	722		0.090%	2031	N	1986	6	-	
201	Construction	96,519		0.084%	1992	N	1987	6	-	
202	Construction	2,498		0.084%	1992	N	1987	6	-	
203	Construction	983		0.084%	1992	N	1987	6	-	
204	Construction	4,113		0.096%	2017	N	1987	7	-	
205	Construction	86,958		0.096%	2017	N	1987	7	-	
206	Construction	569		0.096%	2017	N	1987	7	-	
207	Construction	38		0.096%	2017	N	1987	7	-	
208	Construction	3,274		0.096%	2017	N	1987	7	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
209	Construction	48		0.096%	2017	N	1987	7	-	
210	Construction	618		0.096%	2032	N	1987	7	-	
211	Construction	112		0.096%	2032	N	1987	7	-	
212	Construction	43,236		0.093%	2032	N	1987	4	-	
213	Construction	54,409		0.093%	2032	N	1987	4	-	
214	Construction	7,903		0.096%	2032	N	1987	7	-	
215	Construction	3,109		0.096%	2032	N	1987	7	-	
216	Construction	37,342		0.096%	2032	N	1987	7	-	
217	Construction	111		0.093%	2032	N	1987	4	-	
218	Construction	281		0.093%	2032	N	1987	4	-	
219	Construction	554		0.093%	2032	N	1987	4	-	
220	Construction	1,409		0.093%	2032	N	1987	4	-	
221	Construction	285		0.096%	2032	N	1987	7	-	
222	Construction	631		0.096%	2032	N	1987	7	-	
223	Construction	283		0.095%	2018	N	1988	2	-	
224	Construction	43,417		0.095%	2018	N	1988	2	-	
225	Construction	28,513		0.095%	2033	N	1988	2	-	
226	Construction	27,887		0.095%	2033	N	1988	2	-	
227	Construction	20,677		0.095%	2033	N	1988	2	-	
228	Construction	22,923		0.095%	2033	N	1988	2	-	
229	Construction	45,870		0.095%	2033	N	1988	2	-	
230	Construction	9,018		0.099%	2033	N	1988	6	-	
231	Construction	30,004		0.099%	2033	N	1988	6	-	
232	Construction	954		0.095%	2033	N	1988	2	-	
233	Construction	933		0.095%	2033	N	1988	2	-	
234	Construction	518		0.095%	2033	N	1988	2	-	
235	Construction	1,725		0.095%	2033	N	1988	2	-	
236	Construction	226		0.099%	2033	N	1988	6	-	
237	Construction	752		0.099%	2033	N	1988	6	-	
238	Construction	16,909		0.090%	1999	N	1989	5	-	
239	Construction	56,257		0.090%	1999	N	1989	5	-	
240	Construction	424		0.090%	1999	N	1989	5	-	
241	Construction	1,410		0.090%	1999	N	1989	5	-	
242	Construction	41,894		0.093%	2030	N	1990	1	-	
243	Construction	1,149		0.093%	2030	N	1990	1	-	
244	Construction	3,824		0.093%	2030	N	1990	1	-	
245	Construction	29		0.093%	2030	N	1990	1	-	
246	Construction	96		0.093%	2030	N	1990	1	-	
247	Construction	3,008		0.093%	2030	N	1990	1	-	
248	Construction	54,145		0.076%	1995	N	1991	2	-	
249	Construction	5,855		0.076%	1995	N	1991	2	-	
250	Construction	80,000		0.062%	1995	N	1992	4	-	
251	Construction	50,000		0.070%	1997	N	1992	4	-	
252	Construction	28,300		0.070%	1997	N	1992	4	-	
253	Construction	107,800		0.066%	2000	N	1992	8	-	
254	Construction	107,700		0.073%	2007	N	1992	8	-	
255	Construction	147,521		0.088%	2032	N	1992	4	-	
256	Construction	150,000		0.081%	2032	N	1992	7	-	
257	Construction	2,479		0.088%	2032	N	1992	4	-	
258	Construction	50,000		0.061%	1998	N	1993	10	-	
259	Construction	99,962		0.084%	2033	N	1993	10	-	
260	Construction	130,000		0.078%	2033	N	1993	2	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
261	Construction	110,000		0.070%	2033	N	1993	8	-	
262	Construction	100,000		0.075%	2033	N	1993	4	-	
263	Construction	43,155		0.071%	1998	N	1994	5	-	
264	Construction	49,489		0.071%	1998	N	1994	5	-	
265	Construction	4,456		0.071%	1998	N	1994	5	-	
266	Construction	55,000		0.077%	1999	N	1994	9	-	
267	Construction	50,000		0.071%	2034	N	1994	1	-	
268	Construction	50,000		0.069%	2034	N	1994	10	-	
269	Construction	108,400		0.069%	2034	N	1994	10	-	
270	Construction	50,000		0.082%	2034	N	1994	5	-	
271	Construction	55,000		0.084%	2001	N	1995	1	-	
272	Construction	49,933		0.077%	2025	N	1995	7	-	
273	Construction	65,000		0.077%	2025	N	1995	8	-	
274	Construction	54,378		0.059%	2003	N	1996	1	-	
275	Construction	70,000		0.071%	2006	N	1996	8	-	
276	Construction	22,600		0.068%	2004	N	1997	1	-	
277	Construction	80,000		0.069%	2005	N	1997	5	-	
278	Construction	111,254		0.067%	2007	N	1997	8	-	
279	Construction	36,819		0.058%	2008	N	1998	8	-	
280	Construction	75,300		0.060%	2008	N	1998	4	-	
281	Construction	72,700		0.060%	2009	N	1998	5	-	
282	Construction	40,000		0.062%	2011	N	1998	5	-	
283	Construction	50,000		0.067%	2028	N	1998	4	-	
284	Construction	106,500	106,500	0.059%	2028	N	1998	8	-	
285	Construction	112,300	112,300	0.059%	2028	N	1998	8	-	
286	Construction	98,900		0.067%	2032	N	1998	5	-	
287	Construction	40,000		0.062%	2002	N	1999	9	-	
288	Construction	26,200		0.060%	2004	N	1999	5	-	
289	Construction	59,050	59,050	0.059%	2014	N	1999	2	-	
290	Construction	40,000		0.064%	2003	N	2000	11	-	
291	Construction	15,300		0.069%	2003	N	2000	8	-	
292	Construction	39,052		0.070%	2004	N	2000	7	-	
293	Construction	53,500		0.072%	2005	N	2000	1	-	
294	Construction	40,000		0.068%	2006	N	2000	9	-	
295	Construction	20,000		0.057%	2005	N	2001	1	-	
296	Construction	59,932		0.061%	2010	N	2001	1	-	
297	Construction	25,000		0.060%	2011	N	2001	6	-	
298	Construction	50,000		0.058%	2011	N	2001	8	-	
299	Construction	108,010		0.046%	2005	N	2002	3	-	
300	Construction	60,000		0.038%	2005	N	2002	6	-	
301	Construction	100,000		0.031%	2006	N	2002	9	-	
302	Construction	4,938		0.030%	2006	N	2003	10	-	
303	Construction	40,000		0.028%	2006	N	2003	11	-	
304	Construction	75,000		0.023%	2006	N	2003	7	-	
305	Construction	20,000		0.025%	2006	N	2003	9	-	
306	Construction	40,000		0.029%	2007	N	2003	4	-	
307	Construction	25,000		0.030%	2007	N	2003	7	-	
308	Construction	40,000		0.056%	2033	N	2003	4	-	
309	Construction	46,643		0.025%	2007	N	2004	1	-	
310	Construction	65,000		0.030%	2007	N	2004	4	-	
311	Construction	30,000		0.031%	2007	N	2004	9	-	
312	Construction	50,000		0.035%	2007	N	2004	7	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
313	Construction	65,000		0.030%	2008	N	2004	1	-	
314	Construction	25,000		0.038%	2008	N	2004	7	-	
315	Construction	40,000		0.056%	2034	N	2004	9	-	
316	Construction	27,010		0.038%	2009	N	2005	11	-	
317	Construction	40,000		0.040%	2009	N	2005	6	-	
318	Construction	40,000		0.054%	2035	N	2005	1	-	
319	Construction	40,000		0.055%	2035	N	2005	4	-	
320	Construction	45,000		0.053%	2035	N	2005	9	-	
321	Construction	20,000		0.051%	2009	N	2006	3	-	
322	Construction	70,000		0.054%	2009	N	2006	7	-	
323	Construction	5,319		0.050%	2010	N	2006	9	-	
324	Construction	20,000		0.050%	2010	N	2006	9	-	
325	Construction	25,000		0.051%	2010	N	2007	1	-	
326	Construction	50,000		0.052%	2010	N	2007	7	-	
327	Construction	40,000		0.049%	2012	N	2007	3	-	
328	Construction	35,000		0.064%	2037	N	2007	6	-	
329	Construction	40,000		0.034%	2011	N	2008	5	-	
330	Construction	25,000		0.032%	2011	N	2008	9	-	
331	Construction	30,000		0.039%	2012	N	2008	7	-	
332	Construction	30,000		0.032%	2012	N	2008	1	-	
333	Construction	25,000		0.034%	2012	N	2008	9	-	
334	Construction	14,000	14,000	0.027%	2014	N	2009	9	-	
335	Construction	46,940	46,940	0.040%	2019	N	2009	7	-	
336	Construction	35,000	35,000	0.037%	2019	N	2009	9	-	
337	Construction	50,000	50,000	0.038%	2020	N	2009	1	-	
338	Construction	20,000	20,000	0.042%	2022	N	2009	1	-	
339	Construction	35,000	35,000	0.043%	2022	N	2009	4	-	
340	Construction	35,000	35,000	0.052%	2039	N	2009	6	-	
341	Construction	7,500		0.002%	2015	N	2010	2	-	
342	Construction	15,000	15,000	0.016%	2015	N	2010	8	2025	0.043%
343	Construction	23,000	23,000	0.037%	2019	N	2010	10	-	
344	Construction	15,000	15,000	0.035%	2019	N	2010	11	-	
345	Construction	13,000	13,000	0.041%	2019	N	2010	12	-	
346	Construction	30,000	30,000	0.037%	2019	N	2010	1	-	
347	Construction	10,000		0.002%	2019	N	2010	2	-	
348	Construction	43,000	43,000	0.038%	2020	N	2010	10	-	
349	Construction	50,000	50,000	0.031%	2020	N	2010	7	-	
350	Construction	15,000	15,000	0.042%	2021	N	2010	3	-	
351	Construction	22,000	22,000	0.041%	2021	N	2010	4	-	
352	Construction	22,000	22,000	0.037%	2021	N	2010	5	-	
353	Construction	22,000	22,000	0.034%	2021	N	2010	6	-	
354	Construction	30,000	30,000	0.034%	2022	N	2010	7	-	
355	Construction	20,000	20,000	0.030%	2022	N	2010	8	-	
356	Construction	5,000		0.002%	2022	N	2010	8	-	
357	Construction	46,000	46,000	0.032%	2023	N	2010	9	-	
358	Construction	40,000		0.001%	2011	N	2011	9	-	
359	Construction	40,000		0.001%	2011	N	2011	9	-	
360	Construction	25,000		0.001%	2011	N	2011	9	-	
361	Construction	13,000	13,000	0.020%	2016	N	2011	6	-	
362	Construction	6,500	6,500	0.014%	2016	N	2011	8	-	
363	Construction	45,000	45,000	0.035%	2026	N	2011	10	-	

Table 11-1: Historical Investments (\$000s) (FY 2012)

	A	B	C	D	E	F	G	H	I	J
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	REPLACEMENT?	IN SERVICE DATE	MONTH	ROLLOVER DATE	ROLLOVER RATE
364	Construction	50,000	50,000	0.042%	2029	N	2011	4	-	
365	Construction	98,900	98,900	0.044%	2032	N	2011	5	-	
366	Construction	40,000	40,000	0.044%	2033	N	2011	4	-	
367	Construction	40,000	40,000	0.044%	2034	N	2011	9	-	
368	Construction	40,000	40,000	0.048%	2035	N	2011	4	-	
369	Construction	40,000	40,000	0.044%	2035	N	2011	1	-	
370	Construction	40,000	40,000	0.044%	2035	N	2011	4	-	
371	Construction	45,000	45,000	0.044%	2035	N	2011	9	-	
372	Construction	50,000	50,000	0.050%	2036	N	2011	1	-	
373	Construction	50,000	50,000	0.046%	2036	N	2011	6	-	
374	Construction	55,000	55,000	0.049%	2038	N	2011	2	-	
375	Construction	50,000	50,000	0.043%	2039	N	2011	8	-	
376	Construction	25,000	25,000	0.048%	2040	N	2011	6	-	
377	Construction	35,000	35,000	0.038%	2040	N	2011	9	-	
378	Construction	30,000		0.001%	2012	N	2012	9	-	
379	Construction	40,000		0.002%	2012	N	2012	9	-	
380	Construction	26,000	26,000	0.007%	2015	N	2012	9	2025	0.043%
381	Construction	14,300	14,300	0.007%	2015	N	2012	9	2025	0.043%
382	Construction	37,000	37,000	0.006%	2015	N	2012	8	2025	0.043%
383	Construction	36,400	36,400	0.009%	2017	N	2012	9	-	
384	Construction	45,000	45,000	0.034%	2024	N	2012	3	-	
385	Construction	17,000	17,000	0.036%	2027	N	2012	5	-	
386	Construction	35,000	35,000	0.035%	2037	N	2012	6	-	
387	Construction	39,000	39,000	0.036%	2039	N	2012	9	-	
388	Construction	45,000	45,000	0.039%	2040	N	2012	10	-	
389	Construction	30,000	30,000	0.039%	2040	N	2012	1	-	
390	Environment	40,000		0.070%	2012	N	1997	11	-	
391	Environment	30,000		0.061%	2010	N	2001	1	-	
392	Environment	30,000		0.031%	2006	N	2002	9	-	
393	Environment	20,000		0.051%	2009	N	2006	3	-	
394	Environment	10,000		0.032%	2011	N	2008	9	-	
395	Environment	10,000	10,000	0.043%	2025	N	2010	2	-	
396	Environment	13,000	13,000	0.036%	2027	N	2012	5	-	

Table 11-2: Projected Federal Investments (\$000s)

	A	B	C	D	E	F	G
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	IN SERVICE DATE	MONTH
1	Environment	540	540	3.100%	2028	2013	6
2	Environment	510	510	3.100%	2028	2013	9
3	Environment	5,000	5,000	5.000%	2028	2013	11
4	Projections Construction	8,700	8,700	1.100%	2019	2013	11
5	Projections Construction	10,500	10,500	1.800%	2019	2013	6
6	Projections Construction	12,180	13,650	1.800%	2019	2013	9
7	Projections Construction	55,000	55,000	5.700%	2043	2013	11
8	Projections Construction	30,000	30,000	6.000%	2043	2013	1
9	Projections Construction	15,000	15,000	6.000%	2043	2013	2
10	Projections Construction	18,000	18,000	6.000%	2043	2013	3
11	Projections Construction	42,110	42,110	4.100%	2043	2013	4
12	Projections Construction	39,950	39,950	4.100%	2043	2013	5
13	Projections Construction	42,110	42,110	4.100%	2043	2013	6
14	Projections Construction	40,010	40,010	4.100%	2043	2013	7
15	Projections Construction	60,016	60,016	4.100%	2043	2013	8
16	Projections Construction	66,330	66,330	4.100%	2043	2013	9
17	2013 TOTAL:	445,956	447,426				
18	Environment	780	780	0.044%	2029	2014	12
19	Environment	1,250	1,250	0.036%	2029	2014	3
20	Environment	1,430	1,430	0.036%	2029	2014	6
21	Environment	1,920	1,920	0.036%	2029	2014	9
22	Projections Construction	5,260	5,260	0.022%	2020	2014	12
23	Projections Construction	6,140	6,140	0.022%	2020	2014	3
24	Projections Construction	5,640	5,640	0.022%	2020	2014	6
25	Projections Construction	6,540	6,540	0.022%	2020	2014	9
26	Projections Construction	28,630	28,630	0.045%	2044	2014	10
27	Projections Construction	20,040	20,040	0.045%	2044	2014	11
28	Projections Construction	40,700	40,700	0.045%	2044	2014	12
29	Projections Construction	48,470	48,470	0.045%	2044	2014	1
30	Projections Construction	49,700	49,700	0.045%	2044	2014	2
31	Projections Construction	45,810	45,810	0.045%	2044	2014	3
32	Projections Construction	55,830	55,830	0.045%	2044	2014	4
33	Projections Construction	52,970	52,970	0.045%	2044	2014	5
34	Projections Construction	55,830	55,830	0.045%	2044	2014	6
35	Projections Construction	53,170	53,170	0.045%	2044	2014	7
36	Projections Construction	79,760	79,760	0.045%	2044	2014	8
37	Projections Construction	87,940	87,940	0.045%	2044	2014	9
38	2014 TOTAL:	647,810	647,810				
39	Environment	780	780	0.044%	2030	2015	12
40	Environment	1,250	1,250	0.044%	2030	2015	3
41	Environment	1,430	1,430	0.044%	2030	2015	6
42	Environment	1,920	1,920	0.044%	2030	2015	9
43	Projections Construction	5,390	5,390	0.033%	2021	2015	12
44	Projections Construction	6,290	6,290	0.033%	2021	2015	3
45	Projections Construction	5,780	5,780	0.033%	2021	2015	6
46	Projections Construction	6,700	6,700	0.033%	2021	2015	9

Table 11-2: Projected Federal Investments (\$000s)

	A	B	C	D	E	F	G
	PROJECT	ORIGINAL PRINCIPAL	CURRENT PRINCIPAL	INTEREST RATE	DUE DATE	IN SERVICE DATE	MONTH
47	Projections Construction	27,530	27,530	0.051%	2045	2015	10
48	Projections Construction	19,270	19,270	0.051%	2045	2015	11
49	Projections Construction	39,140	39,140	0.051%	2045	2015	12
50	Projections Construction	46,610	46,610	0.051%	2045	2015	1
51	Projections Construction	47,790	47,790	0.051%	2045	2015	2
52	Projections Construction	44,050	44,050	0.051%	2045	2015	3
53	Projections Construction	53,690	53,690	0.051%	2045	2015	4
54	Projections Construction	50,940	50,940	0.051%	2045	2015	5
55	Projections Construction	53,690	53,690	0.051%	2045	2015	6
56	Projections Construction	51,130	51,130	0.051%	2045	2015	7
57	Projections Construction	76,700	76,700	0.051%	2045	2015	8
58	Projections Construction	84,570	84,570	0.051%	2045	2015	9
59	2015 TOTAL:	624,650	624,650				

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12. REPAYMENT STUDY RESULTS CURRENT STUDY

Table 12.1: Summary of Interest (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1		Project	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2	Appropriation	Bonneville Power Administration	18,641	14,540	13,930	7,145	3,067	1,371	-	-	-	-	-	-	-	-	-	-	-	-
3		Bonneville Power Administration Subtotal:	18,641	14,540	13,930	7,145	3,067	1,371	-	-	-	-	-	-	-	-	-	-	-	-
4		Appropriation Subtotal:	18,641	14,540	13,930	7,145	3,067	1,371	-	-	-	-	-	-	-	-	-	-	-	-
5	Treasury	Construction	85,724	108,349	127,297	140,560	150,651	161,130	169,445	170,950	173,262	173,722	175,413	176,847	178,143	179,279	180,029	181,166	181,880	183,317
6		Environment	1,102	1,233	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	944	944	482	200	-
7		(Less Interest Income)	(1,333)	(1,303)	(1,466)	(1,332)	(1,203)	(1,304)	(2,898)	(2,747)	(2,736)	(2,744)	(2,739)	(2,787)	(2,943)	(2,941)	(2,939)	(2,937)	(2,937)	(2,934)
8		Coupon Scale Down Premiums	-	-	-	-	-	2,335	1,441	1,015	2,848	5,216	7,620	7,851	6,155	8,465	9,062	10,050	7,984	10,223
9		BPA Borrowing Subtotal:	85,492	108,279	127,203	140,600	150,820	163,534	169,361	170,591	174,746	177,566	181,667	183,283	182,726	185,747	187,095	188,761	187,126	190,607
10		Treasury Subtotal:	85,492	108,279	127,203	140,600	150,820	163,534	169,361	170,591	174,746	177,566	181,667	183,283	182,726	185,747	187,095	188,761	187,126	190,607
11	GRAND TOTAL:		104,133	122,819	141,133	147,745	153,887	164,905	169,361	170,591	174,746	177,566	181,667	183,283	182,726	185,747	187,095	188,761	187,126	190,607

Table 12.1: Summary of Interest (\$000s) (FY 2014)

