PRELIMINARY

FY 2009

NON-ROUTINE MAINTENANCE LIST

MAY 24, 2007

May 2007

Preliminary FY09 List of Hydropower Work Packages for Integrated System

District		SWPA Region Priority	Project Name	Work Package Description	Totals		FY09		FY10		FY11		FY12		FY13		FY14		MW AT RISK	Estimated Economic Risk ($1,000)	Cost Savings ($1,000)
					Pkg Tot ($1000)	Cum ($1,000)	Ant. Expend.	Cum ($1,000)	Ant. Expend.	Cum ($1,000)	Ant. Expend.	Cum ($1,000)	Ant. Expend.	Cum ($1,000)	Ant. Expend.	Cum ($1,000)	Ant. Expend.	Cum ($1,000)			
SWL-01		1	Ozark	FY 2008 Rehabilitation Funding (FY 09 - FY 12 Work Plan)	84,000	84,000	11,700	11,700	10,000	10,000	10,000	10,000	10,000	10,000		0		0	100		
NWK-01		2	Truman	Inspection and Repair of Draft Tube Bulkheads, Cylinder Hoists, and Liner and Cavitation Damage (FY 05 & FY 06 Consolidated Project)	6,105	90,105	1,100	12,800	565	10,565	1,000	11,000	500	10,500		0		0	30	965/unit	
SWL-02		3	Little Rock District	Replace SCADA - To be Compatible with Centralized Control (FY 06 Project)	4,230	94,335	840	13,640		10,565		11,000		10,500		0		0	129	360	
MVK-01		4	DeGray	Rewind Units (FY 08 Budget & FY 09 Work Plan)	9,000	103,335	4,500	18,140		10,565		11,000		10,500		0		0	32	3,345	
SWT-01		5	Webbers Falls	Generator Rewind (FY 08 Project)	5,000	108,335	1,500	19,640	1,500	12,065		11,000		10,500		0		0	6	6,271	
SWT-02		6	Webbers Falls	Micillaneous Electrical & Mechanical Rehabilitaiton Work (FY 08 Project)	5,000	113,335	1,500	21,140	1,500	13,565		11,000		10,500		0		0	25	1,508	
SWF-01		7	Whitney	Turbine and Generator Rehabilitation	22,000	135,335	5,250	26,390	5,550	19,115	3,600	14,600		10,500		0		0	30		
		8	To Be Determined	Transformer Oil Containment	350	135,685	350	26,740		19,115		14,600		10,500		0		0			
SWL-03		9	Beaver, Greers Ferry Bull Shoals, Dardanelle, Table Rock and Ozark	Fire Detection System	1,700	137,385	800	27,540	900	20,015		14,600		10,500		0		0	988		
SWT-03		10	R.S. Kerr Lock And Dam	Rehab Intake and draft tube gates	515	137,900	515	28,055		20,015		14,600		10,500		0		0	27	109	2/year
SWL-04		11	Dardanelle	Rehabilitate Intake and Draft Tube Cranes	2000	139,900	750	28,805	1,250	21,265		14,600		10,500					140	3,377	
SWL-05		12	Greers Ferry and Norfork	Upgrade/Replace C02 System	500	140,400	500	29,305		21,265		14,600		10,500		0		0	96 / 80	386 / 321	
NWK-02		13	Stockton	Upgrade and Replace HVAC Systems	394	140,794	394	29,699		21,265		14,600		10,500		0		0	50	603	
SWT-04		14	Ft. Gibson Lake	Replace sump pumps, piping and valves	150	140,944	150	29,849		21,265		14,600		10,500		0		0	45	88	
SWL-05		15	Table Rock	Rehab 480 V Distribtion System	500	141,444	500	30,349		21,265		14,600		10,500		0		0	200	241	
SWT-06		16	R.S. Kerr Lock And Dam	Paint transformers and cranes	250	141,694	250	30,599		21,265		14,600		10,500		0		0	27		1/year
MVS-02		17	Clarence Cannon Dam	Replace Station Service Generator	110	141,804	110	30,709		21,265		14,600		10,500		0		0	58	58	
NWK-03		18	Stockton	Replace Motor Operated Valves	286	142,090	286	30,995		21,265		14,600		10,500		0		0	50	603	
SWT-06		19	Denison	Rehab Draft tube gates and Paint Scroll Case	515	142,605	515	31,510		21,265		14,600		10,500		0		0	40		2/year
SWT-07		20	R.S. Kerr Lock And Dam	Replace 13.8 KV Breakers	350	142,955	350	31,860		21,265		14,600		10,500		0		0	27	217	
SWT-08		21	Keystone Lake	Rehab Intake Gates and replace electrical control panel.	450	143,405	450	32,310		21,265		14,600		10,500		0		0	35	141	2/year
SWL-07		22	Norfork	Rehabilitate Station Sump System and associated piping	350	143,755	350	32,660		21,265		14,600		10,500		0		0	80		
SWL-08		23	Ozark	Replace HVAC System	500	144,255	500	33,160		21,265		14,600		10,500		0		0	20	482	
NWK-04		24	Stockton	Governor Upgrade	456	144,711	456	33,616		21,265		14,600		10,500		0		0	50	804	
SWT-09		25	Tenkiller Ferry Lake	Upgrade Generator and Transformer Relay and automate/modernize controls	200	144,911	200	33,816		21,265		14,600		10,500		0		0	20	201	8/year
SWT-10		26	Eufaula Lake	Rehab penstocks	325	145,236	325	34,141		21,265		14,600		10,500		0		0	30	724	
SWL-09		27	Dardanelle	Spiral Case Drain Valves and associated equipment	350	145,586	350	34,491		21,265		14,600		10,500		0		0	35	281	
SWL-10		28	Bull Shoals	Replace Neutral Breakers with High Impedance Grounds	400	145,986	400	34,891		21,265		14,600		10,500		0		0	45	121	
SWT-11		29	Tenkiller Ferry Lake	Paint Surge Tank	150	146,136	150	35,041		21,265		14,600		10,500		0		0	40	268	

May 2007

Preliminary FY 09 Work Packages

District	SWPA Region Priority	Project Name	Work Package Description	Reiability	Efficiency	Safety	Cost Savings	Environmental	Forced Outage	Preventative Maintenance	Obsolete	MW AT RISK
SWL-01	1	Ozark	FY 2008 Rehabilitation Funding (FY 09 - FY 12 Work Plan)	X	X				X	X		100
NWK-01	2	Truman	Inspection and Repair of Draft Tube Bulkheads, Cylinder Hoists, and Liner and Cavitation Damage (FY 05 & FY 06 Consolidated Project)	X		X	X	X		X		30
SWL-02	3	Little Rock District	Replace SCADA - To be Compatible with Centralized Control (FY 06 Project)	X			X			X	X	129
MVK-01	4	DeGray	Rewind Units (FY 08 Budget & FY 09 Work Plan)	X	X					X	X	32
SWT-01	5	Webbers Falls	Generator Rewind (FY 08 Project)	X	X					X	X	6
SWT-02	6	Webbers Falls	Micillaneous Electrical & Mechanical Rehabilitaiton Work (FY 08 Project)	X	X					X	X	25
SWF-01	7	Whitney	Turbine and Generator Rehabilitation	X	X					X	X	30
	8	To Be Determined	Transformer Oil Containment	X				X	X			
SWL-03	9	Beaver, Greers Ferry Bull Shoals, Dardanelle, Table Rock and Ozark	Fire Detection System	X								988
SWT-03	10	R.S. Kerr Lock And Dam	Rehab Intake and draft tube gates	X						X		27
SWL-04	11	Dardanelle	Rehabilitate Intake and Draft Tube Cranes	X						X		140
SWL-05	12	Greers Ferry and Norfork	Upgrade/Replace C02 System	X						X	X	96 / 80
NWK-02	13	Stockton	Upgrade and Replace HVAC Systems	X	X		X			X	X	50
SWT-04	14	Ft. Gibson Lake	Replace sump pumps, piping and valves	X						X	X	45
SWL-05	15	Table Rock	Rehab 480 V Distribtion System	X						X	X	200
SWT-06	16	R.S. Kerr Lock And Dam	Paint transformers and cranes	X						X		27
MVS-02	17	Clarence Cannon Dam	Replace Station Service Generator	X	X				X			58
NWK-03	18	Stockton	Replace Motor Operated Valves	X			X			X		50
SWT-06	19	Denison	Rehab Draft tube gates and Paint Scroll Case	X						X		40
SWT-07	20	R.S. Kerr Lock And Dam	Replace 13.8 KV Breakers	X						X	X	27
SWT-08	21	Keystone Lake	Rehab Intake Gates and replace electrical control panel.	X						X		35
SWL-07	22	Norfork	Rehabilitate Station Sump System and associated piping	X								80
SWL-08	23	Ozark	Replace HVAC System	X	X		X			X	X	20
NWK-04	24	Stockton	Governor Upgrade	X	X		X			X	X	50
SWT-09	25	Tenkiller Ferry Lake	Upgrade Generator and Transformer Relay and automate/modernize controls	X			X				X	20
SWT-10	26	Eufaula Lake	Rehab penstocks	X		X			X	X		30
SWL-09	27	Dardanelle	Spiral Case Drain Valves and associated equipment	X			X			X	X	35
SWL-10	28	Bull Shoals	Replace Neutral Breakers with High Impedance Grounds	X						X		45
SWT-11	29	Tenkiller Ferry Lake	Paint Surge Tank	X						X		40

Funding Year 2005

Information Data Sheet for Customer Funding

Hydropower Plant: Harry S. Truman **Run of River**_____ **Storage** __X__
District: Kansas City
No. of Units: __6__ **Capacity of Units (MW) (Overload)** 160 (180) MW
Estimated Average Annual (MWH) (SWPA Annual Report) 244,000 MWh

Current Status of Project: All six units are currently available.

