



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

September 4, 2009

MEMORANDUM TO: Thomas H. Boyce, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing

FROM: Eva A. Brown, Senior Project Manager /RA/  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3; SEQUOYAH  
NUCLEAR PLANT, UNITS 1 AND 2; WATTS BAR PLANT, UNIT 1, -  
SUMMARY OF CONFERENCE CALLS WITH THE TENNESSEE  
VALLEY AUTHORITY REGARDING DECOMMISSION FUNDING  
ASSURANCE (TAC NOS. ME0491, ME0492, ME0493, ME0571,  
ME0572, AND ME0587)

On June 9 and 30, 2009, staff from the Financial, Policy, and Rulemaking Branch, the Office of General Counsel, the Office of New Reactors and the Plant Licensing Branch II-2 held conference calls with the Tennessee Valley Authority to discuss the amount of the decommissioning funding assurance shortfall calculated by the NRC staff for the subject units, to clarify the methodology used by the NRC staff to determine decommissioning funding assurance levels, and to establish a schedule for the submittal of a plan to address the shortfall. To facilitate the discussion the Tennessee Valley Authority (TVA) provided a spreadsheet on June 9 (Enclosure 1) and the NRC staff provided information on June 30 (Enclosure 2).

Docket Nos. 50-259, 50-260, 50- 296  
50-327, 50-328, and 50-390

Enclosures:

1. TVA Spreadsheet
2. NRC Information Printouts

# Liability NPV

Real Return 5.0% Year	BFN1			BFN2			BFN3			SQN1			SQN2			WBN1			Actual Fund Balance
	Annual Disbursement	Annual Funding Assurance	Projected Fund Assets	Annual Disbursement	Annual Funding Assurance	Projected Fund Balance	Annual Disbursement	Annual Funding Assurance	Projected Fund Balance	Annual Disbursement	Annual Funding Assurance	Projected Fund Balance	Annual Disbursement	Annual Funding Assurance	Projected Fund Balance	Annual Disbursement	Annual Funding Assurance	Projected Fund Balance	
2008			\$136.2			\$129.7			\$117.7			\$185.5			\$176.7			\$89.2	\$835
2009			\$143.0			\$136.2			\$123.6			\$194.8			\$185.5	\$0.0	\$0	\$877	
2010			\$150.2			\$143.0			\$129.7			\$204.5			\$194.8	\$0.0	\$0	\$921	
2011			\$157.7			\$150.2			\$136.2			\$214.8			\$204.5	\$0.0	\$0	\$967	
2012			\$165.6			\$157.7			\$143.0			\$225.5			\$214.8	\$0.0	\$0	\$1,015	
2013			\$173.9			\$165.6			\$150.2			\$236.8			\$225.5	\$0.0	\$0	\$1,066	
2014			\$182.6			\$173.9			\$157.7			\$248.6			\$236.8	\$0.0	\$0	\$1,119	
2015			\$191.7			\$182.6			\$165.6			\$261.0			\$248.6	\$0.0	\$0	\$1,175	
2016			\$201.3			\$191.7			\$173.9			\$274.1			\$261.0	\$0.0	\$0	\$1,234	
2017			\$211.3			\$201.3			\$182.6			\$287.8			\$274.1	\$0.0	\$0	\$1,296	
2018			\$221.9			\$211.3			\$191.7			\$302.2			\$287.8	\$0.0	\$0	\$1,360	
2019			\$233.0			\$221.9			\$201.3			\$317.3			\$302.2	\$0.0	\$0	\$1,428	
2020			\$244.7			\$233.0			\$211.3	\$12.0		\$333.2			\$317.3	\$12.0	\$0	\$1,500	
2021			\$256.9			\$244.7			\$221.9	\$55.5		\$337.2	\$12.0		\$333.2	\$67.5	\$0	\$1,562	
2022			\$269.7			\$256.9			\$233.0	\$55.5		\$295.8	\$55.5		\$337.2	\$111.0	\$0	\$1,569	
2023			\$283.2			\$269.7			\$244.7	\$55.5		\$252.3	\$55.5		\$295.8	\$111.0	\$0	\$1,531	
2024			\$297.4			\$283.2			\$256.9	\$55.5		\$206.6	\$55.5		\$252.3	\$111.0	\$0	\$1,491	
2025			\$312.2			\$297.4			\$269.7	\$55.5		\$158.7	\$55.5		\$206.6	\$111.0	\$0	\$1,449	
2026			\$327.9			\$312.2			\$283.2	\$55.5		\$108.4	\$55.5		\$158.7	\$111.0	\$0	\$1,405	
2027			\$344.2			\$327.9			\$297.4	\$55.5		\$55.5	\$55.5		\$108.4	\$111.0	\$0	\$1,359	
2028			\$361.5			\$344.2			\$312.2	\$0.0	\$55.5	\$0.0	\$55.5		\$55.5	\$55.5	\$0	\$1,310	
2029			\$379.5			\$361.5			\$327.9			\$0.0			\$0.0	\$0.0	\$0	\$1,317	
2030			\$398.5			\$379.5			\$344.2						\$261.0	\$0.0	\$0	\$1,383	
2031			\$418.4			\$398.5			\$361.5						\$274.1	\$0.0	\$0	\$1,453	
2032			\$439.4			\$418.4			\$379.5						\$287.8	\$0.0	\$0	\$1,525	
2033	\$16.6		\$461.3			\$439.4			\$398.5						\$302.2	\$16.6	\$0	\$1,601	
2034	\$76.9		\$466.9	\$16.6		\$461.3			\$418.4						\$317.3	\$93.5	\$0	\$1,664	
2035	\$76.9		\$409.6	\$76.9		\$466.9			\$439.4				\$12.0		\$333.2	\$165.7	\$0	\$1,649	
2036	\$76.9		\$349.4	\$76.9		\$409.6	\$16.6		\$461.3				\$55.5		\$337.2	\$225.8	\$0	\$1,557	
2037	\$76.9		\$286.1	\$76.9		\$349.4	\$76.9		\$466.9				\$55.5		\$295.8	\$286.1	\$0	\$1,398	
2038	\$76.9		\$219.7	\$76.9		\$286.1	\$76.9		\$409.6				\$55.5		\$252.3	\$286.1	\$0	\$1,168	
2039	\$76.9		\$150.0	\$76.9		\$219.7	\$76.9		\$349.4				\$55.5		\$206.6	\$286.1	\$0	\$926	
2040	\$76.9		\$76.9	\$76.9		\$150.0	\$76.9		\$286.1				\$55.5		\$158.7	\$286.1	\$0	\$672	
2041			\$0.0	\$76.9		\$76.9	\$76.9		\$219.7				\$55.5		\$108.4	\$209.2	\$0	\$405	
2042						\$0.0	\$76.9		\$150.0				\$55.5		\$55.5	\$132.4	\$0	\$206	
2043							\$76.9		\$76.9						\$0.0	\$76.9	\$0	\$77	
2044									\$0								\$0	\$0	
Total	\$554.6			\$554.6			\$554.6			\$400.5			\$400.5			\$400.5		\$2,865.4	