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1		Project	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	Total
2	Appropriation	Bonneville Power Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58,695
3		Bonneville Power Administration Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58,695
4		Appropriation Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58,695
5	Treasury	Construction	185,671	188,410	195,755	200,297	204,675	209,621	222,384	234,040	241,951	250,857	267,477	280,992	289,978	298,471	305,856	313,849	322,475	331,718	7,625,878
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,996
7		(Less Interest Income)	(2,876)	(2,094)	(2,626)	(2,884)	(2,871)	(1,557)	(1,798)	(2,682)	(2,626)	(1,093)	(1,867)	(2,921)	(2,935)	(2,903)	(2,872)	(2,838)	(2,802)	(2,763)	(90,121)
8		Coupon Scale Down Premiums	5,783	4,360	5,279	221	1,753	413	861	779	416		112	-	-	4,533	4,268	3,973	3,766	3,431	130,230
9		BPA Borrowing Subtotal:	188,579	190,677	198,408	197,635	203,557	208,478	221,446	232,138	239,741	249,763	265,721	278,072	287,043	300,101	307,253	314,983	323,439	332,387	7,685,983
10		Treasury Subtotal:	188,579	190,677	198,408	197,635	203,557	208,478	221,446	232,138	239,741	249,763	265,721	278,072	287,043	300,101	307,253	314,983	323,439	332,387	7,685,983
11	GRAND TOTAL:		188,579	190,677	198,408	197,635	203,557	208,478	221,446	232,138	239,741	249,763	265,721	278,072	287,043	300,101	307,253	314,983	323,439	332,387	7,744,678

Table 12.2: Interest Calculation Summary (\$000s) (FY 2014)

A	B	C	D	E	F	G	H
1 Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
2	2013 Bonneville Power Administration	Historical	257,352	7.243%	18,641	-	18,641
3	2013 Construction	Historical	1,927,890	4.074%	78,544	-	78,544
4	2013 Construction	New	361,396	1.987%	7,180	-	7,180
5	2013 Environment	Historical	23,000	3.867%	889	-	889
6	2013 Environment	New	5,540	3.836%	213	-	213
7	2013 Float	Historical	-	-	(1,333)	-	(1,333)
8	FY 2013 Subtotal:		2,575,178		104,133	-	104,133
9	2014 Bonneville Power Administration	Historical	200,978	7.235%	14,540	-	14,540
10	2014 Construction	Historical	2,369,266	4.132%	97,901	-	97,901
11	2014 Construction	New	547,950	1.907%	10,448	-	10,448
12	2014 Environment	Historical	29,050	4.034%	1,172	-	1,172
13	2014 Environment	New	3,460	1.766%	61	-	61
14	2014 Float	Historical	-	-	(1,303)	-	(1,303)
15	FY 2014 Subtotal:		3,150,704		122,819	-	122,819
16	2015 Bonneville Power Administration	Historical	192,577	7.233%	13,930	-	13,930
17	2015 Construction	Historical	2,938,646	4.165%	122,399	-	122,399
18	2015 Construction	New	177,753	2.755%	4,897	-	4,897
19	2015 Environment	Historical	34,430	3.985%	1,372	-	1,372
20	2015 Float	Historical	-	-	(1,466)	-	(1,466)
21	FY 2015 Subtotal:		3,343,406		141,133	-	141,133
22	2016 Bonneville Power Administration	Historical	98,958	7.220%	7,145	-	7,145
23	2016 Construction	Historical	3,116,399	4.346%	135,441	-	135,441
24	2016 Construction	New	185,811	2.755%	5,119	-	5,119
25	2016 Environment	Historical	34,430	3.985%	1,372	-	1,372
26	2016 Float	Historical	-	-	(1,332)	-	(1,332)
27	FY 2016 Subtotal:		3,435,598		147,745	-	147,745
28	2017 Bonneville Power Administration	Historical	42,542	7.210%	3,067	-	3,067
29	2017 Construction	Historical	3,282,710	4.427%	145,332	-	145,332
30	2017 Construction	New	193,085	2.755%	5,319	-	5,319
31	2017 Environment	Historical	34,430	3.985%	1,372	-	1,372
32	2017 Float	Historical	-	-	(1,203)	-	(1,203)
33	FY 2017 Subtotal:		3,552,767		153,887	-	153,887
34	2018 Bonneville Power Administration	Historical	19,017	7.210%	1,371	-	1,371
35	2018 Construction	Historical	3,439,395	4.525%	155,636	2,335	157,971
36	2018 Construction	New	199,431	2.755%	5,494	-	5,494
37	2018 Environment	Historical	34,430	3.985%	1,372	-	1,372
38	2018 Float	Historical	-	-	(1,304)	-	(1,304)
39	FY 2018 Subtotal:		3,692,273		162,569	2,335	164,905
40	2019 Construction	Historical	3,592,118	4.561%	163,822	1,441	165,264
41	2019 Construction	New	204,100	2.755%	5,623	-	5,623
42	2019 Environment	Historical	34,430	3.985%	1,372	-	1,372
43	2019 Float	Historical	-	-	(2,898)	-	(2,898)
44	FY 2019 Subtotal:		3,830,648		167,919	1,441	169,361
45	2020 Construction	Historical	3,546,564	4.657%	165,149	1,015	166,164
46	2020 Construction	New	210,564	2.755%	5,801	-	5,801
47	2020 Environment	Historical	34,430	3.985%	1,372	-	1,372
48	2020 Float	Historical	-	-	(2,747)	-	(2,747)
49	FY 2020 Subtotal:		3,791,558		169,576	1,015	170,591
50	2021 Construction	Historical	3,525,481	4.745%	167,300	2,848	170,148
51	2021 Construction	New	216,398	2.755%	5,962	-	5,962
52	2021 Environment	Historical	34,430	3.985%	1,372	-	1,372
53	2021 Float	Historical	-	-	(2,736)	-	(2,736)
54	FY 2021 Subtotal:		3,776,309		171,898	2,848	174,746

Table 12.2: Interest Calculation Summary (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H
1	Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
55	2022	Construction	Historical	3,514,511	4.769%	167,623	5,216	172,839
56	2022	Construction	New	221,403	2.755%	6,100	-	6,100
57	2022	Environment	Historical	34,430	3.985%	1,372	-	1,372
58	2022	Float	Historical	-	-	(2,744)	-	(2,744)
59	FY 2022 Subtotal:			3,770,344		172,350	5,216	177,566
60	2023	Construction	Historical	3,510,234	4.820%	169,179	7,620	176,800
61	2023	Construction	New	226,273	2.755%	6,234	-	6,234
62	2023	Environment	Historical	34,430	3.985%	1,372	-	1,372
63	2023	Float	Historical	-	-	(2,739)	-	(2,739)
64	FY 2023 Subtotal:			3,770,937		174,046	7,620	181,667
65	2024	Construction	Historical	3,514,705	4.851%	170,506	7,851	178,358
66	2024	Construction	New	230,147	2.755%	6,341	-	6,341
67	2024	Environment	Historical	34,430	3.985%	1,372	-	1,372
68	2024	Float	Historical	-	-	(2,787)	-	(2,787)
69	FY 2024 Subtotal:			3,779,282		175,432	7,851	183,283
70	2025	Construction	Historical	3,518,451	4.879%	171,680	6,155	177,835
71	2025	Construction	New	234,570	2.755%	6,462	-	6,462
72	2025	Environment	Historical	34,430	3.985%	1,372	-	1,372
73	2025	Float	Historical	-	-	(2,943)	-	(2,943)
74	FY 2025 Subtotal:			3,787,451		176,572	6,155	182,726
75	2026	Construction	Historical	3,517,394	4.911%	172,730	8,465	181,194
76	2026	Construction	New	237,736	2.755%	6,550	-	6,550
77	2026	Environment	Historical	24,430	3.864%	944	-	944
78	2026	Float	Historical	-	-	(2,941)	-	(2,941)
79	FY 2026 Subtotal:			3,779,560		177,282	8,465	185,747
80	2027	Construction	Historical	3,512,400	4.936%	173,381	9,062	182,443
81	2027	Construction	New	241,278	2.755%	6,647	-	6,647
82	2027	Environment	Historical	24,430	3.864%	944	-	944
83	2027	Float	Historical	-	-	(2,939)	-	(2,939)
84	FY 2027 Subtotal:			3,778,108		178,033	9,062	187,095
85	2028	Construction	Historical	3,525,178	4.948%	174,419	10,050	184,468
86	2028	Construction	New	244,918	2.755%	6,747	-	6,747
87	2028	Environment	Historical	11,430	4.221%	482	-	482
88	2028	Float	Historical	-	-	(2,937)	-	(2,937)
89	FY 2028 Subtotal:			3,781,526		178,711	10,050	188,761
90	2029	Construction	Historical	3,536,216	4.950%	175,027	7,984	183,010
91	2029	Construction	New	248,752	2.755%	6,853	-	6,853
92	2029	Environment	Historical	5,380	3.716%	200	-	200
93	2029	Float	Historical	-	-	(2,937)	-	(2,937)
94	FY 2029 Subtotal:			3,790,348		179,143	7,984	187,126
95	2030	Construction	Historical	3,548,581	4.969%	176,344	10,223	186,568
96	2030	Construction	New	253,103	2.755%	6,973	-	6,973
97	2030	Float	Historical	-	-	(2,934)	-	(2,934)
98	FY 2030 Subtotal:			3,801,684		180,384	10,223	190,607
99	2031	Construction	Historical	3,563,232	4.972%	177,151	10,016	187,167
100	2031	Construction	New	257,207	2.755%	7,086	-	7,086
101	2031	Float	Historical	-	-	(2,892)	-	(2,892)
102	FY 2031 Subtotal:			3,820,439		181,346	10,016	191,361
103	2032	Construction	Historical	3,587,129	4.975%	178,468	5,783	184,251
104	2032	Construction	New	261,465	2.755%	7,203	-	7,203
105	2032	Float	Historical	-	-	(2,876)	-	(2,876)
106	FY 2032 Subtotal:			3,848,594		182,795	5,783	188,579

Table 12.2: Interest Calculation Summary (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H
1	Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
107	2033	Construction	Historical	3,613,637	5.011%	181,071	4,360	185,431
108	2033	Construction	New	266,389	2.755%	7,339	-	7,339
109	2033	Float	Historical	-	-	(2,094)	-	(2,094)
110	FY 2033 Subtotal:			3,880,026		186,316	4,360	190,677
111	2034	Construction	Historical	3,736,289	5.039%	188,279	5,279	193,558
112	2034	Construction	New	271,374	2.755%	7,476	-	7,476
113	2034	Float	Historical	-	-	(2,626)	-	(2,626)
114	FY 2034 Subtotal:			4,007,663		193,129	5,279	198,408
115	2035	Construction	Historical	3,806,434	5.063%	192,721	221	192,943
116	2035	Construction	New	274,987	2.755%	7,576	-	7,576
117	2035	Float	Historical	-	-	(2,884)	-	(2,884)
118	FY 2035 Subtotal:			4,081,421		197,413	221	197,635
119	2036	Construction	Historical	3,847,413	5.120%	196,985	1,753	198,738
120	2036	Construction	New	279,135	2.755%	7,690	-	7,690
121	2036	Float	Historical	-	-	(2,871)	-	(2,871)
122	FY 2036 Subtotal:			4,126,548		201,804	1,753	203,557
123	2037	Construction	Historical	3,897,766	5.177%	201,803	413	202,216
124	2037	Construction	New	283,794	2.755%	7,819	-	7,819
125	2037	Float	Historical	-	-	(1,557)	-	(1,557)
126	FY 2037 Subtotal:			4,181,560		208,064	413	208,478
127	2038	Construction	Historical	4,107,215	5.221%	214,443	861	215,304
128	2038	Construction	New	288,220	2.755%	7,940	-	7,940
129	2038	Float	Historical	-	-	(1,798)	-	(1,798)
130	FY 2038 Subtotal:			4,395,435		220,586	861	221,446
131	2039	Construction	Historical	4,299,807	5.257%	226,021	779	226,800
132	2039	Construction	New	291,085	2.755%	8,019	-	8,019
133	2039	Float	Historical	-	-	(2,682)	-	(2,682)
134	FY 2039 Subtotal:			4,590,892		231,359	779	232,138
135	2040	Construction	Historical	4,397,994	5.317%	233,822	416	234,238
136	2040	Construction	New	295,065	2.755%	8,129	-	8,129
137	2040	Float	Historical	-	-	(2,626)	-	(2,626)
138	FY 2040 Subtotal:			4,693,059		239,325	416	239,741
139	2041	Construction	Historical	4,510,302	5.379%	242,603	-	242,603
140	2041	Construction	New	299,576	2.755%	8,253	-	8,253
141	2041	Float	Historical	-	-	(1,093)	-	(1,093)
142	FY 2041 Subtotal:			4,809,878		249,763	-	249,763
143	2042	Construction	Historical	4,809,875	5.387%	259,110	112	259,222
144	2042	Construction	New	303,690	2.755%	8,367	-	8,367
145	2042	Float	Historical	-	-	(1,867)	-	(1,867)
146	FY 2042 Subtotal:			5,113,565		265,610	112	265,721
147	2043	Construction	Historical	5,031,798	5.415%	272,491	-	272,491
148	2043	Construction	New	308,578	2.755%	8,501	-	8,501
149	2043	Float	Historical	-	-	(2,921)	-	(2,921)
150	FY 2043 Subtotal:			5,340,376		278,072	-	278,072
151	2044	Construction	Historical	5,142,451	5.472%	281,378	-	281,378
152	2044	Construction	New	312,135	2.755%	8,599	-	8,599
153	2044	Float	Historical	-	-	(2,935)	-	(2,935)
154	FY 2044 Subtotal:			5,454,586		287,043	-	287,043
155	2045	Construction	Historical	5,259,480	5.510%	289,797	4,533	294,330
156	2045	Construction	New	314,836	2.755%	8,674	-	8,674
157	2045	Float	Historical	-	-	(2,903)	-	(2,903)
158	FY 2045 Subtotal:			5,574,316		295,569	4,533	300,101

Table 12.2: Interest Calculation Summary (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H
¹	Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
159	2046	Construction	Historical	5,391,797	5.510%	297,088	4,268	301,356
160	2046	Construction	New	318,263	2.755%	8,768	-	8,768
161	2046	Float	Historical	-	-	(2,872)	-	(2,872)
162	FY 2046 Subtotal:			5,710,060		302,985	4,268	307,253
163	2047	Construction	Historical	5,534,595	5.510%	304,956	3,973	308,929
164	2047	Construction	New	322,781	2.755%	8,893	-	8,893
165	2047	Float	Historical	-	-	(2,838)	-	(2,838)
166	FY 2047 Subtotal:			5,857,376		311,010	3,973	314,983
167	2048	Construction	Historical	5,689,518	5.510%	313,492	3,766	317,259
168	2048	Construction	New	326,031	2.755%	8,982	-	8,982
169	2048	Float	Historical	-	-	(2,802)	-	(2,802)
170	FY 2048 Subtotal:			6,015,549		319,673	3,766	323,439
171	2049	Construction	Historical	5,856,062	5.510%	322,669	3,431	326,100
172	2049	Construction	New	328,462	2.755%	9,049	-	9,049
173	2049	Float	Historical	-	-	(2,763)	-	(2,763)
174	FY 2049 Subtotal:			6,184,524		328,955	3,431	332,387
175	Grand Total:			156,873,546		7,614,448	130,230	7,744,678

Table 12-3: Summary of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1																					
2	BONNEVILLE POWER ADMINISTRATION	BPA	56,374	8,401	93,619	56,416	23,525	19,017	-	-	-	-	-	-	-	-	-	-	-	-	-
3		APPROPRIATION SUBTOTAL:	56,374	8,401	93,619	56,416	23,525	19,017	0	0	0	0	0	0	0	0	0	0	0	0	0
4	BPA BORROWING	CONSTRUCTION	-	73,050	-	19,500	36,400	46,708	249,654	231,646	227,368	225,681	221,802	226,400	235,627	242,730	228,500	233,880	236,386	238,452	233,310
5		ENVIRONMENT	-	-	-	-	-	-	-	-	-	-	-	-	10,000	-	13,000	6,050	5,380	-	-
6		BPA BORROWING SUBTOTAL:	-	73,050	-	19,500	36,400	46,708	249,654	231,646	227,368	225,681	221,802	226,400	245,627	242,730	241,500	239,930	241,766	238,452	233,310
7	MAKE WHOLE CALL	DISCOUNTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8		PREMIUMS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		MAKE WHOLE CALL SUBTOTAL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10		TREASURY SUBTOTAL:	0	73,050	0	19,500	36,400	46,708	249,654	231,646	227,368	225,681	221,802	226,400	245,627	242,730	241,500	239,930	241,766	238,452	233,310
11		GRAND TOTAL:	56,374	81,451	93,619	75,916	59,925	65,725	249,654	231,646	227,368	225,681	221,802	226,400	245,627	242,730	241,500	239,930	241,766	238,452	233,310

Table 12-3: Summary of Amortization (\$000s) (FY 2014)

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	
1			2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	TOTAL	
2	BONNEVILLE POWER ADMINISTRATION	BPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257,352
3		APPROPRIATION SUBTOTAL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257,352
4	BPA BORROWING	CONSTRUCTION	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608		6,106,176
5		ENVIRONMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34,430
6		BPA BORROWING SUBTOTAL:	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608		6,140,606
7	MAKE WHOLE CALL	DISCOUNTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8		PREMIUMS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		MAKE WHOLE CALL SUBTOTAL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10		TREASURY SUBTOTAL:	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608		6,140,606
11		GRAND TOTAL:	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608		6,397,958

Table 12.4: Application of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J
	Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized
1	FY 2013	Bonneville Power Administration	BPA	1973	2018	21,656	5,041	7.280%	No	5,041
2	FY 2013	Bonneville Power Administration	BPA	1973	2018	33,788	15,769	7.280%	No	15,769
3	FY 2013	Bonneville Power Administration	BPA	1974	2019	12,079	12,079	7.270%	No	5,191
4	FY 2013	Bonneville Power Administration	BPA	1974	2019	12,563	12,563	7.270%	No	12,563
5	FY 2013	Bonneville Power Administration	BPA	1974	2019	20,984	17,810	7.270%	No	17,810
6		FY 2013 Subtotal:	-	-	-	101,070	63,262	-	-	56,374
7	FY 2014	Construction	-	1999	2014	59,050	59,050	5.900%	No	59,050
8	FY 2014	Construction	-	2009	2014	14,000	14,000	2.746%	No	14,000
9	FY 2014	Bonneville Power Administration	BPA	1974	2019	12,079	6,888	7.270%	No	6,888
10	FY 2014	Bonneville Power Administration	BPA	1975	2020	11,742	11,742	7.250%	No	1,513
11		FY 2014 Subtotal:	-	-	-	96,871	91,680	-	-	81,451
12	FY 2015	Bonneville Power Administration	BPA	1975	2020	11,742	10,229	7.250%	No	10,229
13	FY 2015	Bonneville Power Administration	BPA	1975	2020	17,158	17,158	7.250%	No	17,158
14	FY 2015	Bonneville Power Administration	BPA	1975	2020	21,916	21,916	7.250%	No	21,916
15	FY 2015	Bonneville Power Administration	BPA	1975	2020	32,026	32,026	7.250%	No	32,026
16	FY 2015	Bonneville Power Administration	BPA	1976	2021	2,212	2,212	7.230%	No	2,212
17	FY 2015	Bonneville Power Administration	BPA	1976	2021	61,025	61,025	7.230%	No	10,078
18		FY 2015 Subtotal:	-	-	-	146,079	144,566	-	-	93,619
19	FY 2016	Construction	-	2011	2016	13,000	13,000	1.957%	No	13,000
20	FY 2016	Construction	-	2011	2016	6,500	6,500	1.423%	No	6,500
21	FY 2016	Bonneville Power Administration	BPA	1976	2021	61,025	50,947	7.230%	No	50,947
22	FY 2016	Bonneville Power Administration	BPA	1977	2022	4,981	4,981	7.210%	No	4,981
23	FY 2016	Bonneville Power Administration	BPA	1977	2022	33,702	33,702	7.210%	No	488
24		FY 2016 Subtotal:	-	-	-	119,208	109,130	-	-	75,916
25	FY 2017	Construction	-	2012	2017	36,400	36,400	0.920%	No	36,400
26	FY 2017	Bonneville Power Administration	BPA	1977	2022	33,702	33,214	7.210%	No	23,525
27		FY 2017 Subtotal:	-	-	-	70,102	69,614	-	-	59,925
28	FY 2018	Bonneville Power Administration	BPA	1977	2022	3,948	3,948	7.210%	No	3,948
29	FY 2018	Bonneville Power Administration	BPA	1977	2022	5,380	5,380	7.210%	No	5,380
30	FY 2018	Bonneville Power Administration	BPA	1977	2022	33,702	9,689	7.210%	No	9,689
31	FY 2018	Construction	-	2013	2043	15,000	15,000	6.000%	No	15,000
32	FY 2018	Construction	-	2013	2043	18,000	18,000	6.000%	No	18,000
33	FY 2018	Construction	-	2013	2043	30,000	30,000	6.000%	No	13,708
34		FY 2018 Subtotal:	-	-	-	106,030	82,017	-	-	65,725
35	FY 2019	Construction	-	2009	2019	46,940	46,940	4.026%	No	46,940
36	FY 2019	Construction	-	2009	2019	35,000	35,000	3.699%	No	35,000
37	FY 2019	Construction	-	2010	2019	13,000	13,000	4.069%	No	13,000
38	FY 2019	Construction	-	2010	2019	23,000	23,000	3.719%	No	23,000
39	FY 2019	Construction	-	2010	2019	30,000	30,000	3.714%	No	30,000
40	FY 2019	Construction	-	2010	2019	15,000	15,000	3.533%	No	15,000
41	FY 2019	Construction	-	2013	2019	10,500	10,500	1.800%	No	10,500
42	FY 2019	Construction	-	2013	2019	12,180	13,650	1.800%	No	13,650
43	FY 2019	Construction	-	2013	2019	8,700	8,700	1.100%	No	8,700
44	FY 2019	Construction	-	1998	2028	112,300	112,300	5.850%	No	37,572
45	FY 2019	Construction	-	2013	2043	30,000	16,292	6.000%	No	16,292
46		FY 2019 Subtotal:	-	-	-	336,620	324,382	-	-	249,654
47	FY 2020	Construction	-	2009	2020	50,000	50,000	3.830%	No	50,000
48	FY 2020	Construction	-	2010	2020	43,000	43,000	3.842%	No	43,000
49	FY 2020	Construction	-	2010	2020	50,000	50,000	3.118%	No	50,000
50	FY 2020	Construction	-	2014	2020	5,260	5,260	2.200%	No	5,260
51	FY 2020	Construction	-	2014	2020	5,640	5,640	2.200%	No	5,640
52	FY 2020	Construction	-	2014	2020	6,140	6,140	2.200%	No	6,140
53	FY 2020	Construction	-	2014	2020	6,540	6,540	2.200%	No	6,540
54	FY 2020	Construction	-	1998	2028	112,300	74,728	5.850%	No	65,066
55		FY 2020 Subtotal:	-	-	-	278,880	241,308	-	-	231,646