Item Proposed for Customer Funding: Inspection and Repair of Draft Tube Bulkheads, Cylinder Hoists, and Liner and Cavitation Damage

Reason for Item: (Check All that Apply)

__X__ Reliability	__X__ Environmental
_____ Efficiency	_____ Forced Outage
__X__ Safety	__X__ Preventative Maintenance
__X__ Cost Savings	_____ Obsolete

History of Outages/Deficiency: The draft tube liners are fabricated of carbon steel and are subject to corrosion and cavitation damage. The water at the project is highly corrosive and is detrimental to the liner, turbines, and structural supports resulting in corrosion damage and measurable reductions in unit efficiency. Sand blasting and vinyl painting of the liners will stop or greatly reduce the corrosive effect of the lake water, increase efficiency, and significantly reduce annual outage times by minimizing the amount of future cavitation repair work. Unit 6 was painted in 1993, but some repairs will be required to the existing vinyl paint. In order to perform the liner corrosion and cavitation repair work, the draft tube bulkheads will need to be inspected and repaired (if required) in accordance with Corps of Engineers' (COE) criteria outlined in Engineering Regulation (ER) 1110-2-8157, Responsibility for Hydraulic Steel Structures (HSS). ER 1110-2-8157 requires all HSS (bulkheads, stoplogs, gates, etc.) to receive a full initial inspection and follow-up periodic inspections every 25 years. The purpose of these inspections is to ensure the bulkheads are structurally sound and safe to use before Government or contractor personnel enter a dewatered area to perform maintenance or repair work. To ensure compliance with the ER and provide safety for Government and contractor personnel, a qualified structural engineer must inspect the bulkheads, determine their safety, and document the inspections. Structural and/or weld defects found during the inspections must be repaired before the bulkheads can be certified for use. The hydraulic power units and cylinders will have to be dismantled so the bulkheads can be removed from their slots and placed on the draft tube deck for these inspections. The operating stems and eye ends of the hydraulically operated draft tube bulkhead hoists (total of 12 hydraulic cylinders) are corroding and need to be repaired. Corrosion is occurring underneath the ceramic coating which protects the operating stems and provides a sealing surface for the cylinders' internal seals and the nickel plating on the eye ends has failed. Continued corrosion of the operating stems will cause the protective ceramic coating to flake off and the hydraulic cylinders will no

longer be able to operate and retain hydraulic oil. There is a potential of losing 900 gallons (from one cylinder) of hydraulic oil into the tailrace (Lake of the Ozarks) downstream of the power plant. Cylinder drift and cycling has also become a problem due to leakage past the internal piston seals. The number of cycles per day depends on the individual cylinder and fluid temperature, but some of the cylinders are cycling over 300 times a day to keep the draft tube bulkheads from drifting into the water passageway. Repair of the cylinders and installation of an automatic latching (dogging) mechanism is needed to prevent the bulkheads from drifting into the water passageways.

Solution: The draft tube bulkhead cylinder work will include redesign of the ceramic protective coating system, repair/rebuilding of the hydraulic cylinders with the redesigned ceramic coating system, and design and installation of an automatic dogging mechanism to prevent cylinder drift. **The draft tube bulkheads will be removed from their slots and inspected and repaired in accordance with COE criteria in concurrence with the hydraulic cylinder repair contract to avoid a duplication of work effort.** The anodes on the bulkheads will also be replaced. Cavitation repair and painting of the draft tube liners and turbines will be performed after the draft tube bulkheads cylinders have been repaired and the draft tube bulkheads inspected/repaired and certified for service.

Scope of Work: Perform engineering and design to develop a new protective coating system that protects the operating stems and an automatic latching dogging device that prevents cylinder drift. Prepare plans and specifications and advertise/award a contract to repair/rebuild the cylinders and install the dogging devices. COE (Kansas City District) will be responsible for the inspection and repair of the draft tube bulkheads. Work will include a visual inspection of all welds, documentation of inspection results, and repair of any weld and/or structural defects. Inspection and repair work will be performed by contract with COE oversight. Power Plant personnel will be responsible for purchasing and replacing the bulkheads' anodes. Also prepare plans and specifications for cavitation and corrosion repair work, sandblasting, and painting of draft tube liners, discharge rings, turbine runners, blades and wicket gates on all six units. Hired labor will be used to complete cavitation repair work and painting will be completed by contract.

Total Estimated Cost: $6,105,000 over 7 years (FY05 – $470,000; FY06 - $1,420,000; FY07 - $1,045,000; FY08 - $505,000; FY09 - $1,100,000; FY10 - $565,000; FY11 - $1,000,000).

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: Loss of 30 MW/unit of available generating capacity (180 MW total for six units).
2) Environmental: High risk of polluting (900 gal/cylinder) the Lake of the Ozarks.
3) Cost Savings: Avoid expensive repairs, environmental cleanup costs, and potential fines if repaired before a failure occurs. Major reduction in costs associated with future cavitation repair work.
4) Other: Unanticipated failure of bulkheads could lead to the loss of life and/or property damage. Reduces risk of extended unit outages.

Work / Funding Timeline:

Activity Item	**Time Frame**	**Dollars**
E&D, Protective Coating & Repair Alternatives	Feb – Jul 07	40,000
P&S, Cyl. Repair/Replacement	Mar 07 – Jan 08	30,000
Contract Admin. (Cyl. Repair)	Jan – Apr 08	10,000
Cylinder Repair Contract	Apr 08 – Oct 10	3,060,000
S&A (Cyl. Repair)	Apr 08 – Oct 10	160,000
Bulkhead Inspection Work	Apr 08 – Oct 10	300,000
Anode Replacement	Apr 08 – Oct 10	30,000
P&S, Cavitation Repair/Painting	Jan – Sep 10	12,000
Contract Admin. (Paint Contract)	Oct – Dec 10	8,000
Cav. Repair/Blast & Paint 6 Units	Jan 11 – Sep 13	2,455,000
	Total =	6,105,000

Duration with/without Customer Funding: Item has been submitted through the Corps' normal budget cycle. Lack of available funding through COE channels appears to be getting worse. Customer funding would prevent failure of the bulkheads and/or hydraulic cylinders resulting in loss of life or property and extended unit outages. Funding of this item would also reduce the likelihood of a significant oil spill into the tailrace water downstream of the power plant resulting in environmental cleanup costs, potential violations and fines, and unit unavailability. Customer funding would also prevent extended outages for cavitation repair work, thereby increasing unit efficiency, availability and reliability. Without customer funding cavitation repair costs will continue to increase and unit efficiency will decrease.

Estimated Losses in Revenue/Benefits/Risk Factor: All units becoming unavailable as the bulkheads and/or hydraulic cylinders failed. Loss of available generation capacity for all six units is 180 MW (30 MW/unit). Loss of generation capability for an average year is 12.6 GWh. Estimated costs for recovering a failed cylinder is $75,000/bulkhead cylinder. The costs for cleaning up an oil spill would also add to the overall costs of a failed cylinder. All units becoming in need of extensive cavitation repair work on the discharge rings, blades and liner. Annual cost savings for cavitation

repair work is estimated at $110,000. 30 MW of available generating capacity would be lost to perform cavitation repair on each unit.

30 MW/unit x 32 weeks x 5 days/week x 3 hours/day x $67/MWh ≈ $965,000/unit

Summary of Funding Argument(s):

- Corps funding is not available.
- Prevent loss of control or failure of draft tube bulkhead cylinders.
- Possible loss of life and/or property if a bulkhead would fail.
- Loss of 30 MW/unit of available generating capacity (180 MW total for six units).
- Increased unit reliability and availability.
- Funding needed to reduce cavitation repair costs.
- Extended outage times required for extensive repair work.
- Increased spillway erosion due to the inability to generate.
- Dam Safety risk due to spillway erosion.
- High potential for environmental pollution.
- Extended unit outage times required for extensive repair work.

Photographs:

Funding Year 2006

Information Data Sheet for Customer Funding

Hydropower Plant: All Little Rock Plants **Run of River**_____ **Storage** __X__
District: Little Rock
No. of Units: __27__ **Capacity of Units (MW) (Overload)** __1,075__
Estimated Average Annual Energy (MWH) (SWPA Annual Report) 2,867,000

Current Status of Project: All units in service.