Liability per Formula at 12-31-08

BWR \$ 554.59  
PWR \$ 400.53

	Assets	NPV Liability	Funded Status
NDT Assets	\$660.60	\$835.11	-\$174.50
BFN1	\$107.43	\$136.23	-\$28.81
BFN2	\$102.71	\$129.74	-\$27.03
BFN3	\$92.48	\$117.68	-\$25.20
SQN1	\$148.13	\$185.52	-\$37.39
SQN2	\$140.95	\$176.69	-\$35.74

**Plant name:** Brown's Ferry Nuclear Power Station, Unit 1

**Year of Biennial:** 2009

**Termination of Operation:** 2033

	<u>MWth</u>	<u>1986\$</u>	ECI	Base Lx		<u>Lx</u>	Px	Fx		<u>Ex</u>		<u>Bx</u>
BWR	3458	\$135,000,000	109.3	1.98	0.65	2.16	1.649	1.988	0.13	1.805	0.22	11.198

**NRC Mimimum:** \$554,157,696

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
TVA	100.00%	\$554,157,696	\$107,400,000

**Step 4:  
Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of Return:	Total Earnings:
\$107,400,000	5%	24	3.225099944	\$346,375,734

**Total Earnings = Trust Fund balance x (1+RRR)^Years left in license**

**Step 5:  
Accumulation:**

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	5%	0	\$0

**Step 6:  
Decom Period:**

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of Return:	Total Earnings for Decom:
\$346,375,734	5%	7	0.407100423	\$70,504,854

**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]**

Total of Steps 4 - 6:
\$416,880,588

**Total = Total Earnings + Total Earnings for Decom**

**Plant name:** Brown's Ferry Nuclear Power Station, Unit 2

**Year of Biennial:** 2009

**Termination of Operation:** 2034

	MWth	1986\$	ECI	Base Lx		Lx	Px	Fx		Ex		Bx
BWR	3458	\$135,000,000	109.3	1.98	0.65	2.16	1.649	1.988	0.13	1.805	0.22	11,198

**NRC Mimimum:** \$554,157,696

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
TVA	100.00%	\$554,157,696	\$102,700,000

**Step 4:  
Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of Return:	Total Earnings:
\$102,700,000	5%	25	3.386354941	\$347,778,652

**Total Earnings = Trust Fund balance x (1+RRR)^Years left in license**

**Step 5:  
Accumulation:**

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	5%	0	\$0

**Step 6:  
Decom Period:**

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of Return:	Total Earnings for Decom:
\$347,778,652	5%	7	0.407100423	\$70,790,418