Table 12.4: Application of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J
	Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized
56	FY 2021	Construction	-	2010	2021	15,000	15,000	4.188%	No	15,000
57	FY 2021	Construction	-	2010	2021	22,000	22,000	4.094%	No	22,000
58	FY 2021	Construction	-	2010	2021	22,000	22,000	3.694%	No	22,000
59	FY 2021	Construction	-	2010	2021	22,000	22,000	3.374%	No	22,000
60	FY 2021	Construction	-	1998	2028	112,300	9,661	5.850%	No	9,661
61	FY 2021	Construction	-	1998	2028	106,500	106,500	5.850%	No	106,500
62	FY 2021	Construction	-	2013	2043	55,000	55,000	5.700%	No	30,207
63		FY 2021 Subtotal:	-	-	-	354,800	252,161	-	-	227,368
64	FY 2022	Construction	-	2009	2022	35,000	35,000	4.253%	No	35,000
65	FY 2022	Construction	-	2009	2022	20,000	20,000	4.200%	No	20,000
66	FY 2022	Construction	-	2010	2022	30,000	30,000	3.372%	No	30,000
67	FY 2022	Construction	-	2010	2022	20,000	20,000	3.029%	No	20,000
68	FY 2022	Construction	-	2013	2043	55,000	24,793	5.700%	No	24,793
69	FY 2022	Construction	-	2015	2050	177,753	177,753	5.510%	No	95,887
70		FY 2022 Subtotal:	-	-	-	337,753	307,546	-	-	225,681
71	FY 2023	Construction	-	2010	2023	46,000	46,000	3.161%	No	46,000
72	FY 2023	Construction	-	2015	2050	177,753	81,866	5.510%	No	81,866
73	FY 2023	Construction	-	2016	2051	185,811	185,811	5.510%	No	93,936
74		FY 2023 Subtotal:	-	-	-	409,564	313,677	-	-	221,802
75	FY 2024	Construction	-	2012	2024	45,000	45,000	3.360%	No	45,000
76	FY 2024	Construction	-	2016	2051	185,811	91,875	5.510%	No	91,875
77	FY 2024	Construction	-	2017	2052	193,085	193,085	5.510%	No	89,526
78		FY 2024 Subtotal:	-	-	-	423,896	329,960	-	-	226,400
79	FY 2025	Construction	-	2010	2025	15,000	15,000	4.310%	Yes	15,000
80	FY 2025	Construction	-	2012	2025	14,300	14,300	4.310%	Yes	14,300
81	FY 2025	Construction	-	2012	2025	26,000	26,000	4.310%	Yes	26,000
82	FY 2025	Construction	-	2012	2025	37,000	37,000	4.310%	Yes	37,000
83	FY 2025	Environment	-	2010	2025	10,000	10,000	4.279%	No	10,000
84	FY 2025	Construction	-	2017	2052	193,085	103,559	5.510%	No	103,559
85	FY 2025	Construction	-	2018	2053	199,431	199,431	5.510%	No	39,768
86		FY 2025 Subtotal:	-	-	-	494,816	405,290	-	-	245,627
87	FY 2026	Construction	-	2011	2026	45,000	45,000	3.450%	No	45,000
88	FY 2026	Construction	-	2018	2053	199,431	159,663	5.510%	No	159,663
89	FY 2026	Construction	-	2019	2054	204,100	204,100	5.510%	No	38,067
90		FY 2026 Subtotal:	-	-	-	448,531	408,763	-	-	242,730
91	FY 2027	Construction	-	2012	2027	17,000	17,000	3.550%	No	17,000
92	FY 2027	Environment	-	2012	2027	13,000	13,000	3.550%	No	13,000
93	FY 2027	Construction	-	2019	2054	204,100	166,033	5.510%	No	166,033
94	FY 2027	Construction	-	2020	2055	210,564	210,564	5.510%	No	45,467
95		FY 2027 Subtotal:	-	-	-	444,664	406,597	-	-	241,500
96	FY 2028	Environment	-	2013	2028	5,000	5,000	5.000%	No	5,000
97	FY 2028	Environment	-	2013	2028	510	510	3.100%	No	510
98	FY 2028	Environment	-	2013	2028	540	540	3.100%	No	540
99	FY 2028	Construction	-	2020	2055	210,564	165,097	5.510%	No	165,097
100	FY 2028	Construction	-	2021	2056	216,398	216,398	5.510%	No	68,783
101		FY 2028 Subtotal:	-	-	-	433,012	387,545	-	-	239,930
102	FY 2029	Construction	-	2011	2029	50,000	50,000	4.238%	No	50,000
103	FY 2029	Environment	-	2014	2029	780	780	4.400%	No	780
104	FY 2029	Environment	-	2014	2029	1,250	1,250	3.600%	No	1,250
105	FY 2029	Environment	-	2014	2029	1,430	1,430	3.600%	No	1,430
106	FY 2029	Environment	-	2014	2029	1,920	1,920	3.600%	No	1,920
107	FY 2029	Construction	-	2021	2056	216,398	147,615	5.510%	No	147,615
108	FY 2029	Construction	-	2022	2057	221,403	221,403	5.510%	No	38,772
109		FY 2029 Subtotal:	-	-	-	493,181	424,398	-	-	241,766
110	FY 2030	Construction	-	2022	2057	221,403	182,631	5.510%	No	182,631
111	FY 2030	Construction	-	2023	2058	226,273	226,273	5.510%	No	55,821
112		FY 2030 Subtotal:	-	-	-	447,676	408,904	-	-	238,452
113	FY 2031	Construction	-	2023	2058	226,273	170,452	5.510%	No	170,452
114	FY 2031	Construction	-	2024	2059	230,147	230,147	5.510%	No	62,858
115		FY 2031 Subtotal:	-	-	-	456,420	400,599	-	-	233,310
116	FY 2032	Construction	-	2011	2032	98,900	98,900	4.355%	No	98,900
117	FY 2032	Construction	-	2024	2059	230,147	167,289	5.510%	No	136,057
118		FY 2032 Subtotal:	-	-	-	329,047	266,189	-	-	234,957

Table 12.4: Application of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J
	Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized
119	FY 2033	Construction	-	2011	2033	40,000	40,000	4.386%	No	40,000
120	FY 2033	Construction	-	2024	2059	230,147	31,232	5.510%	No	31,232
121	FY 2033	Construction	-	2025	2060	234,570	234,570	5.510%	No	72,505
122		FY 2033 Subtotal:	-	-	-	504,717	305,802	-	-	143,737
123	FY 2034	Construction	-	2011	2034	40,000	40,000	4.416%	No	40,000
124	FY 2034	Construction	-	2011	2036	50,000	50,000	4.952%	No	5,157
125	FY 2034	Construction	-	2009	2039	35,000	35,000	5.192%	No	35,000
126	FY 2034	Construction	-	2025	2060	234,570	162,065	5.510%	No	121,072
127		FY 2034 Subtotal:	-	-	-	359,570	287,065	-	-	201,229
128	FY 2035	Construction	-	2011	2035	40,000	40,000	4.794%	No	40,000
129	FY 2035	Construction	-	2011	2035	40,000	40,000	4.446%	No	40,000
130	FY 2035	Construction	-	2011	2035	40,000	40,000	4.446%	No	40,000
131	FY 2035	Construction	-	2011	2035	45,000	45,000	4.446%	No	45,000
132	FY 2035	Construction	-	2011	2036	50,000	44,843	4.952%	No	44,843
133	FY 2035	Construction	-	2011	2038	55,000	55,000	4.935%	No	24,166
134		FY 2035 Subtotal:	-	-	-	270,000	264,843	-	-	234,009
135	FY 2036	Construction	-	2011	2036	50,000	50,000	4.629%	No	50,000
136	FY 2036	Construction	-	2011	2038	55,000	30,834	4.935%	No	30,834
137	FY 2036	Construction	-	2011	2040	25,000	25,000	4.775%	No	25,000
138	FY 2036	Construction	-	2014	2044	79,760	79,760	4.500%	No	35,008
139	FY 2036	Construction	-	2014	2044	87,940	87,940	4.500%	No	87,940
140		FY 2036 Subtotal:	-	-	-	297,700	273,534	-	-	228,782
141	FY 2037	Construction	-	2012	2037	35,000	35,000	3.503%	No	35,000
142	FY 2037	Construction	-	2014	2044	79,760	44,752	4.500%	No	39,344
143		FY 2037 Subtotal:	-	-	-	114,760	79,752	-	-	74,344
144	FY 2038	Construction	-	2014	2044	79,760	5,408	4.500%	No	5,408
145	FY 2038	Construction	-	2014	2044	53,170	53,170	4.500%	No	53,170
146	FY 2038	Construction	-	2014	2044	55,830	55,830	4.500%	No	37,050
147		FY 2038 Subtotal:	-	-	-	188,760	114,408	-	-	95,628
148	FY 2039	Construction	-	2011	2039	50,000	50,000	4.295%	No	50,000
149	FY 2039	Construction	-	2012	2039	39,000	39,000	3.627%	No	39,000
150	FY 2039	Construction	-	2014	2044	55,830	18,780	4.500%	No	18,780
151	FY 2039	Construction	-	2014	2044	52,970	52,970	4.500%	No	52,970
152	FY 2039	Construction	-	2014	2044	55,830	55,830	4.500%	No	32,149
153		FY 2039 Subtotal:	-	-	-	253,630	216,580	-	-	192,898
154	FY 2040	Construction	-	2011	2040	35,000	35,000	3.796%	No	35,000
155	FY 2040	Construction	-	2012	2040	30,000	30,000	3.890%	No	30,000
156	FY 2040	Construction	-	2012	2040	45,000	45,000	3.890%	No	45,000
157	FY 2040	Construction	-	2013	2043	66,330	66,330	4.100%	No	10,831
158	FY 2040	Construction	-	2014	2044	55,830	23,681	4.500%	No	23,681
159	FY 2040	Construction	-	2014	2044	45,810	45,810	4.500%	No	38,244
160		FY 2040 Subtotal:	-	-	-	277,970	245,821	-	-	182,757
161	FY 2041	Construction	-	2013	2043	66,330	55,499	4.100%	No	3
162		FY 2041 Subtotal:	-	-	-	66,330	55,499	-	-	3
163	FY 2042	Construction	-	2013	2043	66,330	55,496	4.100%	No	55,496
164	FY 2042	Construction	-	2013	2043	60,016	60,016	4.100%	No	26,271
165		FY 2042 Subtotal:	-	-	-	126,346	115,512	-	-	81,767
166	FY 2043	Construction	-	2013	2043	60,016	33,745	4.100%	No	33,745
167	FY 2043	Construction	-	2013	2043	39,950	39,950	4.100%	No	39,950
168	FY 2043	Construction	-	2013	2043	40,010	40,010	4.100%	No	40,010
169	FY 2043	Construction	-	2013	2043	42,110	42,110	4.100%	No	42,110
170	FY 2043	Construction	-	2013	2043	42,110	42,110	4.100%	No	42,110
171		FY 2043 Subtotal:	-	-	-	224,196	197,925	-	-	197,925
172	FY 2044	Construction	-	2014	2044	45,810	7,566	4.500%	No	7,566
173	FY 2044	Construction	-	2014	2044	20,040	20,040	4.500%	No	20,040
174	FY 2044	Construction	-	2014	2044	28,630	28,630	4.500%	No	28,630
175	FY 2044	Construction	-	2014	2044	40,700	40,700	4.500%	No	40,700
176	FY 2044	Construction	-	2014	2044	48,470	48,470	4.500%	No	48,470
177	FY 2044	Construction	-	2014	2044	49,700	49,700	4.500%	No	49,700

Table 12.4: Application of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J
	Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized
179	FY 2045	Construction	-	2025	2060	234,570	40,993	5.510%	No	40,993
180	FY 2045	Construction	-	2026	2061	237,736	237,736	5.510%	No	141,526
181		FY 2045 Subtotal:	-	-	-	472,306	278,729	-	-	182,520
182	FY 2046	Construction	-	2026	2061	237,736	96,210	5.510%	No	96,210
183	FY 2046	Construction	-	2027	2062	241,278	241,278	5.510%	No	79,255
184		FY 2046 Subtotal:	-	-	-	479,014	337,488	-	-	175,465
185	FY 2047	Construction	-	2027	2062	241,278	162,023	5.510%	No	162,023
186	FY 2047	Construction	-	2028	2063	244,918	244,918	5.510%	No	5,835
187		FY 2047 Subtotal:	-	-	-	486,196	406,941	-	-	167,858
188	FY 2048	Construction	-	2028	2063	244,918	239,083	5.510%	No	159,487
189		FY 2048 Subtotal:	-	-	-	244,918	239,083	-	-	159,487
190	FY 2049	Construction	-	2028	2063	244,918	79,596	5.510%	No	79,596
191	FY 2049	Construction	-	2029	2064	248,752	248,752	5.510%	No	71,013
192		FY 2049 Subtotal:	-	-	-	493,670	328,348	-	-	150,608
193	FY 2050	Construction	-	2029	2064	248,752	177,739	5.510%	No	139,704
194		FY 2050 Subtotal:	-	-	-	248,752	177,739	-	-	139,704
195	FY 2051	Construction	-	2029	2064	248,752	38,035	5.510%	No	38,035
196	FY 2051	Construction	-	2030	2065	253,103	253,103	5.510%	No	109,292
197		FY 2051 Subtotal:	-	-	-	501,855	291,138	-	-	147,327
198	FY 2052	Construction	-	2030	2065	253,103	143,811	5.510%	No	143,811
199	FY 2052	Construction	-	2031	2066	257,207	257,207	5.510%	No	11,656
200		FY 2052 Subtotal:	-	-	-	510,310	401,018	-	-	155,467
201	FY 2053	Construction	-	2031	2066	257,207	245,551	5.510%	No	163,916
202		FY 2053 Subtotal:	-	-	-	257,207	245,551	-	-	163,916
203	FY 2054	Construction	-	2031	2066	257,207	81,635	5.510%	No	81,635
204	FY 2054	Construction	-	2032	2067	261,465	261,465	5.510%	No	91,296
205		FY 2054 Subtotal:	-	-	-	518,672	343,100	-	-	172,931
206	FY 2055	Construction	-	2032	2067	261,465	170,169	5.510%	No	170,169
207	FY 2055	Construction	-	2033	2068	266,389	266,389	5.510%	No	12,276
208		FY 2055 Subtotal:	-	-	-	527,854	436,558	-	-	182,445
209	FY 2056	Construction	-	2033	2068	266,389	254,113	5.510%	No	192,373
210		FY 2056 Subtotal:	-	-	-	266,389	254,113	-	-	192,373
211	FY 2057	Construction	-	2033	2068	266,389	61,740	5.510%	No	61,740
212	FY 2057	Construction	-	2034	2069	271,374	271,374	5.510%	No	141,176
213		FY 2057 Subtotal:	-	-	-	537,763	333,114	-	-	202,917
214	FY 2058	Construction	-	2034	2069	271,374	130,198	5.510%	No	130,198
215	FY 2058	Construction	-	2035	2070	274,987	274,987	5.510%	No	83,846
216		FY 2058 Subtotal:	-	-	-	546,361	405,185	-	-	214,043
217	FY 2059	Construction	-	2035	2070	274,987	191,141	5.510%	No	191,141
218	FY 2059	Construction	-	2036	2071	279,135	279,135	5.510%	No	34,621
219		FY 2059 Subtotal:	-	-	-	554,122	470,276	-	-	225,763
220	FY 2060	Construction	-	2036	2071	279,135	244,514	5.510%	No	238,097
221		FY 2060 Subtotal:	-	-	-	279,135	244,514	-	-	238,097
222	FY 2061	Construction	-	2036	2071	279,135	6,417	5.510%	No	6,417
223	FY 2061	Construction	-	2037	2072	283,794	283,794	5.510%	No	244,641
224		FY 2061 Subtotal:	-	-	-	562,929	290,211	-	-	251,058
225	FY 2062	Construction	-	2037	2072	283,794	39,153	5.510%	No	39,153
226	FY 2062	Construction	-	2038	2073	288,220	288,220	5.510%	No	225,613
227		FY 2062 Subtotal:	-	-	-	572,014	327,373	-	-	264,766
228	FY 2063	Construction	-	2038	2073	288,220	62,607	5.510%	No	62,607
229	FY 2063	Construction	-	2039	2074	291,085	291,085	5.510%	No	216,597
230		FY 2063 Subtotal:	-	-	-	579,305	353,692	-	-	279,204
231	FY 2064	Construction	-	2039	2074	291,085	74,488	5.510%	No	74,488
232	FY 2064	Construction	-	2040	2075	295,065	295,065	5.510%	No	219,922
233		FY 2064 Subtotal:	-	-	-	586,150	369,553	-	-	294,410
234	FY 2065	Construction	-	2040	2075	295,065	75,143	5.510%	No	75,143
235	FY 2065	Construction	-	2041	2076	299,576	299,576	5.510%	No	235,283
236		FY 2065 Subtotal:	-	-	-	594,641	374,719	-	-	310,426
237	FY 2066	Construction	-	2041	2076	299,576	64,293	5.510%	No	64,293
238	FY 2066	Construction	-	2042	2077	303,690	303,690	5.510%	No	263,003
239		FY 2066 Subtotal:	-	-	-	603,266	367,983	-	-	327,295
240	FY 2067	Construction	-	2042	2077	303,690	40,687	5.510%	No	40,687
241	FY 2067	Construction	-	2043	2078	308,578	308,578	5.510%	No	304,375
242		FY 2067 Subtotal:	-	-	-	612,268	349,265	-	-	345,062

Table 12.4: Application of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J
	Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized
243	FY 2068	Construction	-	2043	2078	308,578	4,203	5.510%	No	4,203
244	FY 2068	Construction	-	2044	2079	312,135	312,135	5.510%	No	312,135
245	FY 2068	Construction	-	2045	2080	314,836	314,836	5.510%	No	47,365
246		FY 2068 Subtotal:	-	-	-	935,549	631,174	-	-	363,703
247	FY 2069	Construction	-	2045	2080	314,836	267,471	5.510%	No	267,471
248	FY 2069	Construction	-	2046	2081	318,263	318,263	5.510%	No	115,903
249		FY 2069 Subtotal:	-	-	-	633,099	585,734	-	-	383,374
250	FY 2070	Construction	-	2046	2081	318,263	202,360	5.510%	No	202,360
251	FY 2070	Construction	-	2047	2082	322,781	322,781	5.510%	No	201,736
252		FY 2070 Subtotal:	-	-	-	641,044	525,141	-	-	404,096
253	FY 2071	Construction	-	2047	2082	322,781	121,045	5.510%	No	121,045
254	FY 2071	Construction	-	2048	2083	326,031	326,031	5.510%	No	304,873
255		FY 2071 Subtotal:	-	-	-	648,812	447,076	-	-	425,917
256	FY 2072	Construction	-	2048	2083	326,031	21,158	5.510%	No	21,158
257	FY 2072	Construction	-	2049	2084	328,462	328,462	5.510%	No	328,462
258		FY 2072 Subtotal:	-	-	-	654,493	349,620	-	-	349,620
259	Grand		-	-	-	23,793,643	17,953,869	-	-	12,431,873

Table 12-5: Summary of Interest (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
1	Appropriation	Bonneville Power Administration	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
2			18,641	14,540	13,930	7,145	1,979	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3		Bonneville Power Administration Subtotal:	18,641	14,540	13,930	7,145	1,979	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4		Appropriation Subtotal:	18,641	14,540	13,930	7,145	1,979	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Treasury	Construction	85,724	108,349	133,869	162,394	173,467	184,324	191,745	193,504	196,125	197,654	199,445	200,781	201,986	203,194	203,863	204,911	205,387	206,858	207,956	
6		Environment	1,102	1,233	1,441	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,181	1,181	719	437	237	-	
7		(Less Interest Income)	(1,333)	(1,303)	(1,643)	(1,691)	(1,547)	(1,654)	(3,391)	(3,225)	(3,212)	(3,216)	(3,211)	(3,263)	(3,433)	(3,431)	(3,430)	(3,428)	(3,430)	(3,426)	(3,381)	
8		Coupon Scale Down Premiums	-	-	-	-	557	3,155	1,209	1,238	6,716	6,614	9,280	9,540	7,603	10,245	10,913	10,014	9,674	11,902	10,896	
9		BPA Borrowing Subtotal:	85,492	108,279	133,667	162,312	174,086	187,433	191,172	193,125	201,237	202,660	207,123	208,667	207,765	211,188	212,527	212,216	212,067	215,571	215,472	
10		Treasury Subtotal:	85,492	108,279	133,667	162,312	174,086	187,433	191,172	193,125	201,237	202,660	207,123	208,667	207,765	211,188	212,527	212,216	212,067	215,571	215,472	
11	GRAND TOTAL:	104,133	122,819	147,597	169,457	176,064	187,433	191,172	193,125	201,237	202,660	207,123	208,667	207,765	211,188	212,527	212,216	212,067	215,571	215,472		