Item Proposed for Customer Funding: Replace Little Rock District SCADA system hardware, update software, and centralize SCADA equipment.

Reason for Item: (Check All that Apply)

__X__ Reliability	_____ Environmental
_____ Efficiency	_____ Forced Outage
_____ Safety	__X__ Preventative Maintenance
__X__ Cost Savings	__X__ Obsolete

History of Outages/Deficiency: Little Rock District has two SCADA systems. The SCADA system for Table Rock and Beaver power plants was purchased in 1991. The SCADA system for Bull Shoals, Norfork, and Greers Ferry was replaced in 1995 and the system for Dardanelle and Ozark was replaced in 1997. The workstations and master station computers for the Table Rock system are obsolete and are no longer supported by the manufacturer. The spare parts supply is running low and new spare parts are becoming very difficult to obtain. Numerous failures of the main servers have occurred, and the systems installed at the other plants are nearing the end of their expected life.

Solution: Replace master station workstations, computers, and peripheral equipment and software. Hardware and software will be compatible with the new Centralized SCADA Control system. The replacement will start with the Table Rock and Beaver power plants system. The Bull Shoals and Dardanelle systems will be replaced over the next three years.

Scope of Work: Replace workstations, two master station computers, and peripherals. Purchase newest version of software. Work will be performed over several years by in-house personnel or by contract.

Total Estimated Cost: $4,230,000 (FY06 - $800,000; FY07 - $1,133,000; FY08 - $1,457,000; and FY09 - $840,000)

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 129MW
2) Environmental Risk: N/A
3) Cost Savings: N/A
4) Other: Loss of Automatic Generation Control

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D	Jul 06 – Aug 07	755,000
Pre-Procurement	Aug 07 – Sep 07	80,000
Installation	Oct 07 – Sep 09	3,395,000

Duration with/without Customer Funding: Item has been submitted through the Corps' normal budget cycle. Lack of available funding through COE channels appears to be getting worse. Customer funding would prevent failure of the existing SCADA system, thereby increasing unit availability and reliability. Once work begins, replacement of a key component on the system will take 24 months.

Estimated Losses in Revenue/Benefits/Risk Factor:

Cost to Man Beaver Power Plant
(assuming spare parts can be found)
$1,500/day x 7 days/week x 2 weeks ≈ $21,000/occurrence

Cost to Man Plant and get upgrade from OEM
(assuming spare parts cannot be found)
$1500/day x 7 days/week x 4 weeks/month x 8 months ≈
$360,000/occurrence

Similar costs for outages would occur with the Bull Shoals and Dardanelle systems. There will be a cost savings of approximately $750,000 per year after the centralization is completed because of the reduced number of powerplant operators that will be needed.

Summary of Funding Argument(s): Twelve to fifteen years is the normal life span of SCADA systems. This equipment is nearing its expected life. Piecemeal replacement of parts of the system is not possible because of technological advances. Periodic equipment upgrades is the most cost effective way to insure system reliability. Installation of the new SCADA system will support the centralization of powerplant control.

Photographs:

Funding Year 2008

Information Data Sheet for Customer Funding

Hydropower Plant: DeGray **Run of River**___ **Storage**__X__
District: Vicksburg
No. of Units: 2 **Capacity of Units (MW) (Overload)** 68 (78)
Estimated Average Annual Energy (MWH) (SWPA Annual Report) 97,000

Current Status of Project: 2 generators operational with the capability to run at 78.0 megawatts.

Item Proposed for Customer Funding: Rewind of Unit 1 and Unit 2.

Reason for Item: (Check All that Apply)

X Reliability	____ Environmental
X Efficiency	____ Forced Outage
____ Safety	X Preventative Maintenance
____ Cost Savings	X Obsolete

History of Outages/Deficiency: The Generators are 34 years old. The Generator tests are showing degradation in the windings and one unit has had a coil removed and has Iron damage.

Solution: Rewind the Generator for Unit 1 and Unit 2.

Scope of Work: Rewind Generator for Unit 1 and rewind Generator for Unit 2.

Total Estimated Cost: $9,000,000 (FY08 - $4,500,000; FY09 - $4,500,000)

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 32 MW
2) Environmental Risk: N/A
3) Cost Savings: N/A
4) Other:N/A

Work / Funding Timeline:

Activity Item	Time frame	Dollars
Rewind Unit 2	Sept 08 – May 09	$4,500,000
Rewind Unit 1	Sept 09 – May 10	$4,500,000

Duration with/without Customer Funding: The customers approved funding for the DeGray Generator Rewind plans and specifications in FY 2006 and which are being developed by HDC in FY 07. $3,000,000 for the project has been included in the FY 2008 President's Budget and the Corps anticipates receiving appropriation funding for the Rewinding of Unit 2. However, it is anticipated that the cost of the Unit 2 will exceed the requested amount by approximately $1,500,000; therefore, customer funding would be needed to start the necessary work on Unit 2. Also, it is possible that the Rewind of Unit 1 will not be included in the FY 2009 budget, and would need customer funding to complete the rewind work at DeGray. Supplemental customer funding for the Rewind of Unit 2 would prevent possible extended outages required for coil repairs and possible unit de-rating. Rewinding Units 1 and 2 will increase reliability, efficiency and output. Without customer funding, maintenance costs will continue to increase and unit reliability will decrease.

Estimated Losses in Revenue/Benefits/Risk Factor: In the case of a coil failure 32 MW of capacity could be lost. Estimated forced outage time would be about 52 weeks.

32 MW x 52 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $3,345,000

Summary of Funding Argument(s):

- Corps funding is not available at this time.
- Increased reliability and availability.
- Timely repair with minimal interruption of service.
- Reduced likelihood of major failure.

Photographs:

Funding Year 2008

Information Data Sheet for Customer Funding

Hydropower Plant: Webbers Falls **Run of River** X **Storage**____
District: Tulsa
No. of Units: 3 **Capacity of Units (MW) (Overload)** 60 (69)
Estimated Average Annual Energy (MWH) (SWPA Annual Report) 213,000

Current Status of Project: 1 Unit operational with the capability to run at 23.0 megawatts.

Item Proposed for Customer Funding: Generator Rewind of Unit 1, Unit 2 and Unit 3.

Reason for Item: (Check All that Apply)

X Reliability	_____ Environmental
X Efficiency	_____ Forced Outage
_____ Safety	X Preventative Maintenance
_____ Cost Savings	X Obsolete

History of Outages/Deficiency: The generators are the original equipment installed when the powerhouse was built in 1973. One unit has experienced a coil failure which was repaired. The Webbers Falls Powerhouse Major Rehabilitation Report identified the generators as an equipment item that needed to be replaced. With the turbine rehabilitation at Webbers Falls, it is possible that a 6 MW uprate could be realized at the Webbers Falls powerplant.

Solution: Rewind the Generators for Unit 1, Unit 2 and Unit 3.

Scope of Work: Rewind the units.

Total Estimated Cost: $5,000,000 (FY08 - $2,000,000; FY09 - $1,500,000; and FY10 – $1,500,000)

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 6 MW
2) Environmental Risk: N/A
3) Cost Savings: N/A
4) Other:N/A

Work / Funding Timeline:

Activity Item	Time frame	Dollars
Rewind Unit 3	Sept 08 – May 09	$1,500,000
Rewind Unit 1	Sept 09 – May 10	$1,500,000
Rewind Unit 2	Sept 10 – May 11	$2,000,000

Duration with/without Customer Funding: Without customer funding, the Units will continue to operate at the current rating (23 MW) and the obtainable uprate (2 MW per unit, 6 MW for the powerhouse) will not be realized. Delay in the rewind of the units will result in less power and energy that is available. The work item has been submitted through the Corps' normal budget cycle.

Estimated Losses in Revenue/Benefits/Risk Factor: If customer funding is not available, the generator rewind will be delayed until funds are available. Federal funds are not expected in the next 10 years.

6 MW x 520 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $6,271,000

Summary of Funding Argument(s):

- Corps funding is not available at this time.
- Increased unit capacity
- Increased reliability and availability.
- Timely replacement with interruption of service timed with turbine rehabilitation outage.
- Reduced likelihood of major failure.

Photographs: None.

Funding Year 2008

Information Data Sheet for Customer Funding

Hydropower Plant: Webbers Falls **Run of River** _X_ **Storage**____
District: Tulsa
No. of Units: 3 **Capacity of Units (MW) (Overload)** 60 (69)
Estimated Average Annual Energy (MWH) (SWPA Annual Report) 213,000

Current Status of Project: 1 Unit operational with the capability to run at 23.0 megawatts.

Item Proposed for Customer Funding: Remaining Electrical and Mechanical work at the Webbers Falls Powerhouse to complete the powerhouse rehabilitation to increase reliability and to enable the uprate of the units.

