Energy Northwest
Columbia Generating Station

FY 2014
Fuel Management Plan

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Section

1

Introduction

The Project Agreement between Energy Northwest and Bonneville Power Administration (BPA) for Columbia Generating Station requires Energy Northwest to submit with each annual budget a Ten-Year Fuel Management Plan.

This Fuel Management Plan for fiscal year (FY) 2014 covers the period from July 1, 2013, through June 30, 2023. This plan includes a cash flow analysis for expenditures and credits for each major component of the fuel cycle by month for the first five (5) years. Also, the contracts for each component of the fuel cycle are discussed. The tables and figures are located at the end of the text.

Section
2

Assumptions

Economic

Table 1 gives the predicted market prices for uranium concentrates (U_3O_8) and conversion and enrichment services. Forward market price data was taken from the *2012 Nuclear Fuel Cycle Supply and Price Report*, provided by Energy Resources International. Over the past year, the spot price for uranium has cycled between lows of $40.75 per lb. U_3O_8 to highs of $52.75 per lb. according to TradeTech, www.uranium.info, historical uranium prices. Spot price is a reflection of very near term inventory supply and demand dynamics. The accident at the Fukushima Daiichi reactors in Japan in March 2011 has caused significant changes in the spot market. Current spot demand is limited as utilities had previously moved to lock up additional forward years' requirements shortly after the price spike in 2007. Over the past year the term price continued its decline from the prior year dropping from $61 per lb. U_3O_8 to $57 per lb. Term price is more closely tied to cost of production and does not exhibit the volatility seen with the spot price but does tend to follow the overall trend of the spot price. In any event, forward price projections predict the price to increase steadily as reactors in Japan are assumed to be returned to service and new mines begin production. The price projections for enrichment services has not seen the significant decline that has been observed in uranium as very little supply is traded in the spot market and suppliers are actively building new enrichment plants. Prices are predicted to begin to decline once the plants are at full capacity. Near term enrichment prices have begun to decline due to surplus capacity being available due to delayed deliveries as a result of the extended reactor shutdowns in Japan and Germany following the accident at Fukushima Daiichi.

Energy Northwest's significant uranium inventory, mid-term uranium contracts and the long-term enrichment contract continue to minimize the near term impact of volatility in the nuclear fuel market prices. The prices from the uranium and enrichment contracts are factored into the cash flow requirements but are not reflected in the prices in Table 1.

Fuel Cycle

Table 2 shows the assumptions for the fuel cycles used in this plan. The planned energy requirements are consistent with the energy requirements supplied by BPA in accordance with the Project Agreement.

SECTION 2 ASSUMPTIONS

Both Final Feedwater Temperature Reduction (FFTR) and Thermal Power Level Coast-Down are planned for cost optimization during the final five to seven weeks of the operating run. During FFTR, the operation of the plant is extended at 100% thermal power level for 8-10 days while the electrical power level gradually decreases by about 1%. During coast-down, the power level is expected to decrease at a rate of 0.5% per day. The Fuel Management Plan assumes 9 days of FFTR and 21 days of coast-down for a total of 30 days of cycle extension for Cycle 22. Future cycles assume a total of 30 days of cycle extension. The planned cycle energy is within the acceptable range provided by BPA for energy requirements for fuel loading in Cycle 22.

The generation factor refers to the amount of energy that is expected to be generated relative to the maximum potential generation from when the generator is synchronized to the grid to when the reactor is shut down for the outage.

The generation factor and outage length are the critical parameters that determine the cycle energy from which the fuel requirements and ultimately the fuel budget is derived.

Section
3

Nuclear Fuel Market

Uranium Market

The uranium market has experienced dramatic fluctuations in price over the past ten years. In January 2003, the price of uranium was $10.20 per lb U_3O_8. The market price peaked in June 2007 at $135 per lb U_3O_8. The spot price currently stands at $43.25 per lb U_3O_8 at the end of December 2012. At the time of the dramatic price increase, utilities moved to place their uncommitted requirements for the next three to six years under contract in an attempt to mitigate supply disruptions and limit their vulnerability to further price increases. As a result, spot supply and demand is very limited leading to market volatility where a 10% change in price from month to month is not uncommon.