Table 12-5: Summary of Interest (\$000s) (FY 2015)

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	
1	Appropriation	Bonneville Power Administration	<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	<u>2041</u>	<u>2042</u>	<u>2043</u>	<u>2044</u>	<u>2045</u>	<u>2046</u>	<u>2047</u>	<u>2048</u>	<u>2049</u>	<u>2050</u>	Total	
2			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56,235
3		Bonneville Power Administration Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56,235
4		Appropriation Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56,235
5	Treasury	Construction	209,355	213,318	222,022	228,118	233,752	240,057	254,355	267,643	277,297	288,095	306,713	322,331	333,537	344,409	354,890	365,027	375,978	387,748	400,345	9,086,527	
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23,616
7		(Less Interest Income)	(3,364)	(2,508)	(3,081)	(3,353)	(3,334)	(1,900)	(2,155)	(3,107)	(3,039)	(1,365)	(2,196)	(3,331)	(3,337)	(3,291)	(3,243)	(3,196)	(3,146)	(3,092)	(3,034)	(107,720)	
8		Coupon Scale Down Premiums	3,007	2,412	3,263	486	1,723	486	910	809	419	1	109	-	-	-	4,015	3,654	3,382	2,938	2,642	139,811	
9		BPA Borrowing Subtotal:	208,998	213,222	222,204	225,250	232,141	238,644	253,110	265,344	274,678	286,731	304,626	319,000	330,200	341,119	355,662	365,485	376,214	387,594	399,953	9,142,234	
10		Treasury Subtotal:	208,998	213,222	222,204	225,250	232,141	238,644	253,110	265,344	274,678	286,731	304,626	319,000	330,200	341,119	355,662	365,485	376,214	387,594	399,953	9,142,234	
11	GRAND TOTAL:		208,998	213,222	222,204	225,250	232,141	238,644	253,110	265,344	274,678	286,731	304,626	319,000	330,200	341,119	355,662	365,485	376,214	387,594	399,953	9,198,469	

Table 12-6: Interest Calculation Summary (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H
	<u>FISCAL YEAR</u>	<u>PROJECT</u>	<u>TYPE</u>	<u>PRINCIPAL</u>	<u>RATE</u>	<u>INTEREST</u>	<u>PREMIUM</u>	<u>TOTAL</u>
1	2013	Bonneville Power Administration	Historical	257,352	7.243%	18,641	-	18,641
2	2013	Construction	Historical	1,927,890	4.074%	78,544	-	78,544
3	2013	Construction	New	361,396	1.987%	7,180	-	7,180
4	2013	Environment	Historical	23,000	3.867%	889	-	889
5	2013	Environment	New	5,540	3.836%	213	-	213
6	2013	Float	Historical	-	-	(1,333)	-	(1,333)
7	FY 2013	Subtotal:		2,575,178		104,133	-	104,133
8	2014	Bonneville Power Administration	Historical	200,978	7.235%	14,540	-	14,540
9	2014	Construction	Historical	2,369,266	4.132%	97,901	-	97,901
10	2014	Construction	New	547,950	1.907%	10,448	-	10,448
11	2014	Environment	Historical	29,050	4.034%	1,172	-	1,172
12	2014	Environment	New	3,460	1.766%	61	-	61
13	2014	Float	Historical	-	-	(1,303)	-	(1,303)
14	FY 2014	Subtotal:		3,150,704		122,819	-	122,819
15	2015	Bonneville Power Administration	Historical	192,577	7.233%	13,930	-	13,930
16	2015	Construction	Historical	2,938,646	4.165%	122,399	-	122,399
17	2015	Construction	New	528,000	2.172%	11,470	-	11,470
18	2015	Environment	Historical	34,430	3.985%	1,372	-	1,372
19	2015	Environment	New	3,460	1.993%	69	-	69
20	2015	Float	Historical	-	-	(1,643)	-	(1,643)
21	FY 2015	Subtotal:		3,697,113		147,597	-	147,597
22	2016	Bonneville Power Administration	Historical	98,958	7.220%	7,145	-	7,145
23	2016	Construction	Historical	3,557,916	4.407%	156,794	-	156,794
24	2016	Construction	New	189,512	2.955%	5,600	-	5,600
25	2016	Environment	Historical	39,810	4.041%	1,609	-	1,609
26	2016	Float	Historical	-	-	(1,691)	-	(1,691)
27	FY 2016	Subtotal:		3,886,196		169,457	-	169,457
28	2017	Bonneville Power Administration	Historical	27,447	7.210%	1,979	-	1,979
29	2017	Construction	Historical	3,727,928	4.497%	167,648	557	168,205
30	2017	Construction	New	196,922	2.955%	5,819	-	5,819
31	2017	Environment	Historical	39,810	4.041%	1,609	-	1,609
32	2017	Float	Historical	-	-	(1,547)	-	(1,547)
33	FY 2017	Subtotal:		3,992,107		175,507	557	176,064
34	2018	Construction	Historical	3,877,739	4.598%	178,308	3,155	181,463
35	2018	Construction	New	203,574	2.955%	6,016	-	6,016
36	2018	Environment	Historical	39,810	4.041%	1,609	-	1,609
37	2018	Float	Historical	-	-	(1,654)	-	(1,654)
38	FY 2018	Subtotal:		4,121,123		184,278	3,155	187,433
39	2019	Construction	Historical	4,001,295	4.638%	185,580	1,209	186,789
40	2019	Construction	New	208,629	2.955%	6,165	-	6,165
41	2019	Environment	Historical	39,810	4.041%	1,609	-	1,609
42	2019	Float	Historical	-	-	(3,391)	-	(3,391)
43	FY 2019	Subtotal:		4,249,734		189,963	1,209	191,172
44	2020	Construction	Historical	3,945,245	4.743%	187,136	1,238	188,375
45	2020	Construction	New	215,471	2.955%	6,367	-	6,367
46	2020	Environment	Historical	39,810	4.041%	1,609	-	1,609
47	2020	Float	Historical	-	-	(3,225)	-	(3,225)
48	FY 2020	Subtotal:		4,200,526		191,887	1,238	193,125
49	2021	Construction	Historical	3,914,756	4.843%	189,582	6,716	196,298
50	2021	Construction	New	221,414	2.955%	6,543	-	6,543
51	2021	Environment	Historical	39,810	4.041%	1,609	-	1,609
52	2021	Float	Historical	-	-	(3,212)	-	(3,212)
53	FY 2021	Subtotal:		4,175,980		194,521	6,716	201,237
54	2022	Construction	Historical	3,898,441	4.898%	190,952	6,614	197,565
55	2022	Construction	New	226,804	2.955%	6,702	-	6,702
56	2022	Environment	Historical	39,810	4.041%	1,609	-	1,609
57	2022	Float	Historical	-	-	(3,216)	-	(3,216)
58	FY 2022	Subtotal:		4,165,055		196,046	6,614	202,660
59	2023	Construction	Historical	3,887,791	4.954%	192,582	9,280	201,862
60	2023	Construction	New	232,252	2.955%	6,863	-	6,863
61	2023	Environment	Historical	39,810	4.041%	1,609	-	1,609
62	2023	Float	Historical	-	-	(3,211)	-	(3,211)
63	FY 2023	Subtotal:		4,159,853		197,843	9,280	207,123

Table 12-6: Interest Calculation Summary (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H
	<u>FISCAL YEAR</u>	<u>PROJECT</u>	<u>TYPE</u>	<u>PRINCIPAL</u>	<u>RATE</u>	<u>INTEREST</u>	<u>PREMIUM</u>	<u>TOTAL</u>
64	2024	Construction	Historical	3,886,809	4.986%	193,789	9,540	203,329
65	2024	Construction	New	236,640	2.955%	6,993	-	6,993
66	2024	Environment	Historical	39,810	4.041%	1,609	-	1,609
67	2024	Float	Historical	-	-	(3,263)	-	(3,263)
68	FY 2024 Subtotal:			4,163,259		199,127	9,540	208,667
69	2025	Construction	Historical	3,885,525	5.015%	194,860	7,603	202,463
70	2025	Construction	New	241,160	2.955%	7,126	-	7,126
71	2025	Environment	Historical	39,810	4.041%	1,609	-	1,609
72	2025	Float	Historical	-	-	(3,433)	-	(3,433)
73	FY 2025 Subtotal:			4,166,495		200,162	7,603	207,765
74	2026	Construction	Historical	3,879,186	5.052%	195,962	10,245	206,207
75	2026	Construction	New	244,724	2.955%	7,232	-	7,232
76	2026	Environment	Historical	29,810	3.961%	1,181	-	1,181
77	2026	Float	Historical	-	-	(3,431)	-	(3,431)
78	FY 2026 Subtotal:			4,153,720		200,943	10,245	211,188
79	2027	Construction	Historical	3,869,695	5.078%	196,508	10,913	207,422
80	2027	Construction	New	248,878	2.955%	7,354	-	7,354
81	2027	Environment	Historical	29,810	3.961%	1,181	-	1,181
82	2027	Float	Historical	-	-	(3,430)	-	(3,430)
83	FY 2027 Subtotal:			4,148,383		201,614	10,913	212,527
84	2028	Construction	Historical	3,878,556	5.090%	197,433	10,014	207,447
85	2028	Construction	New	253,053	2.955%	7,478	-	7,478
86	2028	Environment	Historical	16,810	4.278%	719	-	719
87	2028	Float	Historical	-	-	(3,428)	-	(3,428)
88	FY 2028 Subtotal:			4,148,419		202,202	10,014	212,216
89	2029	Construction	Historical	3,884,215	5.092%	197,793	9,674	207,467
90	2029	Construction	New	256,959	2.955%	7,593	-	7,593
91	2029	Environment	Historical	10,760	4.058%	437	-	437
92	2029	Float	Historical	-	-	(3,430)	-	(3,430)
93	FY 2029 Subtotal:			4,151,934		202,394	9,674	212,067
94	2030	Construction	Historical	3,892,756	5.116%	199,134	11,902	211,036
95	2030	Construction	New	261,392	2.955%	7,724	-	7,724
96	2030	Environment	Historical	5,380	4.400%	237	-	237
97	2030	Float	Historical	-	-	(3,426)	-	(3,426)
98	FY 2030 Subtotal:			4,159,528		203,670	11,902	215,571
99	2031	Construction	Historical	3,909,066	5.119%	200,098	10,896	210,995
100	2031	Construction	New	265,934	2.955%	7,858	-	7,858
101	2031	Float	Historical	-	-	(3,381)	-	(3,381)
102	FY 2031 Subtotal:			4,175,000		204,576	10,896	215,472
103	2032	Construction	Historical	3,928,811	5.125%	201,351	3,007	204,359
104	2032	Construction	New	270,853	2.955%	8,004	-	8,004
105	2032	Float	Historical	-	-	(3,364)	-	(3,364)
106	FY 2032 Subtotal:			4,199,664		205,991	3,007	208,998
107	2033	Construction	Historical	3,948,111	5.196%	205,150	2,412	207,562
108	2033	Construction	New	276,407	2.955%	8,168	-	8,168
109	2033	Float	Historical	-	-	(2,508)	-	(2,508)
110	FY 2033 Subtotal:			4,224,518		210,810	2,412	213,222
111	2034	Construction	Historical	4,066,288	5.255%	213,702	3,263	216,964
112	2034	Construction	New	281,566	2.955%	8,320	-	8,320
113	2034	Float	Historical	-	-	(3,081)	-	(3,081)
114	FY 2034 Subtotal:			4,347,854		218,941	3,263	222,204
115	2035	Construction	Historical	4,133,378	5.315%	219,678	486	220,163
116	2035	Construction	New	285,629	2.955%	8,440	-	8,440
117	2035	Float	Historical	-	-	(3,353)	-	(3,353)
118	FY 2035 Subtotal:			4,419,007		224,764	486	225,250
119	2036	Construction	Historical	4,175,555	5.393%	225,170	1,723	226,893
120	2036	Construction	New	290,425	2.955%	8,582	-	8,582
121	2036	Float	Historical	-	-	(3,334)	-	(3,334)
122	FY 2036 Subtotal:			4,465,980		230,418	1,723	232,141

Table 12-6: Interest Calculation Summary (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H
	<u>FISCAL YEAR</u>	<u>PROJECT</u>	<u>TYPE</u>	<u>PRINCIPAL</u>	<u>RATE</u>	<u>INTEREST</u>	<u>PREMIUM</u>	<u>TOTAL</u>
123	2037	Construction	Historical	4,228,699	5.470%	231,321	486	231,807
124	2037	Construction	New	295,659	2.955%	8,737	-	8,737
125	2037	Float	Historical	-	-	(1,900)	-	(1,900)
126	FY 2037 Subtotal:			4,524,358		238,158	486	238,644
127	2038	Construction	Historical	4,443,076	5.525%	245,485	910	246,395
128	2038	Construction	New	300,168	2.955%	8,870	-	8,870
129	2038	Float	Historical	-	-	(2,155)	-	(2,155)
130	FY 2038 Subtotal:			4,743,244		252,201	910	253,110
131	2039	Construction	Historical	4,642,173	5.572%	258,677	809	259,486
132	2039	Construction	New	303,420	2.955%	8,966	-	8,966
133	2039	Float	Historical	-	-	(3,107)	-	(3,107)
134	FY 2039 Subtotal:			4,945,593		264,536	809	265,344
135	2040	Construction	Historical	4,748,779	5.648%	268,196	419	268,615
136	2040	Construction	New	308,011	2.955%	9,102	-	9,102
137	2040	Float	Historical	-	-	(3,039)	-	(3,039)
138	FY 2040 Subtotal:			5,056,790		274,259	419	274,678
139	2041	Construction	Historical	4,871,826	5.724%	278,844	1	278,845
140	2041	Construction	New	313,067	2.955%	9,251	-	9,251
141	2041	Float	Historical	-	-	(1,365)	-	(1,365)
142	FY 2041 Subtotal:			5,184,893		286,730	1	286,731
143	2042	Construction	Historical	5,184,693	5.735%	297,338	109	297,448
144	2042	Construction	New	317,258	2.955%	9,375	-	9,375
145	2042	Float	Historical	-	-	(2,196)	-	(2,196)
146	FY 2042 Subtotal:			5,501,951		304,517	109	304,626
147	2043	Construction	Historical	5,421,923	5.769%	312,807	-	312,807
148	2043	Construction	New	322,295	2.955%	9,524	-	9,524
149	2043	Float	Historical	-	-	(3,331)	-	(3,331)
150	FY 2043 Subtotal:			5,744,218		319,000	-	319,000
151	2044	Construction	Historical	5,550,051	5.836%	323,894	-	323,894
152	2044	Construction	New	326,338	2.955%	9,643	-	9,643
153	2044	Float	Historical	-	-	(3,337)	-	(3,337)
154	FY 2044 Subtotal:			5,876,389		330,200	-	330,200
155	2045	Construction	Historical	5,687,255	5.885%	334,669	-	334,669
156	2045	Construction	New	329,605	2.955%	9,740	-	9,740
157	2045	Float	Historical	-	-	(3,291)	-	(3,291)
158	FY 2045 Subtotal:			6,016,860		341,119	-	341,119
159	2046	Construction	Historical	5,838,158	5.910%	345,035	4,015	349,050
160	2046	Construction	New	333,499	2.955%	9,855	-	9,855
161	2046	Float	Historical	-	-	(3,243)	-	(3,243)
162	FY 2046 Subtotal:			6,171,657		351,647	4,015	355,662
163	2047	Construction	Historical	6,007,377	5.910%	355,036	3,654	358,690
164	2047	Construction	New	338,102	2.955%	9,991	-	9,991
165	2047	Float	Historical	-	-	(3,196)	-	(3,196)
166	FY 2047 Subtotal:			6,345,479		361,830	3,654	365,485
167	2048	Construction	Historical	6,190,897	5.910%	365,882	3,382	369,264
168	2048	Construction	New	341,663	2.955%	10,096	-	10,096
169	2048	Float	Historical	-	-	(3,146)	-	(3,146)
170	FY 2048 Subtotal:			6,532,560		372,832	3,382	376,214
171	2049	Construction	Historical	6,388,611	5.910%	377,567	2,938	380,505
172	2049	Construction	New	344,541	2.955%	10,181	-	10,181
173	2049	Float	Historical	-	-	(3,092)	-	(3,092)
174	FY 2049 Subtotal:			6,733,152		384,656	2,938	387,594
175	2050	Construction	Historical	6,600,497	5.910%	390,089	2,642	392,732
176	2050	Construction	New	347,044	2.955%	10,255	-	10,255
177	2050	Float	Historical	-	-	(3,034)	-	(3,034)
178	FY 2050 Subtotal:			6,947,541		397,311	2,642	399,953
179	Grand Total:			177,622,013		9,058,658	139,811	9,198,469

Table 12-7: Summary of Amortization (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1			<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>
2	Appropriation	Bonneville Power Administration	56,374	8,401	93,619	71,511	27,447	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3		Bonneville Power Administration Subtotal:	56,374	8,401	93,619	71,511	27,447	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4		Appropriation Subtotal:	56,374	8,401	93,619	71,511	27,447	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Treasury	Construction	-	73,050	-	19,500	47,111	80,018	264,679	245,961	237,729	237,454	233,234	237,924	247,499	254,215	240,017	247,394	248,417	245,082	246,189
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	10,000	-	13,000	6,050	5,380	5,380	-
7		BPA Borrowing Subtotal:	0	73,050	0	19,500	47,111	80,018	264,679	245,961	237,729	237,454	233,234	237,924	257,499	254,215	253,017	253,444	253,797	250,462	246,189
8		Discounts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		Premiums	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10		Make Whole Call Subtotal:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11		Treasury Subtotal:	0	73,050	0	19,500	47,111	80,018	264,679	245,961	237,729	237,454	233,234	237,924	257,499	254,215	253,017	253,444	253,797	250,462	246,189
12	GRAND TOTAL:		56,374	81,451	93,619	91,011	74,559	80,018	264,679	245,961	237,729	237,454	233,234	237,924	257,499	254,215	253,017	253,444	253,797	250,462	246,189

Table 12-7: Summary of Amortization (\$000s) (FY 2015)

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	
1			<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	<u>2041</u>	<u>2042</u>	<u>2043</u>	<u>2044</u>	<u>2045</u>	<u>2046</u>	<u>2047</u>	<u>2048</u>	<u>2049</u>	<u>2050</u>	TOTAL	
2	Appropriation	Bonneville Power Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257,352
3		Bonneville Power Administration Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257,352
4		Appropriation Subtotal:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257,352
5	Treasury	Construction	251,553	158,229	214,476	243,452	237,281	81,282	101,071	196,814	184,964	200	80,028	194,167	189,134	178,702	164,280	154,582	143,949	132,655	120,368		6,432,661
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39,810
7		BPA Borrowing Subtotal:	251,553	158,229	214,476	243,452	237,281	81,282	101,071	196,814	184,964	200	80,028	194,167	189,134	178,702	164,280	154,582	143,949	132,655	120,368		6,472,471
8		Discounts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		Premiums	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10		Make Whole Call Subtotal:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11		Treasury Subtotal:	251,553	158,229	214,476	243,452	237,281	81,282	101,071	196,814	184,964	200	80,028	194,167	189,134	178,702	164,280	154,582	143,949	132,655	120,368		6,472,471
12	GRAND TOTAL:		251,553	158,229	214,476	243,452	237,281	81,282	101,071	196,814	184,964	200	80,028	194,167	189,134	178,702	164,280	154,582	143,949	132,655	120,368		6,729,823

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13. REPAYMENT STUDY RESULTS – SHIFT STUDY

Table 13-1: Summary of Interest (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1		Project	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2	Appropriation	Bonneville Power Administration	18,641	14,540	14,257	7,145	2,872	1,630	-	-	-	-	-	-	-	-	-	-	-
3		Bonneville Power Administration Subtotal:	18,641	14,540	14,257	7,145	2,872	1,630	-	-	-	-	-	-	-	-	-	-	-
4		Appropriation Subtotal:	18,641	14,540	14,257	7,145	2,872	1,630	-	-	-	-	-	-	-	-	-	-	-
5		Treasury	Construction	85,724	108,349	127,297	140,560	150,651	161,130	170,036	171,951	174,695	175,518	177,577	179,464	181,237	182,878	184,156	185,849
6	Environment		1,102	1,233	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	944	944	482	200
7	(Less Interest Income)		(1,333)	(1,265)	(1,507)	(1,337)	(1,148)	(1,248)	(2,840)	(2,687)	(2,674)	(2,681)	(2,674)	(2,720)	(2,874)	(2,870)	(2,865)	(2,861)	(2,859)
8	Coupon Scale Down Premiums		-	-	-	-	-	1,843	1,614	900	1,903	4,705	7,195	7,395	5,703	7,956	8,504	9,430	7,404
9	BPA Borrowing Subtotal:		85,492	108,317	127,161	140,595	150,875	163,097	170,183	171,536	175,295	178,915	183,470	185,511	185,439	188,909	190,738	192,900	191,891
10	Treasury Subtotal:	85,492	108,317	127,161	140,595	150,875	163,097	170,183	171,536	175,295	178,915	183,470	185,511	185,439	188,909	190,738	192,900	191,891	
11	GRAND TOTAL:		104,133	122,858	141,418	147,740	153,748	164,727	170,183	171,536	175,295	178,915	183,470	185,511	185,439	188,909	190,738	192,900	191,891