Reason for Item:

X Reliability	____ Environmental
X Efficiency	____ Forced Outage
____ Safety	X Preventative Maintenance
____ Cost Savings	X Obsolete

History of Outages/Deficiency: The Webbers Falls Powerhouse Major Rehabilitation Report identified the turbines and generators as the major equipment items that needed to be replaced. A benefit of replacing the generators is an anticipated 6 MW uprate. For the powerplant to operate with the increased capacity, the main power cables and generator main bus need to be uprated as well. Also, the maintenance elevator, air compressor, clearwell tank for the packing box water, trash racks, electrical distribution centers, HVAC system and powerplant emergency generator need replacement due to their existing condition. The maintenance elevator is unreliable and is required to efficiently and safely move personnel and equipment for maintenance and repair,; the clearwell tank which is used to store the clean water required by the packing boxes has corroded and is leaking; the station and governor air compressors are existing equipment and are worn out; the trashracks have holes and are failing; the electrical distribution centers have breakers that are not properly rated for the duty and spare parts and difficult to obtain, the HVAC is obsolete and is unable to keep the controlled areas cooled; and the emergency generator is obsolete and not able to provide the necessary load reliably. In addition, it will be necessary to make electrical control, power and relaying changes to incorporate the new equipment.

Solution: Repair / replace the main power cables, main bus, maintenance elevator, air compressors, clearwell tank for the packing box water, trash racks, electrical distribution centers, HVAC system and powerplant emergency generator.

Scope of Work: Perform the required electrical and mechanical work needed to replace the main power cables, main bus, maintenance elevator, air compressor, clearwell tank for the packing box water, trash racks, electrical distribution centers, HVAC system and powerplant emergency generator including electrical control , power and relaying changes required for the uprate and new equipment

Total Estimated Cost: $3,500,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 25 MW
2) Environmental Risk: N/A
3) Cost Savings: N/A
4) Other:N/A

Work / Funding Timeline:

Activity Item	Time frame	Dollars
Remaining Electrical and Mechanical Rehab Work	May 08 – May 11	$3,500,000

Duration with/without Customer Funding: Without customer funding, the needed rehabilitation work will not be repaired which may result in continued frequent forced outages and lost generation. The work item has been submitted through the Corps' normal budget cycle.

Estimated Losses in Revenue/Benefits/Risk Factor: If customer funding is not available, the remaining rehabilitation work will be delayed until funds are available. Federal funds are not expected in the next 3 years.

25 MW x 30 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $1,508,000

Summary of Funding Argument(s):

- Corps funding is not available at this time.
- Increased reliability and availability.
- Timely repair with minimal interruption of service.
- Reduced likelihood of major failure.

Photographs: None.

Funding Year 2008

Information Data Sheet for Customer Funding

Hydropower Plant: Whitney **Run of River**_____ **Storage** __X__
District: Fort Worth
No. of Units: __2__ **Capacity of Units (MW) (Overload)** 30 (34) MW
Estimated Average Annual (MWH) (SWPA Annual Report) 73,000 MWh

Current Status of Project: Both units are available. The plant is 52 years old.

Item Proposed for Customer Funding: Replacement of both turbines, rewinding of both generators and replacement and upgrading of peripheral electrical and mechanical systems such as governors, exciters, coolers, controls, etc. (turbine, generator and associated equipment rehabilitation).

Reason for Item:

__X__	Reliability	_____	Environmental
__X__	Efficiency	_____	Forced Outage
_____	Safety	__X__	Preventative Maintenance
_____	Cost Savings	__X__	Obsolete

History of Outages/Deficiency: The rehabilitation of Whitney Powerhouse is discussed in the study and report approved by Headquarters in July 2001.

Solution: The contract for replacement of the turbines and rewinding of the generators was awarded in May 2007. The base bid was awarded for $3.3 million. Continued funding for the remaining four options will be required to complete the contract. Performance of the contract options will take four to five years.

Scope of Work: Continued execution of the existing Turbine/Generator Contract.

Total Estimated Cost: $22,000,000 over 5 years.

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 30 MW
2) Environmental Risk: None
3) Cost Savings: Delays in funding of the remaining options will cause possible termination of the contract and increased costs for delays and re-procurement of the contract.
4) Other: Eventual failure of the units due to increased age and usage will be the result if the rehabilitation of the turbines and generators are not completed.

Work/Funding Timeline:

Activity Item	Time frame	Dollars
Award of base bid	May 07	3,300,000
Award of Option 1	Feb 08	4,300,000
Award of Option 2	Feb 09	4,300,000
Award of Option 3	Feb 10	4,600,000
Award of Option 4	Feb 11	3,600,000
Award of optional items	Feb 08 – Feb11	1,900,000

Estimated Losses in Revenue/Benefits/Risk Factor: Eventual failure of the generating units will result if rehabilitation is not completed.

Summary of Funding Argument(s):

- Units are past their designed life.
- Rehabilitation will result in increased reliability.
- Increased power production due to up-rating of the rehabbed units.
- Increase unit reliability and availability.

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plants: Bull Shoals, Dardanelle, Greers Ferry, Ozark, Beaver, Table Rock **Run of River** __X__ **Storage** __X__
District: Kansas City
No. of Units: __25__ **Capacity of Units (MW) (Overload)** 988 (1,114) MW

Estimated Average Annual (MWH) (SWPA Annual Report) 2,713,000 MWh

Current Status of Project: Ozark Unit 4 (20 MW) cracked at the shaft flange connection and will be unavailable for generation until the turbine is replaced.

Item Proposed for Customer Funding: Install fire detection system at Bull Shoals, Dardanelle, Greers Ferry, Ozark, Beaver and Table Rock powerhouses.

Reason for Item: (Check All that Apply)

__X__Reliability	_____Environmental
_____Efficiency	_____Forced Outage
_____Safety	____Preventative Maintenance
_____Cost Savings	____Obsolete

History of Outages/Deficiency: These plants do not currently have fire detection systems. An event where a fire is allowed to propagate could result in significant damage to the powerhouse.

Solution: Install fire detection system at Bull Shoals, Dardanelle, Greers Ferry, Ozark, Beaver and Table Rock powerhouses.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work and contract for the purchase and installation of a fire detection system.

Total Estimated Cost: $1,700,000

Cost/Impacts if Item Not Funded:
1) Megawatts and Energy at Risk: 988 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct 08 – May 09	105,000
Procurement	Jun 09	15,000
Construction	Sep 09 – Sep 10	1,580,000

Duration with/without Customer Funding: O&M funds not available for foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: Bull Shoals and Daradanelle are currently occupied 24/7; however, these plants will be remoted by FY 09 and will then only occupied for 40 hours per week. Beaver, Greers Ferry, and Ozark are already remoted and occupied 40 hours per week. If a fire were to break out it during un-staffed hours, it may propagate without detection until it caused damage to other systems which would only then alert the operator. Depending on the event, damages to the powerhouse could be in the millions of dollars. Beaver, Greers Ferry and Ozark should have had fire detection systems installed when the plants were remoted. Dardanelle and Bull Shoals should have fire diction systems installed since the plants will be remoted in the future. Table Rock will be the master powerplant and will need a fire detection system as well to ensure the reliability of the master powerplant.

Summary of Funding Argument(s):

- Corps funding is not available at this time
- Increased reliability.
- Reduced likelihood of major failure.

Photographs: None - No Existing Fire Detection System

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Robert S Kerr **Run of River** X **Storage** ____
District: Tulsa
No. of Units: 4 **Capacity of Units (MW) (Overload)** 110 (126)
Estimated Average Annual Energy (MWh) (**SWPA Annual Report)** 459,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Sand blast and paint intake and draft tube gates, replace seals, bolts, replace chains, cables and replace cathodic protection anodes.

Reason for Item:

X Reliability	____Environmental
____Efficiency	____ Forced Outage
____Safety	X Preventive Maintenance
____Cost Savings	____Obsolete

History of Outages/Deficiency: The intake and draft tube gate paint system is failing due to age which is leading to structural deterioration of the gates. The existing paint on the gates is vinyl. The roller chains have pitted rollers and several of the keepers on the pins have failed. In recent years, several rollers have cracked and were replaced. The bolts and seals on the gates are in poor condition and must be replaced as part of the project. Numerous areas on the surface of the gates are corroding where the paint system has failed. Deterioration will continue until the gates are repaired. Each of the four intake roller gates are approximately 21 feet wide by 40 feet in length, each of the six bulkheads are approximately 21 feet by 43 feet with fill valves, and each of six the draft tube gates are approximately 21 feet wide by 31 feet in length.

Solution: Sand blast the intake and draft tube gates, make any required structural repairs, repaint with an acceptable paint system, repair or replace all roller chains where required, and replace all seals and bolts on all of the gates.

Scope of Work: Prepare plans and specifications to rehabilitate the intake and draft tube gates and perform the necessary repair work.