A number of investment funds have also entered the market buying uranium, which places additional demand on already short supplies. Although this demand has contributed to the price rise, it also provides a source of liquidity to the market since the investors are solely looking for a return-on-investment. The economic credit crisis in 2008 resulted in the majority of funds starting to liquidate their inventory to raise cash leading to a softening of price. The funds have not been quick to return to the market as the price continues to decline and the accident at Fukushima Daiichi raises additional concerns in their minds about nuclear in general.

The Department of Energy (DOE) has finalized agreements to barter uranium to pay for the cleanup costs at the Portsmouth site for the next four years. DOE issued an Excess Uranium Inventory Management Plan on December 16, 2008 calling for planned annual sales of between 1.5 and 10.3 million pounds U_3O_8 equivalent through the 2017 timeframe. The barter amounts are within this plan.

Price projections indicate a close relationship between the projections and the current term price and show a steady increase in price over the next ten (10) years. The following table lists known factors affecting price:

Push Price Up	Push Price Down
New demand from India	Possible short term over-production
Increased worldwide demand for reactors: • China • Russia • Middle East • United States	Government policies • DOE Excess Uranium Sales
Production problems at mines • Cigar Lake mine flooding • Olympic Dam mine shaft damage	Investor selling • Unknown factor at this time
Low cost uranium mined first • McArthur River • Kazakhstan in situ leach mines	Decreased demand due to reactor shutdowns: • Japan • Germany
Development of uranium mines delayed • Olympic Dam expansion	Delay in new plant construction • United States • Asia
Overall decrease in availability of secondary supplies • US-Russia HEU deal ends in 2013 • Currently secondary supplies provide for 35% of world-wide requirements	
Interest/exchange rates • US dollar is weak against the major producer currencies	

Conversion Services

Spot conversion prices are currently at $10.50 per KgU relative to the term price of $16.75 per KgU as reported by TradeTech. Similar to U_3O_8, the price projections for conversion services indicate a close relationship between the projections and the current term price. Spot price is currently elevated due to the shutdown of CoverDyn's Metropolis, IL facility to install NRC required plant modifications. The plant is projected to be off-line until the summer of 2013. Long-term prices are predicted to remain relatively

stable into the foreseeable future as aged plants are upgraded or replaced.

Enrichment Market

The enrichment market has also seen price increases over the past few years. The spot price in January 2006 was $118 per Separative Work Unit (SWU) and has risen to a high of $165 per SWU in January 2010 with current market price reported by TradeTech at $120 per SWU. Near term enrichment prices have continued to decline due to surplus capacity being available due to delayed deliveries as a result of the extended reactor shutdowns in Japan and Germany following the accident at Fukushima Daiichi. The higher the tails assay, the more uranium feed is required and the less enrichment services. The lower the tails assay, the more enrichment services are required and less uranium feed. At the current prices for uranium and enrichment services, the optimum tails assay has reduced to 0.25% from historical levels of 0.30%. The result is an increase in enrichment demand and reduction in uranium demand. The price increase is also being driven by limited supply to meet the higher demand in the face of rising supply costs. Both the US and European gaseous diffusion plants (GDP) have experienced production cost increases due to an increase in power prices. Electricity costs account for nearly 60% of the enrichment costs at GDP enrichment plants.

Another factor fueling price increases in the near term is the fact that all three Western suppliers are in the process of either replacing their costly gaseous diffusion with centrifuge technology or expanding their existing capacity. Urenco has commenced operations at its new enrichment facility in New Mexico using its proven centrifuge technology. In addition, Urenco has increased the capacity at each of their European plants. AREVA has also commenced operations at their new gaseous centrifuge plant and shutdown the GDP facility at Tricastin in France. AREVA has also announced plans to build a domestic centrifuge plant in Idaho and has received a $2 billion loan guarantee from the DOE, but has put the project on hold pending recovery in demand from Japan. General Electric has received a construction and operating license from the NRC for their laser enrichment facility in North Carolina, but has not made the decision to build a commercial plant. Although the United States Enrichment Corporation (USEC) is also planning to replace their GDP facility in Kentucky with a gaseous centrifuge plant, USEC was denied a DOE loan guarantee for its American Centrifuge Plant in Ohio until the technology could be further proven. USEC has drastically cut expenditures on its new plant while it tries to satisfy the DOE requirements.