Table 13-1: Summary of Interest (\$000s) (FY 2014)

	A	B	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	
1		Project	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	Total	
2	Appropriation	Bonneville Power Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59,086
3		Bonneville Power Administration Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59,086
4		Appropriation Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59,086
5	Treasury	Construction	189,200	190,765	192,879	196,337	204,441	209,711	214,757	220,114	233,629	246,058	254,987	264,630	277,574	293,254	305,834	316,037	325,068	334,438	344,515	356,063		7,914,509
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,996
7		(Less Interest Income)	(2,852)	(2,808)	(2,789)	(2,004)	(2,533)	(2,787)	(2,772)	(1,456)	(1,694)	(2,574)	(2,514)	(1,921)	(1,457)	(2,203)	(2,677)	(2,771)	(2,733)	(2,694)	(2,651)	(2,602)		(86,933)
8		Coupon Scale Down Premiums	9,531	9,294	5,121	3,682	5,820	649	855	117	244	161	475	15	40	34	-	2,820	3,482	3,134	1,609	578		112,213
9		BPA Borrowing Subtotal:	195,878	197,252	195,210	198,016	207,728	207,573	212,840	218,775	232,179	243,646	252,948	262,723	276,157	291,086	303,156	316,085	325,818	334,879	343,473	354,039		7,959,785
10		Treasury Subtotal:	195,878	197,252	195,210	198,016	207,728	207,573	212,840	218,775	232,179	243,646	252,948	262,723	276,157	291,086	303,156	316,085	325,818	334,879	343,473	354,039		7,959,785
11		GRAND TOTAL:	195,878	197,252	195,210	198,016	207,728	207,573	212,840	218,775	232,179	243,646	252,948	262,723	276,157	291,086	303,156	316,085	325,818	334,879	343,473	354,039		8,018,871

Table 13-2: Interest Calculation Summary (\$000s) (FY 2014)

A	B	C	D	E	F	G	H	
1	Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
2	2013	Bonneville Power Administration	Historical	257,352	7.243%	18,641	-	18,641
3	2013	Construction	Historical	1,927,890	4.074%	78,544	-	78,544
4	2013	Construction	New	361,396	1.987%	7,180	-	7,180
5	2013	Environment	Historical	23,000	3.867%	889	-	889
6	2013	Environment	New	5,540	3.836%	213	-	213
7	2013	Float	Historical	-	-	(1,333)	-	(1,333)
8	FY 2013	Subtotal:		2,575,178		104,133	-	104,133
9	2014	Bonneville Power Administration	Historical	200,978	7.235%	14,540	-	14,540
10	2014	Construction	Historical	2,369,266	4.132%	97,901	-	97,901
11	2014	Construction	New	547,950	1.907%	10,448	-	10,448
12	2014	Environment	Historical	29,050	4.034%	1,172	-	1,172
13	2014	Environment	New	3,460	1.766%	61	-	61
14	2014	Float	Historical	-	-	(1,265)	-	(1,265)
15	FY 2014	Subtotal:		3,150,704		122,858	-	122,858
16	2015	Bonneville Power Administration	Historical	197,077	7.234%	14,257	-	14,257
17	2015	Construction	Historical	2,938,646	4.165%	122,399	-	122,399
18	2015	Construction	New	177,753	2.755%	4,897	-	4,897
19	2015	Environment	Historical	34,430	3.985%	1,372	-	1,372
20	2015	Float	Historical	-	-	(1,507)	-	(1,507)
21	FY 2015	Subtotal:		3,347,906		141,418	-	141,418
22	2016	Bonneville Power Administration	Historical	98,958	7.220%	7,145	-	7,145
23	2016	Construction	Historical	3,116,399	4.346%	135,441	-	135,441
24	2016	Construction	New	185,811	2.755%	5,119	-	5,119
25	2016	Environment	Historical	34,430	3.985%	1,372	-	1,372
26	2016	Float	Historical	-	-	(1,337)	-	(1,337)
27	FY 2016	Subtotal:		3,435,598		147,740	-	147,740
28	2017	Bonneville Power Administration	Historical	39,839	7.210%	2,872	-	2,872
29	2017	Construction	Historical	3,282,710	4.427%	145,332	-	145,332
30	2017	Construction	New	193,085	2.755%	5,319	-	5,319
31	2017	Environment	Historical	34,430	3.985%	1,372	-	1,372
32	2017	Float	Historical	-	-	(1,148)	-	(1,148)
33	FY 2017	Subtotal:		3,550,064		153,748	-	153,748
34	2018	Bonneville Power Administration	Historical	22,611	7.210%	1,630	-	1,630
35	2018	Construction	Historical	3,439,395	4.525%	155,636	1,843	157,479
36	2018	Construction	New	199,431	2.755%	5,494	-	5,494
37	2018	Environment	Historical	34,430	3.985%	1,372	-	1,372
38	2018	Float	Historical	-	-	(1,248)	-	(1,248)
39	FY 2018	Subtotal:		3,695,867		162,884	1,843	164,727
40	2019	Construction	Historical	3,601,970	4.565%	164,413	1,614	166,027
41	2019	Construction	New	204,100	2.755%	5,623	-	5,623
42	2019	Environment	Historical	34,430	3.985%	1,372	-	1,372
43	2019	Float	Historical	-	-	(2,840)	-	(2,840)
44	FY 2019	Subtotal:		3,840,500		168,568	1,614	170,183
45	2020	Construction	Historical	3,563,674	4.662%	166,150	900	167,050
46	2020	Construction	New	210,564	2.755%	5,801	-	5,801
47	2020	Environment	Historical	34,430	3.985%	1,372	-	1,372
48	2020	Float	Historical	-	-	(2,687)	-	(2,687)
49	FY 2020	Subtotal:		3,808,668		170,636	900	171,536
50	2021	Construction	Historical	3,549,973	4.753%	168,733	1,903	170,635
51	2021	Construction	New	216,398	2.755%	5,962	-	5,962
52	2021	Environment	Historical	34,430	3.985%	1,372	-	1,372
53	2021	Float	Historical	-	-	(2,674)	-	(2,674)
54	FY 2021	Subtotal:		3,800,801		173,393	1,903	175,295
55	2022	Construction	Historical	3,545,988	4.778%	169,419	4,705	174,124
56	2022	Construction	New	221,403	2.755%	6,100	-	6,100
57	2022	Environment	Historical	34,430	3.985%	1,372	-	1,372
58	2022	Float	Historical	-	-	(2,681)	-	(2,681)
59	FY 2022	Subtotal:		3,801,821		174,210	4,705	178,915

Table 13-2: Interest Calculation Summary (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H
	Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
60	2023	Construction	Historical	3,549,496	4.827%	171,343	7,195	178,538
61	2023	Construction	New	226,273	2.755%	6,234	-	6,234
62	2023	Environment	Historical	34,430	3.985%	1,372	-	1,372
63	2023	Float	Historical	-	-	(2,674)	-	(2,674)
64	FY 2023 Subtotal:			3,810,199		176,275	7,195	183,470
65	2024	Construction	Historical	3,562,206	4.860%	173,124	7,395	180,518
66	2024	Construction	New	230,147	2.755%	6,341	-	6,341
67	2024	Environment	Historical	34,430	3.985%	1,372	-	1,372
68	2024	Float	Historical	-	-	(2,720)	-	(2,720)
69	FY 2024 Subtotal:			3,826,783		178,116	7,395	185,511
70	2025	Construction	Historical	3,574,616	4.889%	174,775	5,703	180,478
71	2025	Construction	New	234,570	2.755%	6,462	-	6,462
72	2025	Environment	Historical	34,430	3.985%	1,372	-	1,372
73	2025	Float	Historical	-	-	(2,874)	-	(2,874)
74	FY 2025 Subtotal:			3,843,616		179,735	5,703	185,439
75	2026	Construction	Historical	3,582,707	4.922%	176,328	7,956	184,285
76	2026	Construction	New	237,736	2.755%	6,550	-	6,550
77	2026	Environment	Historical	24,430	3.864%	944	-	944
78	2026	Float	Historical	-	-	(2,870)	-	(2,870)
79	FY 2026 Subtotal:			3,844,873		180,952	7,956	188,909
80	2027	Construction	Historical	3,587,311	4.948%	177,509	8,504	186,012
81	2027	Construction	New	241,278	2.755%	6,647	-	6,647
82	2027	Environment	Historical	24,430	3.864%	944	-	944
83	2027	Float	Historical	-	-	(2,865)	-	(2,865)
84	FY 2027 Subtotal:			3,853,019		182,235	8,504	190,738
85	2028	Construction	Historical	3,610,168	4.961%	179,102	9,430	188,531
86	2028	Construction	New	244,918	2.755%	6,747	-	6,747
87	2028	Environment	Historical	11,430	4.221%	482	-	482
88	2028	Float	Historical	-	-	(2,861)	-	(2,861)
89	FY 2028 Subtotal:			3,866,516		183,470	9,430	192,900
90	2029	Construction	Historical	3,631,781	4.964%	180,292	7,404	187,697
91	2029	Construction	New	248,752	2.755%	6,853	-	6,853
92	2029	Environment	Historical	5,380	3.716%	200	-	200
93	2029	Float	Historical	-	-	(2,859)	-	(2,859)
94	FY 2029 Subtotal:			3,885,913		184,487	7,404	191,891
95	2030	Construction	Historical	3,655,347	4.985%	182,227	9,531	191,758
96	2030	Construction	New	253,103	2.755%	6,973	-	6,973
97	2030	Float	Historical	-	-	(2,852)	-	(2,852)
98	FY 2030 Subtotal:			3,908,450		186,347	9,531	195,878
99	2031	Construction	Historical	3,681,705	4.989%	183,679	9,294	192,974
100	2031	Construction	New	257,207	2.755%	7,086	-	7,086
101	2031	Float	Historical	-	-	(2,808)	-	(2,808)
102	FY 2031 Subtotal:			3,938,912		187,957	9,294	197,252
103	2032	Construction	Historical	3,717,928	4.994%	185,675	5,121	190,796
104	2032	Construction	New	261,465	2.755%	7,203	-	7,203
105	2032	Float	Historical	-	-	(2,789)	-	(2,789)
106	FY 2032 Subtotal:			3,979,393		190,089	5,121	195,210
107	2033	Construction	Historical	3,757,504	5.030%	188,998	3,682	192,680
108	2033	Construction	New	266,389	2.755%	7,339	-	7,339
109	2033	Float	Historical	-	-	(2,004)	-	(2,004)
110	FY 2033 Subtotal:			4,023,893		194,333	3,682	198,016
111	2034	Construction	Historical	3,893,931	5.058%	196,965	5,820	202,785
112	2034	Construction	New	271,374	2.755%	7,476	-	7,476
113	2034	Float	Historical	-	-	(2,533)	-	(2,533)
114	FY 2034 Subtotal:			4,165,305		201,908	5,820	207,728
115	2035	Construction	Historical	3,979,833	5.079%	202,136	649	202,784
116	2035	Construction	New	274,987	2.755%	7,576	-	7,576
117	2035	Float	Historical	-	-	(2,787)	-	(2,787)
118	FY 2035 Subtotal:			4,254,820		206,924	649	207,573

Table 13-2: Interest Calculation Summary (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H
1	Fiscal Year	Project	Type	Principal	Rate	Interest	Premium	Total
119	2036	Construction	Historical	4,037,185	5.129%	207,066	855	207,921
120	2036	Construction	New	279,135	2.755%	7,690	-	7,690
121	2036	Float	Historical	-	-	(2,772)	-	(2,772)
122	FY 2036 Subtotal:			4,316,320		211,985	855	212,840
123	2037	Construction	Historical	4,103,257	5.174%	212,295	117	212,413
124	2037	Construction	New	283,794	2.755%	7,819	-	7,819
125	2037	Float	Historical	-	-	(1,456)	-	(1,456)
126	FY 2037 Subtotal:			4,387,051		218,658	117	218,775
127	2038	Construction	Historical	4,329,441	5.213%	225,689	244	225,933
128	2038	Construction	New	288,220	2.755%	7,940	-	7,940
129	2038	Float	Historical	-	-	(1,694)	-	(1,694)
130	FY 2038 Subtotal:			4,617,661		231,935	244	232,179
131	2039	Construction	Historical	4,539,202	5.244%	238,039	161	238,200
132	2039	Construction	New	291,085	2.755%	8,019	-	8,019
133	2039	Float	Historical	-	-	(2,574)	-	(2,574)
134	FY 2039 Subtotal:			4,830,287		243,484	161	243,646
135	2040	Construction	Historical	4,655,332	5.303%	246,858	475	247,333
136	2040	Construction	New	295,065	2.755%	8,129	-	8,129
137	2040	Float	Historical	-	-	(2,514)	-	(2,514)
138	FY 2040 Subtotal:			4,950,397		252,473	475	252,948
139	2041	Construction	Historical	4,787,288	5.355%	256,376	15	256,391
140	2041	Construction	New	299,576	2.755%	8,253	-	8,253
141	2041	Float	Historical	-	-	(1,921)	-	(1,921)
142	FY 2041 Subtotal:			5,086,864		262,708	15	262,723
143	2042	Construction	Historical	4,997,220	5.387%	269,207	40	269,247
144	2042	Construction	New	303,690	2.755%	8,367	-	8,367
145	2042	Float	Historical	-	-	(1,457)	-	(1,457)
146	FY 2042 Subtotal:			5,300,910		276,117	40	276,157
147	2043	Construction	Historical	5,271,938	5.401%	284,753	34	284,787
148	2043	Construction	New	308,578	2.755%	8,501	-	8,501
149	2043	Float	Historical	-	-	(2,203)	-	(2,203)
150	FY 2043 Subtotal:			5,580,516		291,052	34	291,086
151	2044	Construction	Historical	5,472,462	5.431%	297,234	-	297,234
152	2044	Construction	New	312,135	2.755%	8,599	-	8,599
153	2044	Float	Historical	-	-	(2,677)	-	(2,677)
154	FY 2044 Subtotal:			5,784,597		303,156	-	303,156
155	2045	Construction	Historical	5,627,484	5.462%	307,363	2,820	310,182
156	2045	Construction	New	314,836	2.755%	8,674	-	8,674
157	2045	Float	Historical	-	-	(2,771)	-	(2,771)
158	FY 2045 Subtotal:			5,942,320		313,266	2,820	316,085
159	2046	Construction	Historical	5,782,221	5.470%	316,300	3,482	319,782
160	2046	Construction	New	318,263	2.755%	8,768	-	8,768
161	2046	Float	Historical	-	-	(2,733)	-	(2,733)
162	FY 2046 Subtotal:			6,100,484		322,335	3,482	325,818
163	2047	Construction	Historical	5,950,019	5.471%	325,546	3,134	328,680
164	2047	Construction	New	322,781	2.755%	8,893	-	8,893
165	2047	Float	Historical	-	-	(2,694)	-	(2,694)
166	FY 2047 Subtotal:			6,272,800		331,745	3,134	334,879
167	2048	Construction	Historical	6,131,274	5.472%	335,533	1,609	337,142
168	2048	Construction	New	326,031	2.755%	8,982	-	8,982
169	2048	Float	Historical	-	-	(2,651)	-	(2,651)
170	FY 2048 Subtotal:			6,457,305		341,864	1,609	343,473
171	2049	Construction	Historical	6,324,288	5.487%	347,014	578	347,592
172	2049	Construction	New	328,462	2.755%	9,049	-	9,049
173	2049	Float	Historical	-	-	(2,602)	-	(2,602)
174	FY 2049 Subtotal:			6,652,750		353,461	578	354,039
175	Grand Total:			162,489,060		7,906,657	112,213	8,018,871

Table 13-3: Summary of Amortization (\$000s) (FY 2014)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2	BONNEVILLE POWER ADMINISTRATION	BPA	56,374	8,401	93,619	56,416	23,525	19,017	-	-	-	-	-	-	-	-	-	-	-
3		APPROPRIATION SUBTOTAL:	56,374	8,401	93,619	56,416	23,525	19,017	0	0	0	0	0	0	0	0	0	0	0
4	BPA BORROWING	CONSTRUCTION	-	73,050	-	19,500	36,400	46,708	249,654	231,646	227,368	225,681	221,802	226,400	235,627	242,730	228,500	233,880	236,386
5		ENVIRONMENT	-	-	-	-	-	-	-	-	-	-	-	-	10,000	-	13,000	6,050	5,380
6		BPA BORROWING SUBTOTAL:	-	73,050	-	19,500	36,400	46,708	249,654	231,646	227,368	225,681	221,802	226,400	245,627	242,730	241,500	239,930	241,766
7	MAKE WHOLE CALL	DISCOUNTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8		PREMIUMS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		MAKE WHOLE CALL SUBTOTAL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10		TREASURY SUBTOTAL:	0	73,050	0	19,500	36,400	46,708	249,654	231,646	227,368	225,681	221,802	226,400	245,627	242,730	241,500	239,930	241,766
11		GRAND TOTAL:	56,374	81,451	93,619	75,916	59,925	65,725	249,654	231,646	227,368	225,681	221,802	226,400	245,627	242,730	241,500	239,930	241,766

Table 13-3: Summary of Amortization (\$000s) (FY 2014)

	A	B	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN
1			2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	TOTAL
2	BONNEVILLE POWER ADMINISTRATION	BPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257,352
3		APPROPRIATION SUBTOTAL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257,352
4	BPA BORROWING	CONSTRUCTION	238,452	233,310	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608	6,106,176
5		ENVIRONMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34,430
6		BPA BORROWING SUBTOTAL:	238,452	233,310	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608	6,140,606
7	MAKE WHOLE CALL	DISCOUNTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8		PREMIUMS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		MAKE WHOLE CALL SUBTOTAL:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10		TREASURY SUBTOTAL:	238,452	233,310	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608	6,140,606
11		GRAND TOTAL:	238,452	233,310	234,957	143,737	201,229	234,009	228,782	74,344	95,628	192,898	182,757	3	81,767	197,925	195,106	182,520	175,465	167,858	159,487	150,608	6,397,958

Table 13-4: Application of Amortization (\$000s) (FY 2014)