Total Estimated Cost: $515,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 27 MW
2) Environmental Risk: none
3) Cost Savings: $2,000/year of O&M Cost
4) Other

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Jan 09 – Apr 09	20,000
Procurement	May 09 – Aug 09	5,000
Contract	Sep 09 – May 10	490,000

Duration with/without Customer Funding: Without customer funding, the intake and draft tube gates will continue to deteriorate to a point where structural components of gates will become affected which will increase cost and increase time of eventual repair outage. An increased chance of roller chain failure in an emergency condition will also exist. These gates are used for emergency closure of the water intake to the turbines, and the generators can not be operated without operational intake gates. With customer funding, the gates can be repaired and the probability of gate failing to close or open when needed is greatly reduced.

Estimated Losses in Revenue/Benefits/Risk Factor:

$2,000/yr average savings in O&M costs.

Intake gate failure could result in:

$$27 \text{ MW} \times 2 \text{ weeks} \times 5 \text{ days/week} \times 6 \text{ hrs/day} \times \$67/\text{MWh} \approx \$109{,}000$$

Summary of Funding Argument(s):

- Due to the condition and age of the gates and roller chains and their deteriorated condition, the availability of the gates for operation may be impacted if the gates are not repaired.
- Delay in maintenance painting will possibly result in the need to replace structural members and lead to increased repair costs.

Photographs:

Draft Tube Gate

Draft Tube Gate

Intake Gate

Intake Gate

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Dardanelle **Run of River** __X__ **Storage** ____
District: Little Rock
No. of Units: __4___ **Capacity of Units (MW) (Overload)** _140 (140) MW__
Estimated Average Annual (MWH) (SWPA Annual Report) 613,000 MWh

Current Status of Project: The project has all units available for operation. The generators were originally placed in service in 1965 and 1966. A Major Rehabilitation of the power plant was completed in August 2000.

Item Proposed for Customer Funding: Rehabilitate intake and draft tube cranes.

Reason for Item: (Check All that Apply)

__X__Reliability	_____Environmental
____Efficiency	____Forced Outage
____Safety	__X__Preventative Maintenance
_____Cost Savings	_____Obsolete

History of Outages/Deficiency The existing intake and draft tube cranes are the original equipment that was installed more than 40 years ago. The equipment is breaking down and in need of replacement. Major equipment to be replaced includes: wire rope, gears, lifting beam and controls. The crane also contains asbestos and lead based paint that need to be abated. The intake crane cab windows are glazed over which prevents proper viewing of work.

Solution: Rehabilitate intake and draft tube cranes.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work and contract for the rehabilitate of these cranes.

Total Estimated Cost: $2,000,000

Cost/Impacts if Item Not Funded:
1) Megawatts and Energy at Risk: 140 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct 08 – Mar 09	150,000
Procurement	Jun 09	25,000
Construction	Sep 09 – Nov 10	1,825,000

Duration with/without Customer Funding: O&M funds not available for foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: Failure of the intake or draft tube cranes would shut down the entire plant until the crane could be repaired.

140 MW x 12 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $3,377,000

Summary of Funding Argument(s):

- Corps funding is not available at this time
- Increased reliability

Photographs:


01/25/2000

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Greers Ferry & Norfork **Run of River**_____ **Storage** __X__
District: Little Rock
No. of Units: __4___ **Capacity of Units (MW) (Overload)** _176 (202) MW__
Estimated Average Annual (MWH) (SWPA Annual Report) 373,000 MWh

Current Status of Project: All units currently available for service.

Item Proposed for Customer Funding: Install C02 system at Greers Ferry and Norfork power plant.

Reason for Item:

__X__Reliability
_____Efficiency
_____Safety
_____Cost Savings
_____Environmental
_____Forced Outage
__X__Preventative Maintenance
__X__Obsolete

History of Outages/Deficiency: Upgrade system to meet NFPA 12 requirements and COE safety standard for emergency notification and upgrade replace routing valves, firing heads, and cylinders. This equipment is the original equipment and is about 47 and 57 years old, respectively.

Solution: Install new C02 cylinders, firing heads, routing valves, sensors, and replace controls as needed. Install new alert system for powerhouse personnel per NFPA 12.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work and contract for the purchase and installation of C02 system.

Total Estimated Cost: $500,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 176 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct 08 – May 09	50,000
Procurement	Jun 09	15,000
Construction	Sep 09 – Sep 10	420,000
S&A	Sep 09 – Sep 10	15,000

Duration with/without Customer Funding: O&M funds not available for foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: In case of a failure that cannot be fixed 96 MW or 80 MW of capacity would be lost. Estimated forced outage time would be 2 weeks.

80 MW x 2 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $321,000

OR

96 MW x 2 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $386,000

Summary of Funding Argument(s):

- Corps funding is not available at this time.
- Increased reliability.
- Reduced likelihood of major failure.

Photographs:

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Stockton **Run of River**_____ **Storage** __X__
District: Kansas City
No. of Units: __1___ **Capacity of Units (MW) (Overload)** _45 (50) MW__
Estimated Average Annual (MWH) (SWPA Annual Report) 47,000 MWh

Current Status of Project: Unit is currently available.

Item Proposed for Customer Funding: Replace/Upgrade HVAC systems.

Reason for Item:

__X__ Reliability	_____ Environmental
__X__ Efficiency	_____ Forced Outage
_____ Safety	__X__ Preventative Maintenance
__X__ Cost Savings	__X__ Obsolete

History of Outages/Deficiency: The power plant's HVAC systems have been in service since 1973 and the frequency and cost of maintenance continues to increase each year to keep these systems operational. Approximately $97,000 costs of has been expended over the past 13 years for repair and maintenance. The original manufacturers no longer support these systems and replacement parts are costly due to special manufacturing requirements. The HVAC systems provide temperature control for the generator and main control areas and are critical in maintaining a constant temperature throughout these areas to prevent equipment damage and/or failures. Constant temperatures must be maintained to avoid contact corrosion and adverse effects to the generator winding, main control board, and excitation system. New/Upgraded HVAC systems would be more efficient and reduce O&M costs.

Solution: Replace/Upgrade existing HVAC systems with modern up-to-date equipment to provide adequate heating and cooling throughout the power plant.

Scope of Work: Perform E&D, prepare plans and specifications, and advertise/award a contract to replace/upgrade the power plant's HVAC systems.

Total Estimate Costs: $394,000

Cost/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: Loss of 50 MW of available generating capacity.
2) Environmental: N/A.
3) Cost Savings: Reduced annual maintenance and repair costs (≈$8,000/yr).
4) Other: Prevents the risk of an extended outage to repair and/or replace HVAC equipment.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
E&D	Oct 08 – Mar 09	41,000
P&S	Apr – Sep 09	31,000
Contract Admin.	Oct 09 – Jan 10	10,000
Installation Contract	Feb - Jun 10	294,000
S&A	Feb – Jun 10	18,000

Duration with/without Customer Funding: Item has been submitted through the Corps of Engineers' (COE) normal budget cycle and has not been funded due to budget constraints. Lack of available funding through COE channels appears to be getting worse. Customer funding would prevent a loss of generating availability and equipment damage and reduce HVAC equipment repair/maintenance costs. Without customer funding, equipment repair/maintenance costs will continue to increase and reliability of the HVAC systems will continue to decrease.

Estimated Losses in Revenue/Benefits/Risk Factor: Generating unit becoming unavailable due to failure of HVAC system(s). Failure of critical power plant equipment that must be maintained at a constant temperature is likely if the power plant's HVAC system(s) are out of service. 50 MW of available generating capacity would be lost until necessary repairs were made to the HVAC system(s) and/or failed equipment.

$$50 \text{ MW} \times 12 \text{ weeks} \times 5 \text{ days/week} \times 3 \text{ hours/day} \times \$67/\text{MWh} \approx \$603{,}000$$

Summary of Funding Argument(s):

- Corps funding is not available.
- Increased unit reliability and availability.
- Loss of 50 MW of available generating capacity.
- Failure of critical power plant equipment.
- Unscheduled outage time required for HVAC equipment repair/replacement work.

Photographs: None.

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Fort Gibson **Run of River** ____ **Storage** _X_
District: Tulsa
No. of Units: __4___ **Capacity of Units (MW) (Overload)** 45 (52)
Estimated Average Annual Energy (MWh) (SWPA Annual Report) 191,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Replace the un-watering pumps, sump pumps, piping and valves.

Reason for Item:

__X__Reliability	____Environmental
_____Efficiency	_____Forced Outage
_____Safety	__X__Preventive Maintenance
____Cost Savings	__X__Obsolete

History of Outages/Deficiency: The two un-watering pumps, sump pumps, piping and valves were installed approximately 50 years ago as original equipment and have corroded and deteriorated. The pumps leak due to deteriorated metal and seals.

Solution: Replace the existing un-watering pumps, sump pumps, piping and valves.

Scope of Work: Prepare the necessary specifications, drawings, and work description, and contract for the replacement of the un-watering pumps, sump pumps, piping and valves.