Russian access to the US market continues to be restricted due to the Megatons-to-Megawatts program, which will expire in December 2013.

This program down-blended highly enriched uranium from weapons to low enrichments needed for use in nuclear power plants. However, the current Russian suspension agreement has been re-negotiated to allow increasing amounts of material to be supplied into the US market beginning in 2014. The impact of this new supply should help stabilize or lower prices in the long term.

Fuel Fabrication

Currently, three fabricators supply fabricated fuel to the US BWR community: Global Nuclear Fuel (GNF), AREVA and Westinghouse. There have been no major supply disruptions in the fabrication sector, which looks well poised to support any domestic nuclear renaissance. AREVA announced consolidation of its PWR and BWR fabrication facilities and has moved its PWR fuel fabrication from Virginia to Richland, WA.

Section
4

Fuel Management Strategy

Fuel Cycle Designs

During FY2014, Columbia will be in the first half of Cycle 22. This is the third reload of the GE14 fuel design. The current bundle and core design contain a batch size of 240 assemblies with an average enrichment of ~4.07 wt% U^{235}. The Cycle 22 core has energy available to be able to operate at 100% power for 600 days plus an additional 30 days of cycle extension (9 days of FFTR and 21 days of coast-down).

Fuel Procurement Strategy

Energy Northwest has established a fuel procurement strategy to 1) achieve the long-term goal of a secure and consistently low cost fuel supply, and 2) be flexible enough to take advantage of cost saving opportunities as they arise.

Typically Energy Northwest strives to maintain a minimum strategic inventory of one reloads worth of enriched uranium and approximately half a reload of natural uranium.

Fuel Procurement Activities

In FY 2012, Energy Northwest was able to negotiate a Depleted Uranium Enrichment Program (DUEP) with the Department of Energy (DOE), Tennessee Valley Authority (TVA) and United States Enrichment Corporation (USEC) with an estimated cost to Energy Northwest in an amount not to exceed $711 million which includes approximately $20 million in remaining contingency funds. Beginning in June 2012 and lasting 12 months, USEC will enrich approximately 9,075 metric tons uranium (MTU) of 0.44 weight percent U^{235} (wt%) uranium tails supplied by DOE to Energy Northwest into approximately 482 MTU of 4.4 wt% enriched uranium product (EUP). EN will sell uranium an enrichment services contained in the EUP to TVA under a long term contract FY2015-FY2022 for $730 million and retain the balance. The inventory data shown in Tables 3 and 4 only reflects the portion of the DUEP uranium retained by Energy Northwest. The costs of the project will be funded by the issuance of bonds and therefore the values are not reflected in the cash requirements shown in Tables 8 and 9.

Fabrication Services

A fabrication services contract for Columbia Generating Station for the fuel supply for three reloads was awarded to GNF in June 2007. The 2013 refueling outage will be the third reload of GNF's GE14 fuel design.

Energy Northwest is pursuing the licensing and implementation of the operating flexibility program for APRM, RBM Technical Specifications (ARTS) Improvement and Maximum Extended Load Line Limit Analysis (MELLLA) and supply of the Power Range Neutron Monitoring (PRNM) Nuclear Measurement Analysis and Control (NUMAC) system with Option III Stability for the Columbia Generation Station. This project is referred to as "ARTS/MELLLA and PRNM". The project has an approved budget of $23.9 million for Fiscal Years 2009-2015, excluding financing costs. The benefits to the station are reduced fuel cost due to reduced batch size and improved fuel utilization, increased operating flexibility, increased net generation due to reduced recirculation pump speed, reduction in the number of downpowers to reposition control rods, reduction of nuisance alarms in the control room, and improved equipment reliability by replacing obsolete and aging equipment. The project was originally planned to be installed in 2011 refueling outage but has been delayed due to PRNM licensing issues and is now planned to be installed in the 2015 Refueling Outage. As a result, Energy Northwest has extended the existing fabrication services contract one additional cycle to 2015. The project is a Fuel Capital project and is financed using bond proceeds.