A	B	C	D	E	F	G	H	I	J	
Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized	
1	FY 2013	Bonneville Power Administration	BPA	1973	2018	21,656	5,041	7.280%	No	5,041
2	FY 2013	Bonneville Power Administration	BPA	1973	2018	33,788	15,769	7.280%	No	15,769
3	FY 2013	Bonneville Power Administration	BPA	1974	2019	12,079	12,079	7.270%	No	5,191
4	FY 2013	Bonneville Power Administration	BPA	1974	2019	12,563	12,563	7.270%	No	12,563
5	FY 2013	Bonneville Power Administration	BPA	1974	2019	20,984	17,810	7.270%	No	17,810
6	FY 2013 Subtotal:		-	-	-	101,070	63,262	-	-	56,374
7	FY 2014	Construction	-	1999	2014	59,050	59,050	5.900%	No	59,050
8	FY 2014	Construction	-	2009	2014	14,000	14,000	2.746%	No	14,000
9	FY 2014	Bonneville Power Administration	BPA	1974	2019	12,079	6,888	7.270%	No	3,901
10	FY 2014 Subtotal:		-	-	-	85,129	79,938	-	-	76,951
11	FY 2015	Bonneville Power Administration	BPA	1974	2019	12,079	2,987	7.270%	No	2,987
12	FY 2015	Bonneville Power Administration	BPA	1975	2020	11,742	11,742	7.250%	No	11,742
13	FY 2015	Bonneville Power Administration	BPA	1975	2020	17,158	17,158	7.250%	No	17,158
14	FY 2015	Bonneville Power Administration	BPA	1975	2020	21,916	21,916	7.250%	No	21,916
15	FY 2015	Bonneville Power Administration	BPA	1975	2020	32,026	32,026	7.250%	No	32,026
16	FY 2015	Bonneville Power Administration	BPA	1976	2021	2,212	2,212	7.230%	No	2,212
17	FY 2015	Bonneville Power Administration	BPA	1976	2021	61,025	61,025	7.230%	No	10,078
18	FY 2015 Subtotal:		-	-	-	158,158	149,066	-	-	98,119
19	FY 2016	Construction	-	2011	2016	13,000	13,000	1.957%	No	13,000
20	FY 2016	Construction	-	2011	2016	6,500	6,500	1.423%	No	6,500
21	FY 2016	Bonneville Power Administration	BPA	1976	2021	61,025	50,947	7.230%	No	50,947
22	FY 2016	Bonneville Power Administration	BPA	1977	2022	4,981	4,981	7.210%	No	4,981
23	FY 2016	Bonneville Power Administration	BPA	1977	2022	33,702	33,702	7.210%	No	3,191
24	FY 2016 Subtotal:		-	-	-	119,208	109,130	-	-	78,619
25	FY 2017	Construction	-	2012	2017	36,400	36,400	0.920%	No	36,400
26	FY 2017	Bonneville Power Administration	BPA	1977	2022	33,702	30,511	7.210%	No	17,228
27	FY 2017 Subtotal:		-	-	-	70,102	66,911	-	-	53,628
28	FY 2018	Bonneville Power Administration	BPA	1977	2022	3,948	3,948	7.210%	No	3,948
29	FY 2018	Bonneville Power Administration	BPA	1977	2022	5,380	5,380	7.210%	No	5,380
30	FY 2018	Bonneville Power Administration	BPA	1977	2022	33,702	13,283	7.210%	No	13,283
31	FY 2018	Construction	-	2013	2043	15,000	15,000	6.000%	No	15,000
32	FY 2018	Construction	-	2013	2043	18,000	18,000	6.000%	No	18,000
33	FY 2018	Construction	-	2013	2043	30,000	30,000	6.000%	No	3,856
34	FY 2018 Subtotal:		-	-	-	106,030	85,611	-	-	59,467
35	FY 2019	Construction	-	2009	2019	46,940	46,940	4.026%	No	46,940
36	FY 2019	Construction	-	2009	2019	35,000	35,000	3.699%	No	35,000
37	FY 2019	Construction	-	2010	2019	13,000	13,000	4.069%	No	13,000
38	FY 2019	Construction	-	2010	2019	23,000	23,000	3.719%	No	23,000
39	FY 2019	Construction	-	2010	2019	30,000	30,000	3.714%	No	30,000
40	FY 2019	Construction	-	2010	2019	15,000	15,000	3.533%	No	15,000
41	FY 2019	Construction	-	2013	2019	10,500	10,500	1.800%	No	10,500
42	FY 2019	Construction	-	2013	2019	12,180	13,650	1.800%	No	13,650
43	FY 2019	Construction	-	2013	2019	8,700	8,700	1.100%	No	8,700
44	FY 2019	Construction	-	1998	2028	112,300	112,300	5.850%	No	20,462
45	FY 2019	Construction	-	2013	2043	30,000	26,144	6.000%	No	26,144
46	FY 2019 Subtotal:		-	-	-	336,620	334,234	-	-	242,396
47	FY 2020	Construction	-	2009	2020	50,000	50,000	3.830%	No	50,000
48	FY 2020	Construction	-	2010	2020	43,000	43,000	3.842%	No	43,000
49	FY 2020	Construction	-	2010	2020	50,000	50,000	3.118%	No	50,000
50	FY 2020	Construction	-	2014	2020	5,260	5,260	2.200%	No	5,260
51	FY 2020	Construction	-	2014	2020	5,640	5,640	2.200%	No	5,640
52	FY 2020	Construction	-	2014	2020	6,140	6,140	2.200%	No	6,140
53	FY 2020	Construction	-	2014	2020	6,540	6,540	2.200%	No	6,540
54	FY 2020	Construction	-	1998	2028	112,300	91,838	5.850%	No	57,684
55	FY 2020 Subtotal:		-	-	-	278,880	258,418	-	-	224,264
56	FY 2021	Construction	-	2010	2021	15,000	15,000	4.188%	No	15,000
57	FY 2021	Construction	-	2010	2021	22,000	22,000	4.094%	No	22,000
58	FY 2021	Construction	-	2010	2021	22,000	22,000	3.694%	No	22,000
59	FY 2021	Construction	-	2010	2021	22,000	22,000	3.374%	No	22,000
60	FY 2021	Construction	-	1998	2028	112,300	34,153	5.850%	No	34,153
61	FY 2021	Construction	-	1998	2028	106,500	106,500	5.850%	No	105,230
62	FY 2021 Subtotal:		-	-	-	299,800	221,653	-	-	220,383

Table 13-4: Application of Amortization (\$000s) (FY 2014)

A	B	C	D	E	F	G	H	I	J	
Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized	
63	FY 2022	Construction	-	2009	2022	35,000	35,000	4.253%	No	35,000
64	FY 2022	Construction	-	2009	2022	20,000	20,000	4.200%	No	20,000
65	FY 2022	Construction	-	2010	2022	30,000	30,000	3.372%	No	30,000
66	FY 2022	Construction	-	2010	2022	20,000	20,000	3.029%	No	20,000
67	FY 2022	Construction	-	1998	2028	106,500	1,270	5.850%	No	1,270
68	FY 2022	Construction	-	2013	2043	55,000	55,000	5.700%	No	55,000
69	FY 2022	Construction	-	2015	2050	177,753	177,753	5.510%	No	56,625
70		FY 2022 Subtotal:	-	-	-	444,253	339,023	-	-	217,896
71	FY 2023	Construction	-	2010	2023	46,000	46,000	3.161%	No	46,000
72	FY 2023	Construction	-	2015	2050	177,753	121,128	5.510%	No	121,128
73	FY 2023	Construction	-	2016	2051	185,811	185,811	5.510%	No	46,435
74		FY 2023 Subtotal:	-	-	-	409,564	352,939	-	-	213,563
75	FY 2024	Construction	-	2012	2024	45,000	45,000	3.360%	No	45,000
76	FY 2024	Construction	-	2016	2051	185,811	139,376	5.510%	No	139,376
77	FY 2024	Construction	-	2017	2052	193,085	193,085	5.510%	No	33,361
78		FY 2024 Subtotal:	-	-	-	423,896	377,461	-	-	217,736
79	FY 2025	Construction	-	2010	2025	15,000	15,000	4.310%	Yes	15,000
80	FY 2025	Construction	-	2012	2025	14,300	14,300	4.310%	Yes	14,300
81	FY 2025	Construction	-	2012	2025	26,000	26,000	4.310%	Yes	26,000
82	FY 2025	Construction	-	2012	2025	37,000	37,000	4.310%	Yes	37,000
83	FY 2025	Environment	-	2010	2025	10,000	10,000	4.279%	No	10,000
84	FY 2025	Construction	-	2017	2052	193,085	159,724	5.510%	No	134,179
85		FY 2025 Subtotal:	-	-	-	295,385	262,024	-	-	236,479
86	FY 2026	Construction	-	2011	2026	45,000	45,000	3.450%	No	45,000
87	FY 2026	Construction	-	2017	2052	193,085	25,545	5.510%	No	25,545
88	FY 2026	Construction	-	2018	2053	199,431	199,431	5.510%	No	162,587
89		FY 2026 Subtotal:	-	-	-	437,516	269,976	-	-	233,132
90	FY 2027	Construction	-	2012	2027	17,000	17,000	3.550%	No	17,000
91	FY 2027	Environment	-	2012	2027	13,000	13,000	3.550%	No	13,000
92	FY 2027	Construction	-	2018	2053	199,431	36,844	5.510%	No	36,844
93	FY 2027	Construction	-	2019	2054	204,100	204,100	5.510%	No	164,577
94		FY 2027 Subtotal:	-	-	-	433,531	270,944	-	-	231,421
95	FY 2028	Environment	-	2013	2028	5,000	5,000	5.000%	No	5,000
96	FY 2028	Environment	-	2013	2028	510	510	3.100%	No	510
97	FY 2028	Environment	-	2013	2028	540	540	3.100%	No	540
98	FY 2028	Construction	-	2019	2054	204,100	39,523	5.510%	No	39,523
99	FY 2028	Construction	-	2020	2055	210,564	210,564	5.510%	No	183,782
100		FY 2028 Subtotal:	-	-	-	420,714	256,137	-	-	229,355
101	FY 2029	Construction	-	2011	2029	50,000	50,000	4.238%	No	50,000
102	FY 2029	Environment	-	2014	2029	780	780	4.400%	No	780
103	FY 2029	Environment	-	2014	2029	1,250	1,250	3.600%	No	1,250
104	FY 2029	Environment	-	2014	2029	1,430	1,430	3.600%	No	1,430
105	FY 2029	Environment	-	2014	2029	1,920	1,920	3.600%	No	1,920
106	FY 2029	Construction	-	2020	2055	210,564	26,782	5.510%	No	26,782
107	FY 2029	Construction	-	2021	2056	216,398	216,398	5.510%	No	148,404
108		FY 2029 Subtotal:	-	-	-	482,342	298,560	-	-	230,566
109	FY 2030	Construction	-	2021	2056	216,398	67,994	5.510%	No	67,994
110	FY 2030	Construction	-	2022	2057	221,403	221,403	5.510%	No	158,751
111		FY 2030 Subtotal:	-	-	-	437,801	289,397	-	-	226,745
112	FY 2031	Construction	-	2022	2057	221,403	62,652	5.510%	No	62,652
113	FY 2031	Construction	-	2023	2058	226,273	226,273	5.510%	No	158,332
114		FY 2031 Subtotal:	-	-	-	447,676	288,925	-	-	220,984
115	FY 2032	Construction	-	2011	2032	98,900	98,900	4.355%	No	98,900
116	FY 2032	Construction	-	2023	2058	226,273	67,941	5.510%	No	67,941
117	FY 2032	Construction	-	2024	2059	230,147	230,147	5.510%	No	55,048
118		FY 2032 Subtotal:	-	-	-	555,320	396,988	-	-	221,890
119	FY 2033	Construction	-	2011	2033	40,000	40,000	4.386%	No	40,000
120	FY 2033	Construction	-	2024	2059	230,147	175,099	5.510%	No	89,962
121		FY 2033 Subtotal:	-	-	-	270,147	215,099	-	-	129,962
122	FY 2034	Construction	-	2011	2034	40,000	40,000	4.416%	No	40,000
123	FY 2034	Construction	-	2024	2059	230,147	85,137	5.510%	No	85,137
124	FY 2034	Construction	-	2025	2060	234,570	234,570	5.510%	No	60,335
125		FY 2034 Subtotal:	-	-	-	504,717	359,707	-	-	185,473
126	FY 2035	Construction	-	2011	2035	40,000	40,000	4.794%	No	40,000
127	FY 2035	Construction	-	2011	2035	40,000	40,000	4.446%	No	40,000
128	FY 2035	Construction	-	2011	2035	40,000	40,000	4.446%	No	40,000
129	FY 2035	Construction	-	2011	2035	45,000	45,000	4.446%	No	45,000
130	FY 2035	Construction	-	2011	2036	50,000	50,000	4.952%	No	7,701
131	FY 2035	Construction	-	2009	2039	35,000	35,000	5.192%	No	35,000
132	FY 2035	Construction	-	2025	2060	234,570	174,235	5.510%	No	9,933
133		FY 2035 Subtotal:	-	-	-	484,570	424,235	-	-	217,635

Table 13-4: Application of Amortization (\$000s) (FY 2014)

A	B	C	D	E	F	G	H	I	J	
Fiscal Year	Project	Appropriation Type	In Service	Due Date	Original Principal	Current Balance	Rate	Rollover	Amount Amortized	
134	FY 2036	Construction	-	2011	2036	50,000	42,299	4.952%	No	42,299
135	FY 2036	Construction	-	2011	2036	50,000	50,000	4.629%	No	50,000
136	FY 2036	Construction	-	2011	2038	55,000	55,000	4.935%	No	55,000
137	FY 2036	Construction	-	2011	2040	25,000	25,000	4.775%	No	25,000
138	FY 2036	Construction	-	2014	2044	87,940	87,940	4.500%	No	40,764
139	FY 2036	Construction	-	2025	2060	234,570	164,301	5.510%	No	
140	FY 2036 Subtotal:		-	-	-	502,510	424,540	-	-	213,063
141	FY 2037	Construction	-	2012	2037	35,000	35,000	3.503%	No	35,000
142	FY 2037	Construction	-	2014	2040	55,830	55,830	4.500%	No	22,610
143	FY 2037 Subtotal:		-	-	-	90,830	90,830	-	-	57,610
144	FY 2038	Construction	-	2014	2039	52,970	52,970	4.500%	No	16,609
145	FY 2038	Construction	-	2014	2040	28,630	28,630	4.500%	No	28,630
146	FY 2038	Construction	-	2014	2040	55,830	33,220	4.500%	No	33,220
147	FY 2038 Subtotal:		-	-	-	137,430	114,820	-	-	78,459
148	FY 2039	Construction	-	2011	2039	50,000	50,000	4.295%	No	50,000
149	FY 2039	Construction	-	2012	2039	39,000	39,000	3.627%	No	39,000
150	FY 2039	Construction	-	2014	2039	52,970	36,361	4.500%	No	36,361
151	FY 2039	Construction	-	2012	2040	30,000	30,000	3.890%	No	30,000
152	FY 2039	Construction	-	2012	2040	45,000	45,000	3.890%	No	4,443
153	FY 2039	Construction	-	2014	2044	87,940	47,176	4.500%	No	15,151
154	FY 2039 Subtotal:		-	-	-	304,910	247,536	-	-	174,954
155	FY 2040	Construction	-	2011	2040	35,000	35,000	3.796%	No	35,000
156	FY 2040	Construction	-	2012	2040	45,000	40,557	3.890%	No	40,557
157	FY 2040	Construction	-	2013	2043	66,330	66,330	4.100%	No	26,592
158	FY 2040	Construction	-	2014	2044	87,940	32,025	4.500%	No	32,025
159	FY 2040	Construction	-	2014	2044	79,760	79,760	4.500%	No	28,935
160	FY 2040 Subtotal:		-	-	-	314,030	253,672	-	-	163,109
161	FY 2041	Construction	-	2013	2041	42,110	42,110	4.100%	No	42,110
162	FY 2041	Construction	-	2013	2041	42,110	42,110	4.100%	No	42,110
163	FY 2041	Construction	-	2013	2043	66,330	39,738	4.100%	No	5,424
164	FY 2041 Subtotal:		-	-	-	150,550	123,958	-	-	89,644
165	FY 2042	Construction	-	2013	2043	66,330	34,314	4.100%	No	28,972
166	FY 2042 Subtotal:		-	-	-	66,330	34,314	-	-	28,972
167	FY 2043	Construction	-	2013	2043	66,330	5,342	4.100%	No	5,342
168	FY 2043	Construction	-	2013	2043	39,950	39,950	4.100%	No	39,950
169	FY 2043	Construction	-	2013	2043	40,010	40,010	4.100%	No	40,010
170	FY 2043	Construction	-	2014	2044	79,760	50,825	4.500%	No	22,752
171	FY 2043 Subtotal:		-	-	-	226,050	136,127	-	-	108,054
172	FY 2044	Construction	-	2014	2044	20,040	20,040	4.500%	No	20,040
173	FY 2044	Construction	-	2014	2044	79,760	28,073	4.500%	No	28,073
174	FY 2044	Construction	-	2014	2044	53,170	53,170	4.500%	No	53,170
175	FY 2044	Construction	-	2014	2044	55,830	55,830	4.500%	No	55,830
176	FY 2044 Subtotal:		-	-	-	208,800	157,113	-	-	157,113
177	FY 2045	Construction	-	2014	2045	40,700	40,700	4.500%	No	40,700
178	FY 2045	Construction	-	2025	2060	234,570	164,301	5.510%	No	119,400
179	FY 2045 Subtotal:		-	-	-	275,270	205,001	-	-	160,100
180	FY 2046	Construction	-	2025	2060	234,570	44,902	5.510%	No	44,902
181	FY 2046	Construction	-	2026	2061	237,736	237,736	5.510%	No	105,563
182	FY 2046 Subtotal:		-	-	-	472,306	282,638	-	-	150,464
183	FY 2047	Construction	-	2026	2061	237,736	132,173	5.510%	No	132,173
184	FY 2047	Construction	-	2027	2062	241,278	241,278	5.510%	No	9,353
185	FY 2047 Subtotal:		-	-	-	479,014	373,451	-	-	141,526
186	FY 2048	Construction	-	2013	2048	60,016	60,016	4.100%	No	60,016
187	FY 2048	Construction	-	2027	2062	241,278	231,925	5.510%	No	73,001
188	FY 2048 Subtotal:		-	-	-	301,294	291,941	-	-	133,017
189	FY 2049	Construction	-	2014	2049	45,810	45,810	4.500%	No	45,810
190	FY 2049	Construction	-	2014	2049	48,470	48,470	4.500%	No	48,470
191	FY 2049	Construction	-	2027	2062	241,278	158,924	5.510%	No	28,240
192	FY 2049 Subtotal:		-	-	-	335,558	253,204	-	-	122,520
Grand Total:						11,467,311	8,758,782			5,901,643

Table 13-5: Summary of Interest (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1			<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>
2	Appropriation	Bonneville Power Administration	18,641	14,540	14,257	7,145	2,872	223	-	-	-	-	-	-	-	-	-	-	-	-	-
3		Bonneville Power Administration Subtotal:	18,641	14,540	14,257	7,145	2,872	223	-	-	-	-	-	-	-	-	-	-	-	-	-
4		Appropriation Subtotal:	18,641	14,540	14,257	7,145	2,872	223	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Treasury	Construction	85,724	108,349	133,869	162,394	173,467	184,966	192,679	194,554	197,298	198,953	200,878	202,355	203,709	205,075	205,910	207,133	207,750	209,412	210,712
6		Environment	1,102	1,233	1,441	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,609	1,181	1,181	719	437	237	-
7		(Less Interest Income)	(1,333)	(1,265)	(1,688)	(1,554)	(1,537)	(1,641)	(3,376)	(3,210)	(3,197)	(3,200)	(3,194)	(3,246)	(3,415)	(3,412)	(3,410)	(3,408)	(3,408)	(3,404)	(3,358)
8		Coupon Scale Down Premiums	-	-	-	-	-	3,379	1,174	1,206	6,607	6,495	9,151	9,401	7,469	10,090	10,743	8,895	9,448	11,662	11,666
9		BPA Borrowing Subtotal:	85,492	108,317	133,622	162,449	173,539	188,313	192,086	194,158	202,317	203,857	208,444	210,120	209,372	212,933	214,424	213,339	214,227	217,908	219,019
10		Treasury Subtotal:	85,492	108,317	133,622	162,449	173,539	188,313	192,086	194,158	202,317	203,857	208,444	210,120	209,372	212,933	214,424	213,339	214,227	217,908	219,019
11	GRAND TOTAL:		104,133	122,858	147,879	169,594	176,411	188,536	192,086	194,158	202,317	203,857	208,444	210,120	209,372	212,933	214,424	213,339	214,227	217,908	219,019

Table 13-5: Summary of Interest (\$000s) (FY 2015)

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1			<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	<u>2041</u>	<u>2042</u>	<u>2043</u>	<u>2044</u>	<u>2045</u>	<u>2046</u>	<u>2047</u>	<u>2048</u>	<u>2049</u>	<u>2050</u>	<u>Total</u>
2	Appropriation	Bonneville Power Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57,679
3		Bonneville Power Administration Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57,679
4		Appropriation Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57,679
5	Treasury	Construction	212,296	215,609	223,725	228,838	234,025	238,774	252,630	265,492	275,072	285,741	299,689	316,547	330,350	341,828	352,126	363,145	374,992	388,074	401,963	9,086,105
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23,616
7		(Less Interest Income)	(3,340)	(2,487)	(3,063)	(3,340)	(3,323)	(1,896)	(2,153)	(3,108)	(3,039)	(2,391)	(1,882)	(2,686)	(3,197)	(3,293)	(3,246)	(3,195)	(3,141)	(3,080)	(3,016)	(107,131)
8		Coupon Scale Down Premiums	6,923	5,294	7,762	3,364	4,770	320	224	239	144	122	68	47	-	1,621	677	516	1,067	922	363	141,829
9		BPA Borrowing Subtotal:	215,879	218,415	228,424	228,861	235,472	237,198	250,701	262,623	272,177	283,472	297,876	313,907	327,153	340,156	349,558	360,466	372,918	385,915	399,311	9,144,419
10		Treasury Subtotal:	215,879	218,415	228,424	228,861	235,472	237,198	250,701	262,623	272,177	283,472	297,876	313,907	327,153	340,156	349,558	360,466	372,918	385,915	399,311	9,144,419
11	GRAND TOTAL:		215,879	218,415	228,424	228,861	235,472	237,198	250,701	262,623	272,177	283,472	297,876	313,907	327,153	340,156	349,558	360,466	372,918	385,915	399,311	9,202,097