Total Estimated Cost: $150,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 45 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Jan 09 – Mar 09	10,000
Procurement	Apr 09 – Jun 09	5,000
Contract	Jul 09 – Jan 10	125,000

Duration with/without Customer Funding: Without Customer funding, the existing sump pumps, piping and valves will continue to deteriorate until they fail or require additional maintenance to keep operational.

Estimated Losses in Revenue/Benefits/Risk Factor: A possible loss in availability of dewatering hydropower units for routine maintenance and a possibility of flooding powerhouse.

11 MW x 4 weeks x 5 days/wk x 6 hrs/day x $67/Mwh ≈ $88,000

Summary of Funding Argument(s):

- Corps funding is not available.
- Increased unit reliability and availability.
- Possible loss of 11 MW of available generating capacity.
- Possible loss of the powerplant due to flooding.

Photographs:

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Table Rock **Run of River**_____ **Storage** __X_____
District: Little Rock
No. of Units: __4___ **Capacity of Units (MW) (Overload)** _200 (230) MW__
Estimated Average Annual (MWH) (SWPA Annual Report) 495,000 MWh

Current Status of Project: All units in service.

Item Proposed for Customer Funding: Replace/rehabilitate station service switchgear.

Reason for Item:

__X__Reliability	_____Environmental
_____Efficiency	_____Forced Outage
_____Safety	__X__Preventative Maintenance
_____Cost Savings	__X__Obsolete

History of Outages/Deficiency: The original equipment is almost 60 years old. There have been repeated failures of the breakers, and the Unit A main breaker is in need of immediate repair. Failures of the breaker equipment will increase in the future due to the advance age of the equipment.

Solution: Replace/rehabilitate station service switchgear.

Scope of Work: Purchase new station service switchgear and install by powerhouse personnel.

Total Estimated Cost: $500,000

Cost/Impacts if Item Not Funded:
1) Megawatts and Energy at Risk: 200 MW
2) Environmental Risk: None.
3) Cost Savings: None.
4) Other: None.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct 08 – May 09	50,000
Procurement & Installation	Jun 09 – Sep 10	450,000

Duration with/without Customer Funding: O&M funds not available for foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: Failure of station service power will result in loss of power to critical components for all generation units. Station power also supplies power that supplies the UPS providing power to the to the SWPA backup dispatch center. Assuming repair of one station service unit is being made when the primary station unit fails, we expect repairs to be made in 72 hours.

200 MW x 3 days x 6 hours/day x $67/MWh ≈ $241,000

Summary of Funding Argument(s):

- Corps funding is not available at this time
- Increased reliability

Photographs:


11/22/2004

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: RS Kerr **Run of River** X **Storage** ____
District: Tulsa
No. of Units: 4 **Capacity of Units (MW) (Overload)** 110 (126)
Estimated Average Annual Energy (MWh) (**SWPA Annual Report)** 459,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Sand blast and paint Intake and Draft Tube Cranes, and Main Power Transformers.

Reason for Item:

X Reliability	____Environmental
____Efficiency	____ Forced Outage
____Safety	X Preventive Maintenance
____Cost Savings	____Obsolete

History of Outages/Deficiency: The intake and draft tube crane paint systems are failing due to age which is leading to surface rusting. The same applies on the Main Power Transformers. The equipment should be repainted to minimize further degradation of the underlying materials and ensure reliable operation into the future.

Solution: Sandblast and paint the intake crane and transformers.

Scope of Work: Develop plans and specifications to sand blast and paint the equipment.

Total Estimated Cost: $250,000

Costs/Impacts if Item is Not Funded:
1) Megawatts and Energy at Risk: 27
2) Environmental Risk: None
3) Cost Savings: $1,000/year of O&M Cost
4) Other: None.

Work / Funding Timeline:

Activity Item	Time Frame	Dollars
E&D/P&S	Jan 09 – Apr 09	25,000
Procurement	May 09 – Jul 09	5,000
Contract	Aug 09 – May 09	220,000

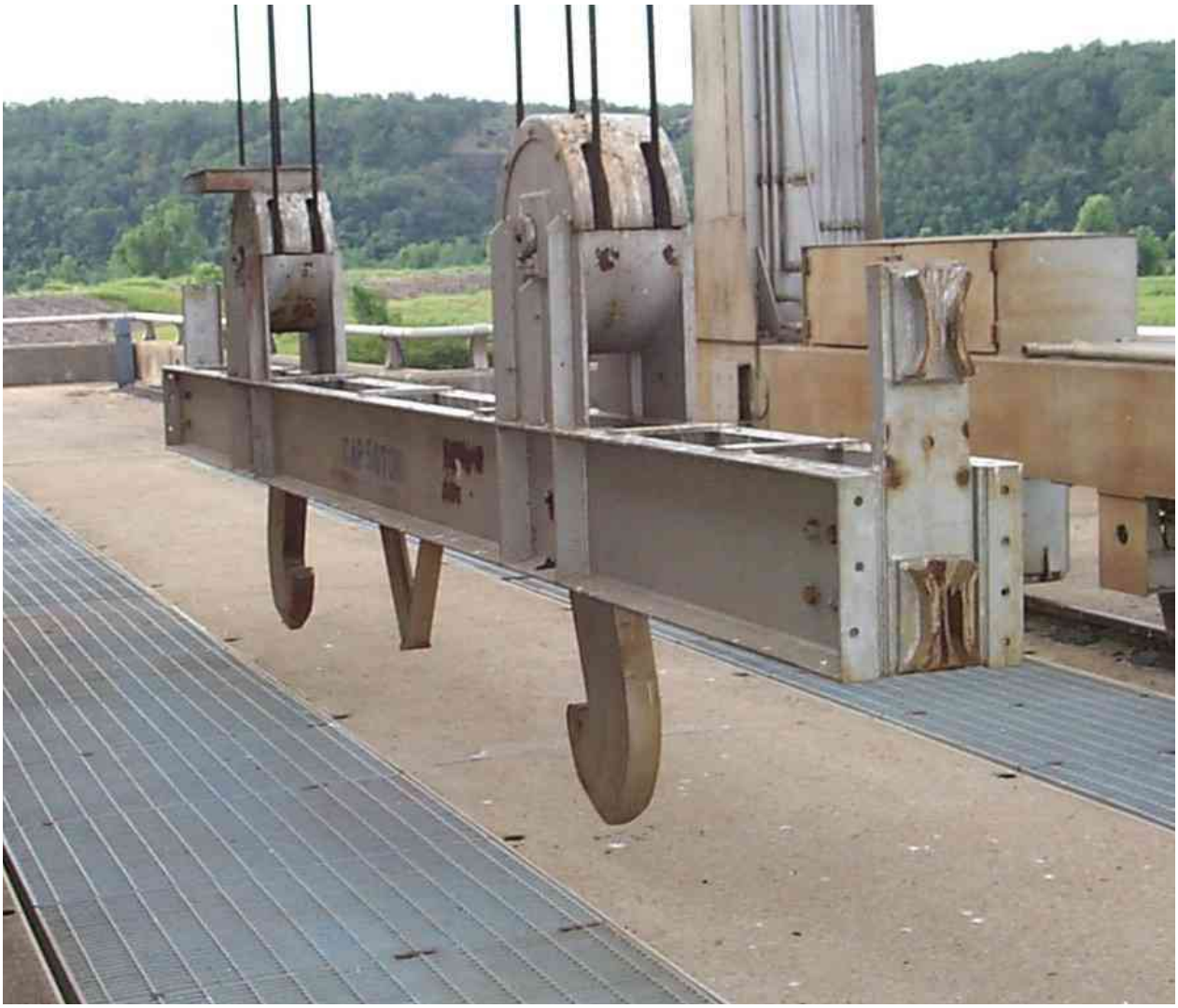
Duration with/without Customer Funding: Without customer funding, the intake and draft tube cranes and Main Transformers will continue to deteriorate to a point where structural components could become affected. This would increase cost and increase time for repair.

Estimated Losses in Revenue/Benefits/Risk Factor: $1,000/yr average savings in O&M costs.

Summary of Funding Argument(s):

- Coating systems are deteriorating and should be replaced to ensure no significant damage is done to the equipment due to surface corrosion.

Photographs:



Intake Crane Beam and Trolley

RS Kerr Powerhouse Transformer Number 1

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Clarence Cannon **Run of River**_____ **Storage** __X_____
District: St. Louis
No. of Units: __2___ **Capacity of Units (MW) (Overload)** _58 (70) MW__
Estimated Average Annual (MWH) (SWPA Annual Report) 90,000 MWh

Current Status of Project: Both units operational with the capability to run at 27 and 31 megawatts.

Item Proposed for Customer Funding: Replacement of auxiliary plant generator.

Reason for Item:

__X__Reliability
__X__Efficiency
_____Safety
_____Cost Savings
_____Environmental
__X__Forced Outage
_____Preventative Maintenance
_____Obsolete

History of Outages/Deficiency: The current auxiliary generator was installed at the completion of construction for Cannon Powerplant (1983). This generator can only maintain minimum operation of the Powerplant. It is not capable of operating the flood gates and Powerplant simultaneously. It does not supply enough power to enable Black Start capability as is a reliability requirement and was to be an initial plant capability.