Energy Northwest is planning to issue a request for proposal for fabrication services, during Fiscal Year 2014, which will cover the fabrication needs of Columbia beginning with the 2017 refueling outage.

Other Fabrication Costs

A number of costs in addition to vendor fabrication costs for the fuel bundles and analytical services are included as fabrication costs. These costs address the following types of activities:

- Fuel receipt & inspection
- Fuel procurement
- Fuels' staff
- Fuel consultants
- Fuels' work-station and code fees
- Fuels' travel and training

Fuel Management Physical Requirements

The assumed cycle energies and fuel designs are used to develop multi-cycle reload material requirement projections. The projected reload material requirements are integrated with the existing inventory levels to project procurement requirements into the future. Tables 3 and 4 summarize those requirements over the next ten years.

Table 3 assumes uranium is purchased as uranium concentrates (U_3O_8). Conversion services must then be purchased to convert the concentrates to uranium hexafluoride (UF_6). Enrichment services are then purchased to convert the natural UF_6 to enriched UF_6. The enriched UF_6 is transferred to the fabrication facility and used to fabricate the necessary quantity of fuel assemblies. Table 4 shows the total material of each form existing as of the end of each fiscal year. Typically, the processing time from concentrates to fabricated fuel assemblies is one year, allowing for the necessary material lead times at each step in the process. Therefore, the majority of the material in Table 4 is considered to be working stock with a lesser portion considered the strategic inventory.

Spent Fuel Storage and Disposal

DOE Spent Fuel Contract

While the courts have now ruled that DOE had a binding obligation to begin acceptance of spent nuclear fuel no later than January 31, 1998, DOE has suspended all work on the license application for the Yucca Mountain underground storage repository. Energy Northwest began legal action due to DOE's failure to meet its obligations for spent fuel and on August 29, 2011, Energy Northwest received $48,702,551 from DOE for expenditures made on the Independent Spent Fuel Storage Installation (ISFSI) prior to September 1, 2006. Energy Northwest will continue further legal action to recover expenditures made on ISFSI starting September 1, 2006. Energy Northwest continues to pay a waste disposal fee as indicated in the category of Disposal.

On-Site Spent Fuel Storage

Columbia Generating Station operates an Independent Spent Fuel Storage Installation (ISFSI) using NRC-approved dry storage casks to supplement wet storage in the fuel pool. The ISFSI, located just north of the Deschutes Building, is capable of being expanded to hold the lifetime spent fuel requirements of Columbia Generating Station. Twenty-seven

(27) storage casks have been loaded to date, moving 1,836 assemblies from the fuel pool to the ISFSI.

The costs for the inner storage canister (called a multi-purpose canister or MPC) and closure welds are treated as fuel and are included in this Fuel Management Plan in the category of Casks. The costs of the overpacks, facility, and common equipment are treated as a plant capital addition. The Fiscal Years 2014-2016 cost of a multi-purpose canister is currently estimated to be $928,911 and welding costs are estimated to be $90,807 per MPC. This equates to a per bundle cost of $14,996. The Fiscal Year 2017 and beyond cost of a multi-purpose canister is currently estimated to be $1,640,504 and welding costs are estimated to be $119,590 per MPC. This equates to a per bundle cost of $25,884. Future costs have been escalated.

Active Contracts

Appendix A contains descriptions of the currently active fuel management contracts for nuclear material and fabrication services.

Section
5

Nuclear Fuel Budgets

Nuclear Fuel Costs

A measure of nuclear fuel cost is the Fuel-in-Process costs, or the costs to fabricate finished fuel assemblies. The estimated costs for the reload batch for Cycle 22 are shown in Table 5. Reload batch costs are amortized over the life of the fuel. Typically, fuel resides in the reactor core for three (3) cycles (equivalent to six years).

Fuel Revenue

There will be cash revenue from Fuels activities in FY2013-FY2022 from sales and reimbursed expenses from TVA under the Depleted Uranium Enrichment Program. The TVA agreement is summarized in Appendix A and the revenue is shown in Table 6.