Table 13-6: Interest Calculation Summary (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H
	FISCAL YEAR	PROJECT	TYPE	PRINCIPAL	RATE	INTEREST	PREMIUM	TOTAL
1	2013	Bonneville Power Administration	Historical	257,352	7.243%	18,641	-	18,641
2	2013	Construction	Historical	1,927,890	4.074%	78,544	-	78,544
3	2013	Construction	New	361,396	1.987%	7,180	-	7,180
4	2013	Environment	Historical	23,000	3.867%	889	-	889
5	2013	Environment	New	5,540	3.836%	213	-	213
6	2013	Float	Historical	-	-	(1,333)	-	(1,333)
7	FY 2013 Subtotal:			2,575,178		104,133	-	104,133
8	2014	Bonneville Power Administration	Historical	200,978	7.235%	14,540	-	14,540
9	2014	Construction	Historical	2,369,266	4.132%	97,901	-	97,901
10	2014	Construction	New	547,950	1.907%	10,448	-	10,448
11	2014	Environment	Historical	29,050	4.034%	1,172	-	1,172
12	2014	Environment	New	3,460	1.766%	61	-	61
13	2014	Float	Historical	-	-	(1,265)	-	(1,265)
14	FY 2014 Subtotal:			3,150,704		122,858	-	122,858
15	2015	Bonneville Power Administration	Historical	197,077	7.234%	14,257	-	14,257
16	2015	Construction	Historical	2,938,646	4.165%	122,399	-	122,399
17	2015	Construction	New	528,000	2.172%	11,470	-	11,470
18	2015	Environment	Historical	34,430	3.985%	1,372	-	1,372
19	2015	Environment	New	3,460	1.993%	69	-	69
20	2015	Float	Historical	-	-	(1,688)	-	(1,688)
21	FY 2015 Subtotal:			3,701,613		147,879	-	147,879
22	2016	Bonneville Power Administration	Historical	98,958	7.220%	7,145	-	7,145
23	2016	Construction	Historical	3,557,916	4.407%	156,794	-	156,794
24	2016	Construction	New	189,512	2.955%	5,600	-	5,600
25	2016	Environment	Historical	39,810	4.041%	1,609	-	1,609
26	2016	Float	Historical	-	-	(1,554)	-	(1,554)
27	FY 2016 Subtotal:			3,886,196		169,594	-	169,594
28	2017	Bonneville Power Administration	Historical	39,839	7.210%	2,872	-	2,872
29	2017	Construction	Historical	3,727,928	4.497%	167,648	-	167,648
30	2017	Construction	New	196,922	2.955%	5,819	-	5,819
31	2017	Environment	Historical	39,810	4.041%	1,609	-	1,609
32	2017	Float	Historical	-	-	(1,537)	-	(1,537)
33	FY 2017 Subtotal:			4,004,499		176,411	-	176,411
34	2018	Bonneville Power Administration	Historical	3,092	7.210%	223	-	223
35	2018	Construction	Historical	3,888,450	4.602%	178,951	3,379	182,330
36	2018	Construction	New	203,574	2.955%	6,016	-	6,016
37	2018	Environment	Historical	39,810	4.041%	1,609	-	1,609
38	2018	Float	Historical	-	-	(1,641)	-	(1,641)
39	FY 2018 Subtotal:			4,134,926		185,157	3,379	188,536
40	2019	Construction	Historical	4,017,266	4.643%	186,514	1,174	187,688
41	2019	Construction	New	208,629	2.955%	6,165	-	6,165
42	2019	Environment	Historical	39,810	4.041%	1,609	-	1,609
43	2019	Float	Historical	-	-	(3,376)	-	(3,376)
44	FY 2019 Subtotal:			4,265,705		190,911	1,174	192,086
45	2020	Construction	Historical	3,963,195	4.748%	188,187	1,206	189,392
46	2020	Construction	New	215,471	2.955%	6,367	-	6,367
47	2020	Environment	Historical	39,810	4.041%	1,609	-	1,609
48	2020	Float	Historical	-	-	(3,210)	-	(3,210)
49	FY 2020 Subtotal:			4,218,476		192,952	1,206	194,158
50	2021	Construction	Historical	3,934,803	4.848%	190,755	6,607	197,362
51	2021	Construction	New	221,414	2.955%	6,543	-	6,543
52	2021	Environment	Historical	39,810	4.041%	1,609	-	1,609
53	2021	Float	Historical	-	-	(3,197)	-	(3,197)
54	FY 2021 Subtotal:			4,196,027		195,710	6,607	202,317
55	2022	Construction	Historical	3,920,632	4.904%	192,251	6,495	198,747
56	2022	Construction	New	226,804	2.955%	6,702	-	6,702
57	2022	Environment	Historical	39,810	4.041%	1,609	-	1,609
58	2022	Float	Historical	-	-	(3,200)	-	(3,200)
59	FY 2022 Subtotal:			4,187,246		197,362	6,495	203,857
60	2023	Construction	Historical	3,912,245	4.959%	194,015	9,151	203,167
61	2023	Construction	New	232,252	2.955%	6,863	-	6,863
62	2023	Environment	Historical	39,810	4.041%	1,609	-	1,609
63	2023	Float	Historical	-	-	(3,194)	-	(3,194)
64	FY 2023 Subtotal:			4,184,307		199,293	9,151	208,444

Table 13-6: Interest Calculation Summary (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H
	FISCAL YEAR	PROJECT	TYPE	PRINCIPAL	RATE	INTEREST	PREMIUM	TOTAL
65	2024	Construction	Historical	3,913,649	4.992%	195,363	9,401	204,764
66	2024	Construction	New	236,640	2.955%	6,993	-	6,993
67	2024	Environment	Historical	39,810	4.041%	1,609	-	1,609
68	2024	Float	Historical	-	-	(3,246)	-	(3,246)
69	FY 2024 Subtotal:			4,190,099		200,718	9,401	210,120
70	2025	Construction	Historical	3,914,883	5.021%	196,583	7,469	204,052
71	2025	Construction	New	241,160	2.955%	7,126	-	7,126
72	2025	Environment	Historical	39,810	4.041%	1,609	-	1,609
73	2025	Float	Historical	-	-	(3,415)	-	(3,415)
74	FY 2025 Subtotal:			4,195,853		201,903	7,469	209,372
75	2026	Construction	Historical	3,911,216	5.058%	197,843	10,090	207,933
76	2026	Construction	New	244,724	2.955%	7,232	-	7,232
77	2026	Environment	Historical	29,810	3.961%	1,181	-	1,181
78	2026	Float	Historical	-	-	(3,412)	-	(3,412)
79	FY 2026 Subtotal:			4,185,750		202,843	10,090	212,933
80	2027	Construction	Historical	3,904,536	5.085%	198,555	10,743	209,299
81	2027	Construction	New	248,878	2.955%	7,354	-	7,354
82	2027	Environment	Historical	29,810	3.961%	1,181	-	1,181
83	2027	Float	Historical	-	-	(3,410)	-	(3,410)
84	FY 2027 Subtotal:			4,183,224		203,680	10,743	214,424
85	2028	Construction	Historical	3,916,358	5.098%	199,655	8,895	208,550
86	2028	Construction	New	253,053	2.955%	7,478	-	7,478
87	2028	Environment	Historical	16,810	4.278%	719	-	719
88	2028	Float	Historical	-	-	(3,408)	-	(3,408)
89	FY 2028 Subtotal:			4,186,221		204,444	8,895	213,339
90	2029	Construction	Historical	3,924,206	5.101%	200,157	9,448	209,605
91	2029	Construction	New	256,959	2.955%	7,593	-	7,593
92	2029	Environment	Historical	10,760	4.058%	437	-	437
93	2029	Float	Historical	-	-	(3,408)	-	(3,408)
94	FY 2029 Subtotal:			4,191,925		204,778	9,448	214,227
95	2030	Construction	Historical	3,935,972	5.124%	201,688	11,662	213,350
96	2030	Construction	New	261,392	2.955%	7,724	-	7,724
97	2030	Environment	Historical	5,380	4.400%	237	-	237
98	2030	Float	Historical	-	-	(3,404)	-	(3,404)
99	FY 2030 Subtotal:			4,202,744		206,246	11,662	217,908
100	2031	Construction	Historical	3,955,683	5.128%	202,853	11,666	214,519
101	2031	Construction	New	265,934	2.955%	7,858	-	7,858
102	2031	Float	Historical	-	-	(3,358)	-	(3,358)
103	FY 2031 Subtotal:			4,221,617		207,354	11,666	219,019
104	2032	Construction	Historical	3,980,040	5.133%	204,293	6,923	211,215
105	2032	Construction	New	270,853	2.955%	8,004	-	8,004
106	2032	Float	Historical	-	-	(3,340)	-	(3,340)
107	FY 2032 Subtotal:			4,250,893		208,956	6,923	215,879
108	2033	Construction	Historical	4,007,286	5.177%	207,441	5,294	212,735
109	2033	Construction	New	276,407	2.955%	8,168	-	8,168
110	2033	Float	Historical	-	-	(2,487)	-	(2,487)
111	FY 2033 Subtotal:			4,283,693		213,121	5,294	218,415
112	2034	Construction	Historical	4,131,722	5.213%	215,405	7,762	223,166
113	2034	Construction	New	281,566	2.955%	8,320	-	8,320
114	2034	Float	Historical	-	-	(3,063)	-	(3,063)
115	FY 2034 Subtotal:			4,413,288		220,662	7,762	228,424
116	2035	Construction	Historical	4,206,096	5.240%	220,398	3,364	223,761
117	2035	Construction	New	285,629	2.955%	8,440	-	8,440
118	2035	Float	Historical	-	-	(3,340)	-	(3,340)
119	FY 2035 Subtotal:			4,491,725		225,498	3,364	228,861
120	2036	Construction	Historical	4,252,949	5.301%	225,443	4,770	230,213
121	2036	Construction	New	290,425	2.955%	8,582	-	8,582
122	2036	Float	Historical	-	-	(3,323)	-	(3,323)
123	FY 2036 Subtotal:			4,543,374		230,702	4,770	235,472
124	2037	Construction	Historical	4,310,489	5.337%	230,037	320	230,357
125	2037	Construction	New	295,659	2.955%	8,737	-	8,737
126	2037	Float	Historical	-	-	(1,896)	-	(1,896)
127	FY 2037 Subtotal:			4,606,148		236,878	320	237,198
128	2038	Construction	Historical	4,524,485	5.388%	243,760	224	243,984
129	2038	Construction	New	300,168	2.955%	8,870	-	8,870
130	2038	Float	Historical	-	-	(2,153)	-	(2,153)
131	FY 2038 Subtotal:			4,824,653		250,477	224	250,701

Table 13-6: Interest Calculation Summary (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H
	<u>FISCAL YEAR</u>	<u>PROJECT</u>	<u>TYPE</u>	<u>PRINCIPAL</u>	<u>RATE</u>	<u>INTEREST</u>	<u>PREMIUM</u>	<u>TOTAL</u>
132	2039	Construction	Historical	4,722,238	5.432%	256,526	239	256,765
133	2039	Construction	New	303,420	2.955%	8,966	-	8,966
134	2039	Float	Historical	-	-	(3,108)	-	(3,108)
135	FY 2039 Subtotal:			5,025,658		262,385	239	262,623
136	2040	Construction	Historical	4,827,188	5.510%	265,970	144	266,114
137	2040	Construction	New	308,011	2.955%	9,102	-	9,102
138	2040	Float	Historical	-	-	(3,039)	-	(3,039)
139	FY 2040 Subtotal:			5,135,199		272,033	144	272,177
140	2041	Construction	Historical	4,948,801	5.587%	276,490	122	276,612
141	2041	Construction	New	313,067	2.955%	9,251	-	9,251
142	2041	Float	Historical	-	-	(2,391)	-	(2,391)
143	FY 2041 Subtotal:			5,261,868		283,350	122	283,472
144	2042	Construction	Historical	5,150,439	5.637%	290,314	68	290,383
145	2042	Construction	New	317,258	2.955%	9,375	-	9,375
146	2042	Float	Historical	-	-	(1,882)	-	(1,882)
147	FY 2042 Subtotal:			5,467,697		297,808	68	297,876
148	2043	Construction	Historical	5,417,907	5.667%	307,023	47	307,070
149	2043	Construction	New	322,295	2.955%	9,524	-	9,524
150	2043	Float	Historical	-	-	(2,686)	-	(2,686)
151	FY 2043 Subtotal:			5,740,202		313,860	47	313,907
152	2044	Construction	Historical	5,612,427	5.714%	320,707	-	320,707
153	2044	Construction	New	326,338	2.955%	9,643	-	9,643
154	2044	Float	Historical	-	-	(3,197)	-	(3,197)
155	FY 2044 Subtotal:			5,938,765		327,153	-	327,153
156	2045	Construction	Historical	5,763,093	5.762%	332,088	1,621	333,709
157	2045	Construction	New	329,605	2.955%	9,740	-	9,740
158	2045	Float	Historical	-	-	(3,293)	-	(3,293)
159	FY 2045 Subtotal:			6,092,698		338,535	1,621	340,156
160	2046	Construction	Historical	5,914,091	5.787%	342,271	677	342,948
161	2046	Construction	New	333,499	2.955%	9,855	-	9,855
162	2046	Float	Historical	-	-	(3,246)	-	(3,246)
163	FY 2046 Subtotal:			6,247,590		348,880	677	349,558
164	2047	Construction	Historical	6,078,271	5.810%	353,154	516	353,670
165	2047	Construction	New	338,102	2.955%	9,991	-	9,991
166	2047	Float	Historical	-	-	(3,195)	-	(3,195)
167	FY 2047 Subtotal:			6,416,373		359,950	516	360,466
168	2048	Construction	Historical	6,257,837	5.831%	364,896	1,067	365,963
169	2048	Construction	New	341,663	2.955%	10,096	-	10,096
170	2048	Float	Historical	-	-	(3,141)	-	(3,141)
171	FY 2048 Subtotal:			6,599,500		371,852	1,067	372,918
172	2049	Construction	Historical	6,453,320	5.856%	377,892	922	378,814
173	2049	Construction	New	344,541	2.955%	10,181	-	10,181
174	2049	Float	Historical	-	-	(3,080)	-	(3,080)
175	FY 2049 Subtotal:			6,797,861		384,993	922	385,915
176	2050	Construction	Historical	6,664,592	5.877%	391,708	363	392,071
177	2050	Construction	New	347,044	2.955%	10,255	-	10,255
178	2050	Float	Historical	-	-	(3,016)	-	(3,016)
179	FY 2050 Subtotal:			7,011,636		398,947	363	399,311
Grand Total:				179,211,130		9,060,268	141,829	9,202,097

Table 13-7: Summary of Amortization (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	
			<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	
1	Appropriation	Bonneville Power Administration	56,374	3,901	98,119	59,119	36,747	3,092	-	-	-	-	-	-	-	-	-	-	-	-	-	
2																						
3		Bonneville Power Administration Subtotal:	56,374	3,901	98,119	59,119	36,747	3,092	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4		Appropriation Subtotal:	56,374	3,901	98,119	59,119	36,747	3,092	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Treasury	Construction	-	73,050	-	19,500	36,400	74,758	262,700	243,863	235,584	235,191	230,848	235,406	244,827	251,405	237,055	245,206	245,193	241,681	241,577	
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	10,000	-	13,000	6,050	5,380	5,380	-	
7		BPA Borrowing Subtotal:	-	73,050	-	19,500	36,400	74,758	262,700	243,863	235,584	235,191	230,848	235,406	254,827	251,405	250,055	251,256	250,573	247,061	241,577	
8		Discounts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		Premiums	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10		Make Whole Call Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Treasury Subtotal:	0	73,050	0	19,500	36,400	74,758	262,700	243,863	235,584	235,191	230,848	235,406	254,827	251,405	250,055	251,256	250,573	247,061	241,577		
12	GRAND TOTAL:		56,374	76,951	98,119	78,619	73,147	77,850	262,700	243,863	235,584	235,191	230,848	235,406	254,827	251,405	250,055	251,256	250,573	247,061	241,577	

Table 13-7: Summary of Amortization (\$000s) (FY 2015)

	A	B	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	
1			<u>2032</u>	<u>2033</u>	<u>2034</u>	<u>2035</u>	<u>2036</u>	<u>2037</u>	<u>2038</u>	<u>2039</u>	<u>2040</u>	<u>2041</u>	<u>2042</u>	<u>2043</u>	<u>2044</u>	<u>2045</u>	<u>2046</u>	<u>2047</u>	<u>2048</u>	<u>2049</u>	<u>2050</u>	<u>TOTAL</u>	
2	Appropriation	Bonneville Power Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257,352
3		Bonneville Power Administration Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	257,352
4		Appropriation Subtotal:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257,352
5	Treasury	Construction	243,608	151,971	207,191	238,776	232,886	81,663	102,415	198,470	186,397	111,430	49,790	127,775	175,672	178,607	169,319	158,536	146,180	133,269	119,945		6,368,143
6		Environment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39,810
7		BPA Borrowing Subtotal:	243,608	151,971	207,191	238,776	232,886	81,663	102,415	198,470	186,397	111,430	49,790	127,775	175,672	178,607	169,319	158,536	146,180	133,269	119,945		6,407,953
8		Discounts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9		Premiums	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10		Make Whole Call Subtotal:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11		Treasury Subtotal:	243,608	151,971	207,191	238,776	232,886	81,663	102,415	198,470	186,397	111,430	49,790	127,775	175,672	178,607	169,319	158,536	146,180	133,269	119,945		6,407,953
12	GRAND TOTAL:		243,608	151,971	207,191	238,776	232,886	81,663	102,415	198,470	186,397	111,430	49,790	127,775	175,672	178,607	169,319	158,536	146,180	133,269	119,945		6,665,305

Table 13-8: Application of Amortization (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J
	YEAR	PROJECT	APPROPRIATION TYPE	IN SERVICE	DATE	PRINCIPAL	BALANCE	RATE	ROLLOVER	AMOUNT AMORTIZED
1	FY 2013	Bonneville Power Administration	BPA	1973	2018	21,656	5,041	7.280%	No	5,041
2	FY 2013	Bonneville Power Administration	BPA	1973	2018	33,788	15,769	7.280%	No	15,769
3	FY 2013	Bonneville Power Administration	BPA	1974	2019	12,079	12,079	7.270%	No	5,191
4	FY 2013	Bonneville Power Administration	BPA	1974	2019	12,563	12,563	7.270%	No	12,563
5	FY 2013	Bonneville Power Administration	BPA	1974	2019	20,984	17,810	7.270%	No	17,810
6		FY 2013 Subtotal:	-	-	-	101,070	63,262	-	-	56,374
7	FY 2014	Construction	-	1999	2014	59,050	59,050	5.900%	No	59,050
8	FY 2014	Construction	-	2009	2014	14,000	14,000	2.746%	No	14,000
9	FY 2014	Bonneville Power Administration	BPA	1974	2019	12,079	6,888	7.270%	No	3,901
10		FY 2014 Subtotal:	-	-	-	85,129	79,938	-	-	76,951
11	FY 2015	Bonneville Power Administration	BPA	1974	2019	12,079	2,987	7.270%	No	2,987
12	FY 2015	Bonneville Power Administration	BPA	1975	2020	11,742	11,742	7.250%	No	11,742
13	FY 2015	Bonneville Power Administration	BPA	1975	2020	17,158	17,158	7.250%	No	17,158
14	FY 2015	Bonneville Power Administration	BPA	1975	2020	21,916	21,916	7.250%	No	21,916
15	FY 2015	Bonneville Power Administration	BPA	1975	2020	32,026	32,026	7.250%	No	32,026
16	FY 2015	Bonneville Power Administration	BPA	1976	2021	2,212	2,212	7.230%	No	2,212
17	FY 2015	Bonneville Power Administration	BPA	1976	2021	61,025	61,025	7.230%	No	10,078
18		FY 2015 Subtotal:	-	-	-	158,158	149,066	-	-	98,119
19	FY 2016	Construction	-	2011	2016	13,000	13,000	1.957%	No	13,000
20	FY 2016	Construction	-	2011	2016	6,500	6,500	1.423%	No	6,500
21	FY 2016	Bonneville Power Administration	BPA	1976	2021	61,025	50,947	7.230%	No	50,947
22	FY 2016	Bonneville Power Administration	BPA	1977	2022	4,981	4,981	7.210%	No	4,981
23	FY 2016	Bonneville Power Administration	BPA	1977	2022	33,702	33,702	7.210%	No	3,191
24		FY 2016 Subtotal:	-	-	-	119,208	109,130	-	-	78,619
25	FY 2017	Construction	-	2012	2017	36,400	36,400	0.920%	No	36,400
26	FY 2017	Bonneville Power Administration	BPA	1977	2022	3,948	3,948	7.210%	No	856
27	FY 2017	Bonneville Power Administration	BPA	1977	2022	5,380	5,380	7.210%	No	5,380
28	FY 2017	Bonneville Power Administration	BPA	1977	2022	33,702	30,511	7.210%	No	30,511
29		FY 2017 Subtotal:	-	-	-	79,430	76,239	-	-	73,147
30	FY 2018	Bonneville Power Administration	BPA	1977	2022	3,948	3,092	7.210%	No	3,092
31	FY 2018	Construction	-	1998	2028	112,300	112,300	5.850%	No	11,758
32	FY 2018	Construction	-	2013	2043	15,000	15,000	6.000%	No	15,000
33	FY 2018	Construction	-	2013	2043	18,000	18,000	6.000%	No	18,000
34	FY 2018	Construction	-	2013	2043	30,000	30,000	6.000%	No	30,000
35		FY 2018 Subtotal:	-	-	-	179,248	178,392	-	-	77,850
36	FY 2019	Construction	-	2009	2019	46,940	46,940	4.026%	No	46,940
37	FY 2019	Construction	-	2009	2019	35,000	35,000	3.699%	No	35,000
38	FY 2019	Construction	-	2010	2019	13,000	13,000	4.069%	No	13,000
39	FY 2019	Construction	-	2010	2019	23,000	23,000	3.719%	No	23,000
40	FY 2019	Construction	-	2010	2019	30,000	30,000	3.714%	No	30,000
41	FY 2019	Construction	-	2010	2019	15,000	15,000	3.533%	No	15,000
42	FY 2019	Construction	-	2013	2019	10,500	10,500	1.800%	No	10,500
43	FY 2019	Construction	-	2013	2019	12,180	13,650	1.800%	No	13,650
44	FY 2019	Construction	-	2013	2019	8,700	8,700	1.100%	No	8,700
45	FY 2019	Construction	-	1998	2028	112,300	100,542	5.850%	No	66,910
46		FY 2019 Subtotal:	-	-	-	306,620	296,332	-	-	262,700
47	FY 2020	Construction	-	2009	2020	50,000	50,000	3.830%	No	50,000
48	FY 2020	Construction	-	2010	2020	43,000	43,000	3.842%	No	43,000
49	FY 2020	Construction	-	2010	2020	50,000	50,000	3.118%	No	50,000
50	FY 2020	Construction	-	2014	2020	5,260	5,260	2.200%	No	5,260
51	FY 2020	Construction	-	2014	2020	5,640	5,640	2.200%	No	5,640
52	FY 2020	Construction	-	2014	2020	6,140	6,140	2.200%	No	6,140
53	FY 2020	Construction	-	2014	2020	6,540	6,540	2.200%	No	6,540
54	FY 2020	Construction	-	1998	2028	112,300	33,632	5.850%	No	33,632
55	FY 2020	Construction	-	1998	2028	106,500	106,500	5.850%	No	43,651
56		FY 2020 Subtotal:	-	-	-	385,380	306,712	-	-	243,863