Solution: Replace the current diesel generator with an appropriated sized generator and to isolate the powerhouse emergency power from the spillway gate emergency power.

Scope of Work: Replacement of generator for Clarence Cannon Power Plant will include the isolation of the powerplant emergency power from the spillway emergency power and the installation of a new generator for the powerplant. The work will require minor wiring and engineering.

Total Estimated Cost: $110,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 58 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None

Work / Funding Timeline:

Activity Item	Time frame	Dollars
Supply Contract & Installation	Oct 08 – Mar 09	$110,000

Duration with/without Customer Funding: Funding is not available through the U.S. Army Corps of Engineers. The large number of unfunded maintenance work items grows each year. Only "high priority" items receive funding through budget and ranking process. Funding through normal appropriations is not expected in the next three years.

Estimated Losses in Revenue/Benefits/Risk Factor: Risk factor is no black start capability to aid electrical service recovery during a major outage. Intermitted outages at times when generator is needed for flood control gate operation.

58 MW x 1 week x 5 days/week x 3 hours/day x $67/MWh ≈ $58,000

Summary of Funding Argument(s):

- Timely replacement of a critical generating component.
- Avoidance of a prolonged outage during major outage event.
- Capability to perform black start allowing startup of the grid after major outage.
- Loss of operating plant and dam during an outage.
- Increased reliability.

Photograph:

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Stockton **Run of River**_____ **Storage** __X__
District: Kansas City
No. of Units: __1___ **Capacity of Units (MW) (Overload)** _45 (50) MW__
Estimated Average Annual (MWH) (SWPA Annual Report) 47,000 MWh

Current Status of Project: Unit is currently available.

Item Proposed for Customer Funding: Replacement of the power plant's motor operated valves (draft tube fill valve, draft tube drain valves, 3-way draft tube drain/fill valve, spiral case drain valve, generator cooling valve, and raw water fill valves and strainers).

Reason for Item:

__X__ Reliability	_____ Environmental
_____ Efficiency	_____ Forced Outage
_____ Safety	__X__ Preventative Maintenance
__X__ Cost Savings	_____ Obsolete

History of Outages/Deficiency: The power plant's motor operated valves and raw water strainers have been in service since 1973 and are becoming less reliable every year. Maintenance has become more frequent over the past 6 years to keep these valves and strainers operational. Operation of the valves is becoming more difficult due to wear in the valve linkages and operators. Spare parts for the valves and strainers are no longer available from the original manufacturer and replacement parts are costly due to special manufacturing requirements and long lead times. Three of the valves are located in a confined space and require a minimum of three people to make repairs. The location of these valves significantly increases repair times and costs. Annual repair and maintenance costs for these valves and strainers are estimated at $5,000/yr and continue to increase. The valves and strainers need to be replaced before unexpected repairs are required that may lead to forced and/or extended unit outages.

Solution: Replace the existing motor operated valves, motor controls, and strainers with similar equipment.

Scope of Work: Prepare plans and specifications and advertise/award a contract to replace the motor operated valves, motor controls, and strainers.

Total Estimate Costs: $286,000

Cost/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: Loss of 50 MW of available generating capacity.
2) Environmental: N/A.
3) Cost Savings: Reduced annual maintenance and repair costs (≈$5,000/yr).
4) Other: Avoid the inability to raise the draft tube bulkheads, dewater the spiral case and draft tube, and provide cooling water to the generator bearings and air coolers. Also prevents the risk of an extended unit outage.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct - Dec 08	17,000
Contract Admin.	Jan – Mar 09	8,000
Installation Contract	Apr – Sep 09	246,000
S&A	Apr – Sep 09	15,000

Duration with/without Customer Funding: Item has been submitted through the Corps of Engineers' (COE) normal budget cycle and has not been funded due to budget constraints. Lack of available funding through COE channels appears to be getting worse. Customer funding would prevent the possibility of valve/strainer failures resulting in the inability to dewater or water up the spiral case and draft tube areas and provide cooling water to critical equipment (e.g. generator bearing and air coolers) throughout the power plant. Without customer funding, the risk of a valve or strainer failure will continue to increase and available generating capacity of 50 MW would be lost.

Estimated Losses in Revenue/Benefits/Risk Factor: Failure of the existing valves and strainers would adversely affect our ability to generate and perform the required inspection, maintenance and repair work of the generator-turbine unit. 50 MW of available generating capacity would also be lost until necessary repairs were made to the valves and strainers.

50 MW x 12 weeks x 5 days/week x 3 hours/day x $67/MWh ≈ $603,000

Summary of Funding Argument(s):

- Corps funding is not available.
- Increased unit reliability and availability.
- Loss of 50 MW of available generating capacity.
- Unscheduled outage time required for valve and strainer maintenance and repair/replacement work.
- Unable to dewater unit for inspection and maintenance work.

Photographs: None.

Funding Year 2009

Maintenance Data Sheet for Customer Funding

Hydropower Plant: Denison **Run of River** ____ **Storage** _X__
District: Tulsa
No. of Units:__2___ **Capacity of Units (MW)** 70 (84)
Estimated Average Annual Energy (MWh) (SWPA Annual Report) 219,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Sand blast, repair, and repaint draft tube gates, scroll case and intake gate hoists.

Reason for Item:

__X__Reliability
____Efficiency
____Safety
____Cost Savings
____Environmental
____ Forced Outage
__X__Preventive Maintenance
____Obsolete

History of Outages/Deficiency: The draft tube gate paint system is failing due to age which is leading to structural deterioration of the gates. The existing paint on the gates is vinyl. The bolts and seals on the gates are in poor condition and must be replaced as part of the project. Numerous areas on the surface of the gates are corroding where the paint system has failed. Deterioration will continue until the gates are repaired. The four draft tube gates are approximately 23 feet wide by 9 feet high. The scroll cases on both units are severely corroded due to coating system failure. The scroll cases must be sandblasted and recoated with an epoxy coating system to prolong the life of the equipment and improve unit efficiency.

Solution: Sand blast draft tube gates, make any required structural repairs, repaint with an acceptable paint system, and replace all seals and bolts on all of the gates. Sandblast and recoat the scroll cases on both main units.

Scope of Work: Prepare plans and specifications to rehabilitate draft tube gates and sandblast and paint scroll case.

Total Estimated Cost: $515,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 40 MW
2) Environmental Risk: none
3) Cost Savings: $2,000/year of O&M Cost
4) Other: None.

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Jan 09 – May 09	15,000
Procurement	Jun 09 - Aug 09	10,000
Contract	Sep 09 - May 10	490,000

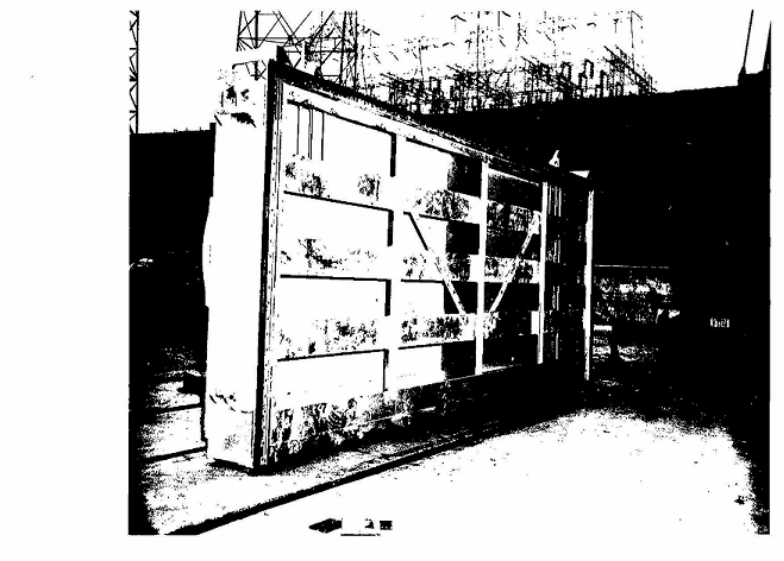
Duration with/without Customer Funding: Without customer funding, the draft tube gates will continue to deteriorate to a point where structural components of gates will become affected which will increase cost and increase time of eventual repair outage. The scroll cases are currently in poor condition and will continue to deteriorate without the proposed work. With customer funding, the gates and cases can be repaired and the probability of failures is greatly reduced.

Estimated Losses in Revenue/Benefits/Risk Factor: $2,000/yr average savings in O&M costs.

Summary of Funding Argument(s):

- Due to the condition and age of the gates and cases and their deteriorated condition, the availability of the equipment for operation may be impacted if the gates are not repaired.
- Delay in maintenance painting will possibly result in the need to replace structural members and lead to increased repair costs.

Photographs:



Draft Tube Gate

Scroll Case

Scroll Case

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: RS Kerr **Run of River** _X_ **Storage** ___
District: Tulsa
No. of Units: 4 **Capacity of Units (MW) (Overload)** 110 (126)
Estimated Average Annual Energy (MWh) (SWPA Annual Report) 459,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Replace the existing 13.8 KV generator and station service air circuit breakers.