Nuclear Fuel Cash Flows

The summary of cash requirements for the ARTS/MELLLA and PRNM project for FY 2014 are provided in Table 7. A summary of cash flows by fuel component and fiscal year for the next ten years is given in Table 8. Cash flows for nuclear fuel by month for each component for the next five years are shown in Tables 9 through 13. The cash flows are in today's dollars including the costs associated with the nuclear material (uranium, conversion, enrichment).

Section
6

Tables and Figures

Table 1

Projected Market Fuel Prices

Year	Uranium $/lb U3O8	Conversion $/kgU UF6	Enrichment $/SWU
2014	$50.50	$14.00	$124.00
2015	$53.50	$14.00	$124.00
2016	$52.50	$15.50	$128.00
2017	$53.50	$15.50	$130.00
2018	$54.50	$16.00	$131.00
2019	$57.00	$16.00	$133.00
2020	$57.50	$16.00	$130.00
2021	$57.50	$16.00	$129.00
2022	$58.50	$16.00	$128.00
2023	$59.50	$17.00	$130.00

Table 2

Fuel Cycle Assumptions

Fiscal Year	Outage Length (Days)	Cycle	Energy FPD	Generation Factor %
2013	40	22	629	93%
2014				
2015	47	23	646	94%
2016				
2017	40	24	645	94%
2018				
2019	40	25	650	94%
2020				
2021	40	26	650	94%
2022				
2023	40	27	650	94%

Energy FPD = Operating Calendar Days x GF – (Days lost during startup and coastdown)

Table 3

Planned Purchases of Nuclear Material and Fuel Fabrication Requirements

Purchases				Fabrication		
Fiscal Year	Lbs U_3O_8	KgU UF_6 Conversion	SWU	KgU Enriched UF_6	SWU	# Bundles
2013	4,824,716	1,846,534	26,874	394,005	238,615	240
2014	428,507	164,000	112,500			
2015	154,158	59,000	117,000	427,159	258,694	260
2016		0	0			
2017		0	225,000	433,752	262,687	264
2018		0	132,000			
2019		0	206,800	433,752	262,687	264
2020		0	82,904			
2021		0		433,752	262,687	264
2022		0	287,400			
2023		0		433,752	262,687	264

Table 4

Nuclear Material Totals

Fiscal Year	Natural UF_6 KgU	Enriched Uranium Product	
		UF_6	SWU
2014	897,853	2,612,219	618,730
2015	793,671	2,365,656	465,882
2016	793,671	2,365,656	465,882
2017	682,547	2,076,516	406,745
2018	701,131	2,077,578	526,161
2019	521,348	1,854,388	450,558
2020	405,721	1,982,354	525,558
2021	405,721	1,548,602	262,872
2022	653,477	1,343,621	522,872
2023	1,139,926	423,420	260,185

Table 5

Predicted Reload Batch Costs ($1000)

Component	CGS1-22
# of Assemblies	240
Fuel Cost:	
Uranium	$22,353
Conversion	$2,341
Enrichment	$29,916
Fabrication	$26,604
Sales Tax	$6,100
Fuels' Projects	$0
TOTAL $K	$87,314
Cask Cost:	
TOTAL	$3,599
TOTAL COST:	$90,913

Per Assembly Cost ($)

Fuel Cost	$363,803
Cask Cost	$14,996
Total Cost	$378,799

Table 6

Estimated Revenue From Fuel ($1000)

Fiscal Year	Uranium	Enrichment	Services	Total
2014			100	100
2015		69,960	100	70,060
2016		24,300	100	24,400
2017		24,900	100	25,000
2018	85,000	76,050	100	161,150
2019	147,000	83,420	100	230,520
2020		67,760	100	67,860
2021		85,920	100	86,020
2022		65,880	100	65,980
2023		0	0	0

Table 7

FY2014 Fuel Project Cash Flow [(1)]
(ARTS/MELLLA+PRNM)

Month	Cash Flow
Jul-13	$18,089
Aug-13	$23,001
Sep-12	$21,956
Oct-13	$24,047
Nov-13	$21,956
Dec-13	$22,234
Jan-14	$20,519
Feb-14	$17,843
Mar-14	$18,735
Apr-14	$19,627
May-14	$25,571
Jun-14	$31,123
Total	$264,700

[(1)] The costs of this project will be funded by the issuance of bonds.