Table 13-8: Application of Amortization (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J
	YEAR	PROJECT	APPROPRIATION TYPE	IN SERVICE	DATE	PRINCIPAL	BALANCE	RATE	ROLLOVER	AMORTIZED AMOUNT
57	FY 2021	Construction	-	2010	2021	15,000	15,000	4.188%	No	15,000
58	FY 2021	Construction	-	2010	2021	22,000	22,000	4.094%	No	22,000
59	FY 2021	Construction	-	2010	2021	22,000	22,000	3.694%	No	22,000
60	FY 2021	Construction	-	2010	2021	22,000	22,000	3.374%	No	22,000
61	FY 2021	Construction	-	2015	2021	5,390	5,390	3.300%	No	5,390
62	FY 2021	Construction	-	2015	2021	5,780	5,780	3.300%	No	5,780
63	FY 2021	Construction	-	2015	2021	6,290	6,290	3.300%	No	6,290
64	FY 2021	Construction	-	2015	2021	6,700	6,700	3.300%	No	6,700
65	FY 2021	Construction	-	2016	2051	189,512	189,512	5.910%	No	130,424
66	FY 2021 Subtotal:		-	-	-	294,672	294,672	-	-	235,584
67	FY 2022	Construction	-	2009	2022	35,000	35,000	4.253%	No	35,000
68	FY 2022	Construction	-	2009	2022	20,000	20,000	4.200%	No	20,000
69	FY 2022	Construction	-	2010	2022	30,000	30,000	3.372%	No	30,000
70	FY 2022	Construction	-	2010	2022	20,000	20,000	3.029%	No	20,000
71	FY 2022	Construction	-	2016	2051	189,512	59,088	5.910%	No	59,088
72	FY 2022	Construction	-	2017	2052	196,922	196,922	5.910%	No	71,104
73	FY 2022 Subtotal:		-	-	-	491,434	361,010	-	-	235,191
74	FY 2023	Construction	-	2010	2023	46,000	46,000	3.161%	No	46,000
75	FY 2023	Construction	-	2017	2052	196,922	125,818	5.910%	No	125,818
76	FY 2023	Construction	-	2018	2053	203,574	203,574	5.910%	No	59,029
77	FY 2023 Subtotal:		-	-	-	446,496	375,392	-	-	230,848
78	FY 2024	Construction	-	2012	2024	45,000	45,000	3.360%	No	45,000
79	FY 2024	Construction	-	2018	2053	203,574	144,545	5.910%	No	144,545
80	FY 2024	Construction	-	2019	2054	208,629	208,629	5.910%	No	45,861
81	FY 2024 Subtotal:		-	-	-	457,203	398,174	-	-	235,406
82	FY 2025	Construction	-	2010	2025	15,000	15,000	4.310%	Yes	15,000
83	FY 2025	Construction	-	2012	2025	14,300	14,300	4.310%	Yes	14,300
84	FY 2025	Construction	-	2012	2025	26,000	26,000	4.310%	Yes	26,000
85	FY 2025	Construction	-	2012	2025	37,000	37,000	4.310%	Yes	37,000
86	FY 2025	Environment	-	2010	2025	10,000	10,000	4.279%	No	10,000
87	FY 2025	Construction	-	2019	2054	208,629	162,768	5.910%	No	152,527
88	FY 2025 Subtotal:		-	-	-	310,929	265,068	-	-	254,827
89	FY 2026	Construction	-	2011	2026	45,000	45,000	3.45	No	45,000
90	FY 2026	Construction	-	2019	2054	208,629	10,241	5.910%	No	10,241
91	FY 2026	Construction	-	2020	2055	215,471	215,471	5.910%	No	196,164
92	FY 2026 Subtotal:		-	-	-	469,100	270,712	-	-	251,405
93	FY 2027	Construction	-	2012	2027	17,000	17,000	3.550%	No	17,000
94	FY 2027	Environment	-	2012	2027	13,000	13,000	3.550%	No	13,000
95	FY 2027	Construction	-	2020	2055	215,471	19,307	5.910%	No	19,307
96	FY 2027	Construction	-	2021	2056	221,414	221,414	5.910%	No	200,748
97	FY 2027 Subtotal:		-	-	-	466,885	270,721	-	-	250,555
98	FY 2028	Construction	-	1998	2028	106,500	62,849	5.850%	No	62,849
99	FY 2028	Environment	-	2013	2028	5,000	5,000	5.000%	No	5,000
100	FY 2028	Environment	-	2013	2028	510	510	3.100%	No	510
101	FY 2028	Environment	-	2013	2028	540	540	3.100%	No	540
102	FY 2028	Construction	-	2021	2056	221,414	20,666	5.910%	No	20,666
103	FY 2028	Construction	-	2022	2057	226,804	226,804	5.910%	No	161,691
104	FY 2028 Subtotal:		-	-	-	560,768	316,368	-	-	251,256
105	FY 2029	Construction	-	2011	2029	50,000	50,000	4.238%	No	50,000
106	FY 2029	Environment	-	2014	2029	780	780	4.400%	No	780
107	FY 2029	Environment	-	2014	2029	1,250	1,250	3.600%	No	1,250
108	FY 2029	Environment	-	2014	2029	1,430	1,430	3.600%	No	1,430
109	FY 2029	Environment	-	2014	2029	1,920	1,920	3.600%	No	1,920
110	FY 2029	Construction	-	2022	2057	226,804	65,113	5.910%	No	65,113
111	FY 2029	Construction	-	2023	2058	232,252	232,252	5.910%	No	130,080
112	FY 2029 Subtotal:		-	-	-	514,436	352,745	-	-	250,573

Table 13-8: Application of Amortization (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J
	YEAR	PROJECT	APPROPRIATION TYPE	IN SERVICE	DATE	PRINCIPAL	BALANCE	RATE	ROLLOVER	AMOUNT AMORTIZED
113	FY 2030	Environment	-	2015	2030	780	780	4.400%	No	780
114	FY 2030	Environment	-	2015	2030	1,250	1,250	4.400%	No	1,250
115	FY 2030	Environment	-	2015	2030	1,430	1,430	4.400%	No	1,430
116	FY 2030	Environment	-	2015	2030	1,920	1,920	4.400%	No	1,920
117	FY 2030	Construction	-	2023	2058	232,252	102,172	5.910%	No	102,172
118	FY 2030	Construction	-	2024	2059	236,640	236,640	5.910%	No	139,509
119		FY 2030 Subtotal:	-	-	-	474,272	344,192	-	-	247,061
120	FY 2031	Construction	-	2024	2059	236,640	97,131	5.910%	No	97,131
121	FY 2031	Construction	-	2025	2060	241,160	241,160	5.910%	No	144,446
122		FY 2031 Subtotal:	-	-	-	477,800	338,291	-	-	241,577
123	FY 2032	Construction	-	2011	2032	98,900	98,900	4.355%	No	98,900
124	FY 2032	Construction	-	2025	2060	241,160	96,714	5.910%	No	96,714
125	FY 2032	Construction	-	2026	2061	244,724	244,724	5.910%	No	47,993
126		FY 2032 Subtotal:	-	-	-	584,784	440,338	-	-	243,608
127	FY 2033	Construction	-	2011	2033	40,000	40,000	4.386%	No	40,000
128	FY 2033	Construction	-	2026	2061	244,724	196,731	5.910%	No	111,971
129		FY 2033 Subtotal:	-	-	-	284,724	236,731	-	-	151,971
130	FY 2034	Construction	-	2011	2034	40,000	40,000	4.416%	No	40,000
131	FY 2034	Construction	-	2026	2061	244,724	84,760	5.910%	No	84,760
132	FY 2034	Construction	-	2027	2062	248,878	248,878	5.910%	No	82,432
133		FY 2034 Subtotal:	-	-	-	533,602	373,638	-	-	207,191
134	FY 2035	Construction	-	2011	2035	40,000	40,000	4.794%	No	40,000
135	FY 2035	Construction	-	2011	2035	40,000	40,000	4.446%	No	40,000
136	FY 2035	Construction	-	2011	2035	40,000	40,000	4.446%	No	40,000
137	FY 2035	Construction	-	2011	2035	45,000	45,000	4.446%	No	45,000
138	FY 2035	Construction	-	2027	2062	248,878	166,446	5.910%	No	73,776
139		FY 2035 Subtotal:	-	-	-	413,878	331,446	-	-	238,776
140	FY 2036	Construction	-	2011	2036	50,000	50,000	4.952%	No	50,000
141	FY 2036	Construction	-	2011	2036	50,000	50,000	4.629%	No	50,000
142	FY 2036	Construction	-	2013	2043	55,000	55,000	5.700%	No	35,068
143	FY 2036	Construction	-	2027	2062	248,878	92,670	5.910%	No	92,670
144	FY 2036	Construction	-	2028	2063	253,053	253,053	5.910%	No	5,147
145		FY 2036 Subtotal:	-	-	-	656,931	500,723	-	-	232,886
146	FY 2037	Construction	-	2012	2037	35,000	35,000	3.503%	No	35,000
147	FY 2037	Construction	-	2009	2039	35,000	35,000	5.192%	No	26,731
148	FY 2037	Construction	-	2013	2043	55,000	19,932	5.700%	No	19,932
149		FY 2037 Subtotal:	-	-	-	125,000	89,932	-	-	81,663
150	FY 2038	Construction	-	2011	2038	55,000	55,000	4.935%	No	55,000
151	FY 2038	Construction	-	2009	2039	35,000	8,269	5.192%	No	8,269
152	FY 2038	Construction	-	2011	2040	25,000	25,000	4.775%	No	25,000
153	FY 2038	Construction	-	2014	2044	87,940	87,940	4.500%	No	14,146
154		FY 2038 Subtotal:	-	-	-	202,940	176,209	-	-	102,415
155	FY 2039	Construction	-	2011	2039	50,000	50,000	4.295%	No	50,000
156	FY 2039	Construction	-	2012	2039	39,000	39,000	3.627%	No	39,000
157	FY 2039	Construction	-	2014	2039	52,970	52,970	4.500%	No	52,970
158	FY 2039	Construction	-	2014	2040	55,830	55,830	4.500%	No	32,089
159	FY 2039	Construction	-	2014	2044	87,940	73,794	4.500%	No	24,411
160		FY 2039 Subtotal:	-	-	-	285,740	271,594	-	-	198,470
161	FY 2040	Construction	-	2011	2040	35,000	35,000	3.796%	No	35,000
162	FY 2040	Construction	-	2012	2040	30,000	30,000	3.890%	No	30,000
163	FY 2040	Construction	-	2012	2040	45,000	45,000	3.890%	No	45,000
164	FY 2040	Construction	-	2014	2040	55,830	23,741	4.500%	No	23,741
165	FY 2040	Construction	-	2014	2040	28,630	28,630	4.500%	No	28,630
166	FY 2040	Construction	-	2014	2044	87,940	49,382	4.500%	No	24,026
167		FY 2040 Subtotal:	-	-	-	282,400	211,754	-	-	186,397

Table 13-8: Application of Amortization (\$000s) (FY 2015)

	A	B	C	D	E	F	G	H	I	J
	YEAR	PROJECT	APPROPRIATION TYPE	IN SERVICE	DATE	PRINCIPAL	BALANCE	RATE	ROLLOVER	AMOUNT AMORTIZED
168	FY 2041	Construction	-	2013	2041	42,110	42,110	4.100%	No	42,110
169	FY 2041	Construction	-	2013	2041	42,110	42,110	4.100%	No	42,110
170	FY 2041	Construction	-	2014	2044	87,940	25,357	4.500%	No	25,357
171	FY 2041	Construction	-	2014	2044	79,760	79,760	4.500%	No	1,853
172		FY 2041 Subtotal:	-	-	-	251,920	189,337	-	-	111,430
173	FY 2042	Construction	-	2013	2043	66,330	66,330	4.100%	No	49,790
174		FY 2042 Subtotal:	-	-	-	66,330	66,330	-	-	49,790
175	FY 2043	Construction	-	2013	2043	66,330	16,540	4.100%	No	16,540
176	FY 2043	Construction	-	2013	2043	39,950	39,950	4.100%	No	39,950
177	FY 2043	Construction	-	2013	2043	40,010	40,010	4.100%	No	40,010
178	FY 2043	Construction	-	2014	2044	79,760	77,907	4.500%	No	31,275
179		FY 2043 Subtotal:	-	-	-	226,050	174,407	-	-	127,775
180	FY 2044	Construction	-	2014	2044	20,040	20,040	4.500%	No	20,040
181	FY 2044	Construction	-	2014	2044	79,760	46,632	4.500%	No	46,632
182	FY 2044	Construction	-	2014	2044	53,170	53,170	4.500%	No	53,170
183	FY 2044	Construction	-	2014	2044	55,830	55,830	4.500%	No	55,830
184		FY 2044 Subtotal:	-	-	-	208,800	175,672	-	-	175,672
185	FY 2045	Construction	-	2014	2045	40,700	40,700	4.500%	No	40,700
186	FY 2045	Construction	-	2015	2045	84,570	84,570	5.100%	No	84,570
187	FY 2045	Construction	-	2028	2063	253,053	247,906	5.910%	No	53,337
188		FY 2045 Subtotal:	-	-	-	378,323	373,176	-	-	178,607
189	FY 2046	Construction	-	2015	2046	19,270	19,270	5.100%	No	19,270
190	FY 2046	Construction	-	2015	2046	27,530	27,530	5.100%	No	27,530
191	FY 2046	Construction	-	2015	2046	47,790	47,790	5.100%	No	47,790
192	FY 2046	Construction	-	2015	2046	51,130	51,130	5.100%	No	51,130
193	FY 2046	Construction	-	2028	2063	253,053	194,569	5.910%	No	23,599
194		FY 2046 Subtotal:	-	-	-	398,773	340,289	-	-	169,319
195	FY 2047	Construction	-	2015	2047	39,140	39,140	5.100%	No	39,140
196	FY 2047	Construction	-	2015	2047	46,610	46,610	5.100%	No	46,610
197	FY 2047	Construction	-	2015	2047	53,690	53,690	5.100%	No	53,690
198	FY 2047	Construction	-	2028	2063	253,053	170,970	5.910%	No	19,096
199		FY 2047 Subtotal:	-	-	-	392,493	310,410	-	-	158,536
200	FY 2048	Construction	-	2013	2048	60,016	60,016	4.100%	No	60,016
201	FY 2048	Construction	-	2015	2048	44,050	44,050	5.100%	No	44,050
202	FY 2048	Construction	-	2028	2063	253,053	151,874	5.910%	No	42,114
203		FY 2048 Subtotal:	-	-	-	357,119	255,940	-	-	146,180
204	FY 2049	Construction	-	2014	2049	45,810	45,810	4.500%	No	45,810
205	FY 2049	Construction	-	2014	2049	48,470	48,470	4.500%	No	48,470
206	FY 2049	Construction	-	2028	2063	253,053	109,760	5.910%	No	38,989
207		FY 2049 Subtotal:	-	-	-	347,333	204,040	-	-	133,269
208	FY 2050	Construction	-	2014	2050	49,700	49,700	4.500%	No	49,700
209	FY 2050	Construction	-	2015	2050	53,690	53,690	5.100%	No	53,690
210	FY 2050	Construction	-	2028	2063	253,053	70,771	5.910%	No	16,555
211		FY 2050 Subtotal:	-	-	-	356,443	174,161	-	-	119,945
	Grand					12,731,821	9,742,541			6,665,305
	Total:									

14. REPAYMENT THEORY OF OPERATION

14.1 Introduction

BPA is required to collect revenues sufficient to meet BPA's annual transmission expenses and cover the long-term obligations of the Federal Columbia River Transmission System.

The repayment program is used to determine whether a given set of annual revenues is sufficient to meet a given set of annual expenses and cover a given set of long-term obligations when applied in accordance with the requirements of Department of Energy Order RA 6120.2. The program is also used to determine the minimum factor by which future revenues can be multiplied to obtain a new set of revenues that will be sufficient to recover amortization costs.

The revenues and the expenses of the cost evaluation year will be assigned to all future years, in effect assigning the net operating revenue of the cost evaluation year to all future years and levelizing the long-term obligations over all future years.

14.2 Repayment Program Logic

The diagrams on the following pages show the flow of logic in BPA's repayment program. The first diagram shows the logic of the binary search used to locate minimum sufficient revenues. A necessary part of this search is the test for sufficiency. The logic of the test for sufficiency is shown on the remaining two diagrams.

The equations referred to are:

Revenue Equation: Net revenues of each year are expended on interest and payments on the principals.

Investment equation: The payments on each investment are less than or equal to the principal of that investment (and equal to the principal of that investment after the investment is due).

Predictor equation: For each future year, the accumulated revenues less the accumulated interest less the accumulated investments due is equal to the accumulated payments on high interest rate investments which are not due.

14.3 Bond Rollover Feature

Since the 2004 transmission rate case, BPA has incorporated a data manipulation feature associated with the repayment program. This feature does not change any methodology of the model but allows the user to assume that any short-term bonds associated with assets with average service lives considerably longer than the bond maturity date are refinanced on the original maturity date, and recognizes replacement bonds with new maturity dates and corresponding interest rates. This feature reflects BPA's practice of rolling over a bond when it comes due if funds are not available to pay it at that time or if market conditions justify refinancing such bonds within the allowable repayment period of the associated assets. Reflecting this practice in the model allows a more realistic calculation of interest expense.

FIGURES

Figure 13-1 Repayment Program (Test for Sufficiency)

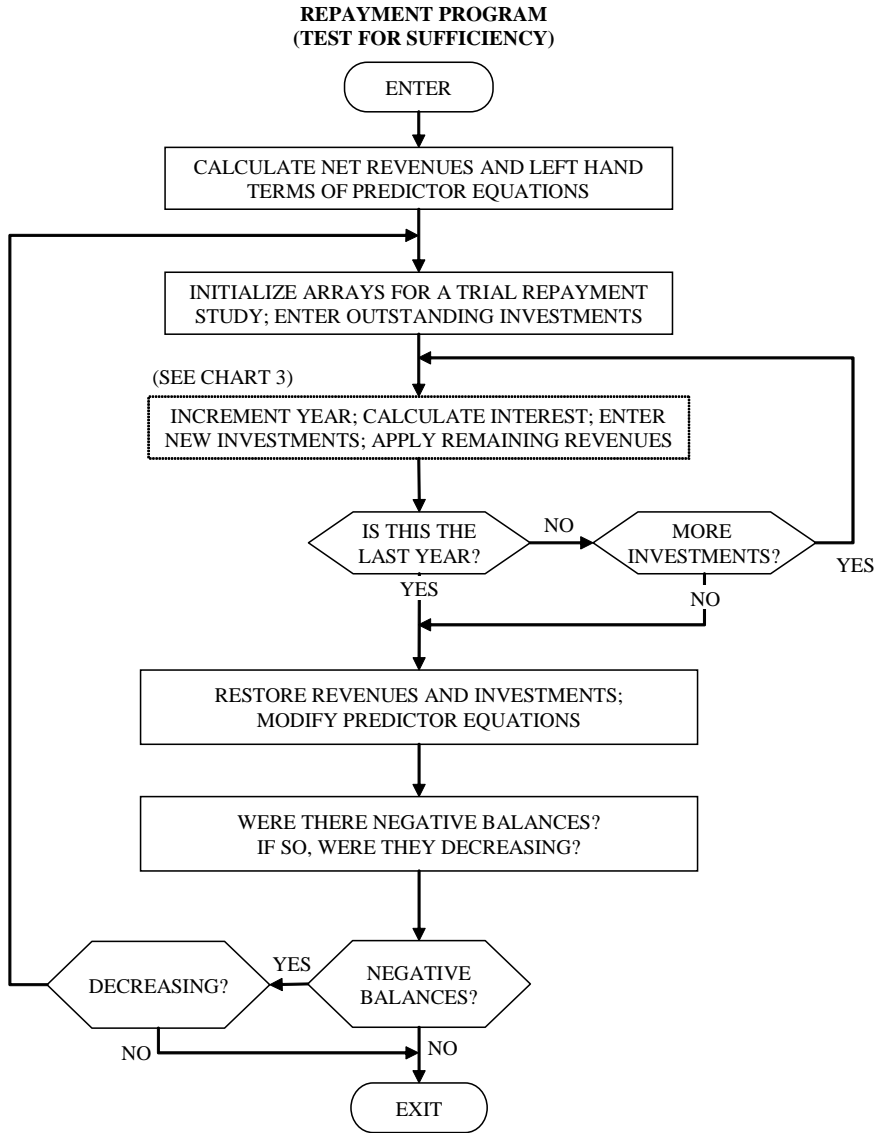


Figure 13-2 Repayment Program (Application of Revenues)