**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]**

Total of Steps 4 - 6:
\$418,569,071

**Total = Total Earnings + Total Earnings for Decom**



**Plant name:**

**Brown's Ferry Nuclear Power Station, Unit 3**

**Year of Biennial:**

**2009**

**Termination of Operation:**

**2036**

	<u>MWth</u>	<u>1986\$</u>	ECI	Base Lx		<u>Lx</u>	Px	Fx		<u>Ex</u>		<u>Bx</u>
BWR	3458	\$135,000,000	109.3	1.98	0.65	2.16	1.649	1.988	0.13	1.805	0.22	11.198

**NRC Mimimum:**

**\$554,157,696**

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
TVA	100.00%	\$554,157,696	\$92,500,000

**Step 4:**

**Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of Return:	Total Earnings:
\$92,500,000	5%	27	3.733456322	<b>\$345,344,710</b>

**Total Earnings = Trust Fund balance x (1+RRR)^Years left in license**

**Step 5:**

**Accumulation:**

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	5%	0	\$0

**Step 6:**

**Decom Period:**

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of Return:	Total Earnings for Decom:
\$345,344,710	5%	7	0.407100423	\$70,294,989

**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]**

Total of Steps 4 - 6:
<b>\$415,639,698</b>

**Total = Total Earnings + Total Earnings for Decom**

**Plant name:**

**Sequoyah Nuclear Plant, Unit 1**

**Year of Biennial: 2009**

**Termination of Operation: 2020**

	<u>MWth</u>	<u>1986\$</u>	ECI	Base Lx		<u>Lx</u>	Px	Fx		<u>Ex</u>		<u>Bx</u>
PWR	3455	\$105,000,000	109.3	1.98	0.65	2.16	1.649	1.988	0.13	1.791	0.22	9.872

**NRC Mimimum: \$400,195,878**

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
TVA	100.00%	\$400,195,878	\$148,100,000

**Step 4:**

**Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of Return:	Total Earnings:
\$148,100,000	5%	11	1.710339358	<b>\$253,301,259</b>

**Total Earnings = Trust Fund balance x (1+RRR)^Years left in license**

**Step 5:**

**Accumulation:**

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	5%	0	\$0

**Step 6:**

**Decom Period:**

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of Return:	Total Earnings for Decom:
\$253,301,259	5%	7	0.407100423	\$51,559,525

**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]**

Total of Steps 4 - 6:
<b>\$304,860,784</b>

**Total = Total Earnings + Total Earnings for Decom**

**Plant name:** Sequoyah Nuclear Plant, Unit 2

**Year of Biennial:** 2009

**Termination of Operation:** 2021

	<u>MWth</u>	<u>1986\$</u>	ECI	Base Lx		<u>Lx</u>	Px	Fx		<u>Ex</u>		<u>Bx</u>
PWR	3455	\$105,000,000	109.3	1.98	0.65	2.16	1.649	1.988	0.13	1.791	0.22	9.872

**NRC Mimimum:** \$400,195,878

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
TVA	100.00%	\$400,195,878	\$140,900,000

**Step 4:**

**Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of Return:	Total Earnings:
\$140,900,000	5%	12	1.795856326	\$253,036,156

**Total Earnings = Trust Fund balance x (1+RRR)^Years left in license**

**Step 5:**

**Accumulation:**

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	5%	0	\$0

**Step 6:**

**Decom Period:**

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of Return:	Total Earnings for Decom:
\$253,036,156	5%	7	0.407100423	\$51,505,563

**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]**

Total of Steps 4 - 6:
\$304,541,719

**Total = Total Earnings + Total Earnings for Decom**

**Plant name:**

**Watts Bar Nuclear Plant, Unit 1**

**Year of Biennial:**

**2009**

**Termination of Operation:**

**2036**

	MWth	1986\$	ECI	Base Lx		Lx	Px	Fx		Ex		Bx
PWR	3459	\$105,000,000	109.3	1.98	0.65	2.16	1.649	1.988	0.13	1.791	0.22	9.872

**NRC Mimimum:**

**\$400,195,878**

Licensee:	% Owned:	Amount of NRC Minimum/Site Specific:	Amount in Trust Fund:
TVA	100.00%	\$400,195,878	\$68,900,000

**Step 4:**

**Earnings Credit:**

Trust Fund Balance:	Real Rate of Return per year	Years Left in License	Total Real Rate of Return:	Total Earnings:
\$68,900,000	5%	27	3.733456322	\$257,235,141

**Total Earnings = Trust Fund balance x (1+RRR)^Years left in license**

**Step 5:**

**Accumulation:**

Value of Annuity per year	Real Rate of Return per year	Years of Annuity:	Total Annuity:
\$0	5%	0	\$0

**Step 6:**

**Decom Period:**

Total Earnings:	Real Rate of Return per year	Decom Period:	Total Real Rate of Return:	Total Earnings for Decom:
\$257,235,141	5%	7	0.407100423	\$52,360,267

**Total Earnings for Decom = (1/2) x Total Earnings x [(1+RRR)^Decom period - 1]**

Total of Steps 4 - 6:
\$309,595,408

**Total = Total Earnings + Total Earnings for Decom**



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