Table 8

10-Year Cash Flow for Nuclear Fuel ($1,000)

FY	Uranium	Conversion	Enrichment	Staff	Fabrication	Tax	Casks	Fuel Cash[1]	Disposal	Gen Tax
2014	$27,317	$1,465	$14,618	$1,763	$2,305		$3,121	$50,589	$7,693	$4,318
2015	$9,828	$527	$15,472	$1,816	$24,780	$7,134	$371	$59,928	$8,725	$5,223
2016				$1,871	$1,597		$9,034	$12,502	$7,798	$4,924
2017			$29,896	$1,927	$26,928	$7,509	$5,948	$72,208	$8,883	$6,106
2018			$17,765	$1,985	$1,692		$8,008	$29,450	$7,950	$5,804
2019			$27,504	$2,044	$28,459	$7,735		$65,742	$8,881	$6,971
2020			$10,777	$2,105	$1,792		$2,828	$17,502	$7,942	$6,629
2021				$2,169	$30,296	$7,883	$2,474	$42,822	$8,846	$7,970
2022			$36,787	$2,234	$1,898		$9,259	$50,178	$7,867	$7,547
2023				$2,301	$32,254	$8,034	$2,859	$45,448	$8,836	$9,070
Total	$37,145	$1,992	$152,819	$20,215	$152,001	$38,295	$43,902	$446,369	$83,421	$64,562

(1) The total fuel cash does NOT include the costs of the ARTS/MELLLA+PRNM project or the Depleted Uranium Enrichment Program. The costs of the both of these projects will be funded by the issuance of bonds.

Table 9

Fiscal Year 2014 Monthly Cash Flow ($1000)

Date	Uranium	Conv.	Enrich	Staff	Fab	Tax	Casks	Fuel Cash[1]	Disposal	Gen Tax
Jul-13	27,317	1,465	14,618	147	192			43,739		
Aug-13				147	192			339	1,135	
Sep-13				147	192		1,239	1,578		
Oct-13				147	192		140	479		
Nov-13				147	192			339	2,210	
Dec-13				147	192		924	1,263		
Jan-14				147	192			339		
Feb-14				147	192			339	2,210	
Mar-14				147	192		272	611		
Apr-14				147	192		272	611		
May-14				147	192		272	611	2,138	
Jun-14				147	192			339		4,318
Total	27,317	1,465	14,618	1,764	2,304		3,119	50,587	7,693	4,318

(1) The total fuel cash does NOT include the costs of the ARTS/MELLLA+PRNM project. The costs of the project will be funded by the issuance of bonds.

Table 10

Fiscal Year 2015 Monthly Cash Flow ($1000)

Date	Uranium	Conv.	Enrich	Staff	Fab	Tax	Casks	Fuel Cash	Disposal	Gen Tax
Jul-14	9,828	527	15,472	151	251			26,229		
Aug-14				151	251			402	2,206	
Sep-14				151	251			402		
Oct-14				151	251			402		
Nov-14				151	251			402	2,197	
Dec-14				151	251			402		
Jan-15				151	251		371	774		
Feb-15				151	251			402	2,197	
Mar-15				151	251			402		
Apr-15				151	251			402		
May-15				151	22,273	7,134		29,558	2,125	
Jun-15				151				151		5,223
Total	9,828	527	15,472	1,812	24,783	7,134	371	59,928	8,725	5,223

Table 11

Fiscal Year 2016 Monthly Cash Flow ($1000)

Date	Uranium	Conv.	Enrich	Staff	Fab	Tax	Casks	Fuel Cash	Disposal	Gen Tax
Jul-15				156	133		1,114	1,403		
Aug-15				156	133			289	1,093	
Sep-15				156	133			289		
Oct-15				156	133		1,155	1,444		
Nov-15				156	133			289	2,251	
Dec-15				156	133			289		
Jan-16				156	133			289		
Feb-16				156	133			289	2,251	
Mar-16				156	133		1,800	2,089		
Apr-16				156	133		3,964	4,253		
May-16				156	133		500	789	2,202	
Jun-16				156	133		500	789		4,924
Total				1,872	1,596		9,033	12,501	7,797	4,924

Table 12

Fiscal Year 2017 Monthly Cash Flow ($1000)

Date	Uranium	Conv.	Enrich	Staff	Fab	Tax	Casks	Fuel Cash	Disposal	Gen Tax
Jul-16				161	239			400		
Aug-16				161	239			400	2,246	
Sep-16				161	239		929	1,329		
Oct-16				161	239		100	500		
Nov-16				161	239			400	2,237	
Dec-16				161	239		878	1,278		
Jan-17			29,896	161	239			30,296		
Feb-17				161	239			400	2,237	
Mar-17				161	239		4,042	4,442		
Apr-17				161	239			400		
May-17				161	24,534	7,509		32,203	2,164	
Jun-17				161				161		6,106
Total			29,896	1,932	26,924	7,509	5,949	72,209	8,884	6,106

Table 13

Fiscal Year 2018 Monthly Cash Flow ($1000)

Date	Uranium	Conv.	Enrich	Staff	Fab	Tax	Casks	Fuel Cash	Disposal	Gen Tax
Jul-17				165	141			306		
Aug-17				165	141			306	1,269	
Sep-17				165	141		2,887	3,193		
Oct-17				165	141		140	446		
Nov-17				165	141			306	2,251	
Dec-17				165	141		3,546	3,852		
Jan-18			17,765	165	141			18,071		
Feb-18				165	141			306	2,251	
Mar-18				165	141		359	665		
Apr-18				165	141		359	665		
May-18				165	141		359	665	2,178	
Jun-18				165	141		359	665		5,804
Total			17,765	1,980	1,692		8,009	29,446	7,949	5,804

APPENDIX A ACTIVE FUEL CONTRACTS

Appendix A
Active Nuclear Material Contracts

Contract	Vendor	Scope
324350	Global Nuclear Fuel	Energy Northwest contracted with GNF in June 2007 to supply fuel design, licensing, and fabrication services for three consecutive reloads for Columbia Generating Station. The first reload under this contract was delivered in the spring of 2009. The scope of this contract will meet the needs of Columbia Generating Station for reload fabrication services through 2013. Energy Northwest has extended the existing fabrication services contract one additional reload to 2015.
313337	Urenco	Energy Northwest contracted with Urenco in January 2003 to supply enrichment services for delivery over calendar years 2005 to 2009. The contract was amended (twice) to procure additional SWU. In January 2006, Energy Northwest issued RFP 640137 for SWU to be delivered between calendar years 2010 to 2015. Urenco was awarded the procurement and the contract extended through 2015. The contract has been amended two additional times to move deliveries to meet the needs of both Urenco and Energy Northwest extending the contract through 2018.
330249	Nufcor International Limited	In July 2009, Energy Northwest issued RFP 656708 for natural uranium to be delivered between calendar years 2011 to 2020 to be awarded to multiple suppliers. Nufcor was selected to supply uranium concentrates between calendar years 2012 to 2014. This contract was amended from the supply of uranium concentrates to uranium hexafluoride as part of the FY2012 conversion procurement.
313179	UG USA	Energy Northwest established a no-requirements contract with UG USA in 2003 to supply uranium, conversion and/or enrichment services. Each individual purchase under the contract will require approval of the Energy Northwest management, Executive Board and BPA, as required.
335900	USEC	Energy Northwest established a contract with USEC in May 2012 for the supply of 4.44 million SWU of enrichment services contained in 482 MTU of enriched uranium product produced from the enrichment of 9,075 MTU of depleted uranium supplied to Energy Northwest by DOE. The approved contract value is $706 million.

335903	DOE	Energy Northwest established a contract with DOE in May 2012 for the supply of 9,075 MTU of depleted uranium and the storage of 482 MTU of enriched uranium product. Energy Northwest will pay DOE for actual costs incurred by DOE for the delivery of the depleted uranium and storage of the EUP.
335901	TVA	Energy Northwest established a contract with TVA in May 2012 for the sale of 2.9 million SWU and 1,675 MTU of feed contained in EUP produced by Depleted Uranium Enrichment Program for $730.2 million over TVA fiscal years 2015 to 2022.