Reason for Item:

X Reliability	____ Environmental
____ Efficiency	____ Forced Outage
____ Safety	X Preventative Maintenance
____ Cost Savings	X Obsolete

History of Outages/Deficiency: The generator and station service breakers are original equipment nearly 40 years old. Replacement parts are difficult to obtain and the maintenance on the existing breakers is significantly more maintenance than new breakers would require. Moisture contamination of the arc chutes is a continual problem. Failure of a breaker to operate properly could possibly lead to loss of generation and major damage to one or more generating unit.

Solution: Replace the air circuit breakers with new vacuum circuit breakers.

Scope of Work: Purchase and install new 13.8 KV breakers for 4 generators and 2 station service feeders.

Total Estimated Cost: $350,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 27 MW (per unit)
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None.

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Oct 08 - Dec 08	30,000
Procurement	Jan 09- Mar 09	10,000
Contract	Mar 09 – Jan 10	310,000

Duration with/without Customer Funding: Without customer funding, the breakers will remain in service, but with increased inspection and maintenance until funding is available. Federal funds are not anticipated for the next 3 years.

Estimated Losses in Revenue/Benefits/Risk Factor: Possible loss in the availability of one unit (27 MW) for one month.

27 MW x 4 weeks x 5 days/wk x 6 hrs/day x $67/Mwh ≈ $217,000

Summary of Funding Argument(s):

- Major damage to the generating units is possible if breakers fail to respond in a timely manner to a sudden failure.
- An extended outage of one month is possible, to repair or replace damage equipment.
- Reduced circuit breaker maintenance required for new vacuum bottle circuit breakers. Existing breakers continue to be problematic because of atmospheric moisture contamination of the arc chutes.

Photographs: None.

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Keystone **Run of River** ____ **Storage** _X_
District: Tulsa
No. of Units: _2_ **Capacity of Units (MW) (Overload)** 70 (80)
Estimated Average Annual Energy (MWh) (**SWPA Annual Report)** 228,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Sand blast and paint intake gates, replace seals, replace chains, cables, replace cathodic protection anodes and control panel.

Reason for Item:

_X_Reliability	____Environmental
____Efficiency	____ Forced Outage
____Safety	_X_Preventive Maintenance
____Cost Savings	____Obsolete

History of Outages/Deficiency: The four power intake gates were last sand blasted and painted in 1981. The existing paint on the gates is vinyl. The roller chains have pitted rollers and several of the keepers on the pins have failed. In recent years, several rollers have cracked and were replaced. The cathodic protection anodes are in need of replacement. Numerous areas on the surface of the gates are corroding where the paint system has failed. Deterioration will continue until the gates are repaired. Each penstock (turbine) has two intake gates that are approximately 16 feet wide by 32 feet in length. The control panel is the original equipment supplied when the powerhouse was built. Some components are obsolete and replacement parts are not available.

Solution: Sand blast power intake gates, repaint with vinyl paint system, replace all roller chains, cables, replace seals, anodes and control panels on all four power gates.

Scope of Work: Prepare the plans and specifications to rehabilitate the four power intake gates and contract for their rehabilitation.

Total Estimated Cost: $450,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 35 MW
2) Environmental Risk: None
3) Cost Savings: $2,000/year of O&M Cost
4) Other: None

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Jan 09 – Apr 09	15,000
Procurement	May 09 - Jul 09	10,000
Contract	Apr 09 – May 10	425,000

Duration with/without Customer Funding: Without customer funding, the power intake gates will continue to deteriorate to a point where structural components of gates will become affected which will increase cost and increase time of eventual repair outage. Also an increased chance of roller chain failure in an emergency condition will also exist. These gates are used for emergency closure of the water intake to the turbines and the generators cannot be operated without operational intake gates. With customer funding, the gates can be repaired and the probability of gate failing to close or open when needed is greatly reduced.

Estimated Losses in Revenue/Benefits/Risk Factor: $2,000/yr average savings in O&M costs. Intake gate failure could result in:

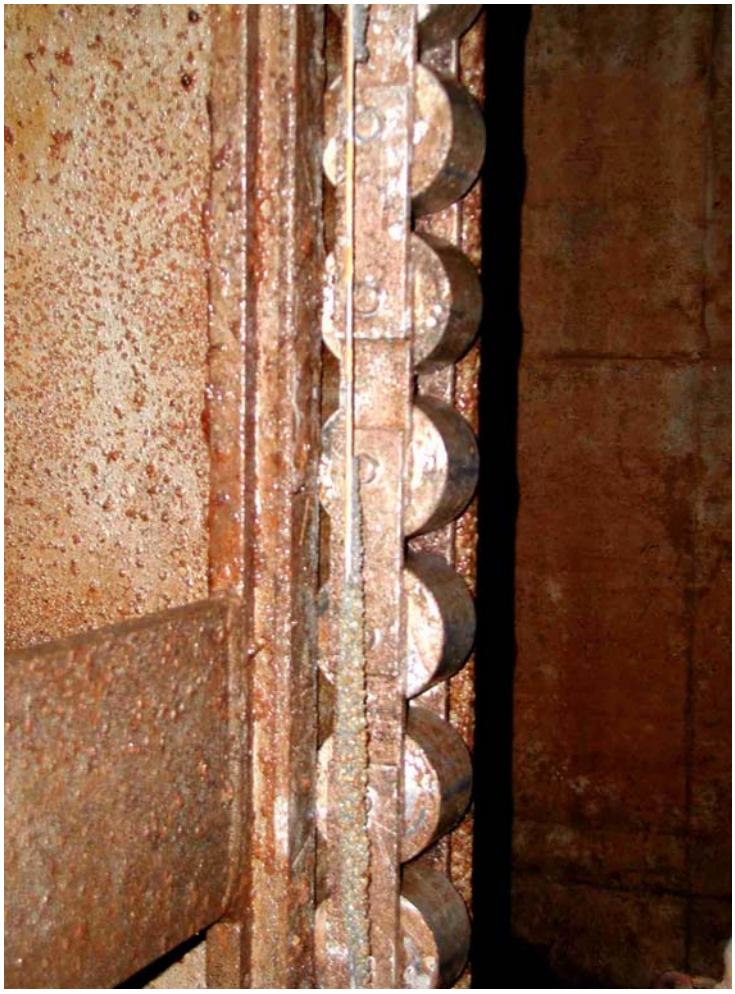
35MW x 2wk x 5 days/wk x 6 hrs/day x $67/MWh ≈ $141,000

Summary of Funding Argument(s):

- Due to the condition and age of the gates and roller chains and their deteriorated condition, the availability of the gates for operation may be impacted if the gates are not repaired.
- Delay in maintenance painting will possibly result in the need to replace structural members and lead to increased repair costs.

Photographs:

VIEW OF RUST ON STRUCTURE OF ROLLER GATE



VIEW OF RUST AND DETERIORATED ROLLER CHAINS

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Norfork **Run of River**_____ **Storage** __X__
District: Little Rock
No. of Units: __2___ **Capacity of Units (MW) (Overload)** _80 (92) MW

Estimated Average Annual (MWH) (SWPA Annual Report) 184,000 MWh

Current Status of Project: The project has both units available for operation. The generators were placed in service in 1944 and 1950.

Item Proposed for Customer Funding: Rehabilitate station sump system and associated piping.

Reason for Item:

__X__Reliability
_____Efficiency
_____Safety
_____Cost Savings
_____Environmental
_____Forced Outage
_____Preventative Maintenance
_____Obsolete

History of Outages/Deficiency: Existing equipment is beyond its normal life expectancy and in need of replacement. There are leaks and the piping is corroded.

Solution: Rehabilitate station sump system and associated piping.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work and contract for the purchase and installation of the new equipment.

Total Estimated Cost: $350,000

Cost/Impacts if Item Not Funded:
1) Megawatts and Energy at Risk: 80 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
Design Phase	Oct 08 – Apr 09	50,000
Procurement	Jun 09	15,000
Construction	Sept 09 – Jun 10	285,000

Duration with/without Customer Funding: O&M funding not available for the foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: If the station sump were to fail then flooding of the powerplant could occur (depending on if the failure occurred when the plant was unmanned). Powerplant flooding would result in millions of dollars of damage to the electrical generating equipment and cause an extended outage of the plant.

Summary of Funding Argument(s):

- Corps funding is not available at this time
- Increased reliability
- Timely repair with minimal interruption of service
- Repair will reduced likelihood of major failure

Photographs: None.

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Ozark **Run of River**___X__ **Storage** ___
District: Little Rock
No. of Units: __5___ **Capacity of Units (MW) (Overload)** _100 (115) MW

Estimated Average Annual (MWH) (SWPA Annual Report) 429,000 MWh

Current Status of Project: Four of five Units in operation. Unit 4 cracked at the shaft flange connection and will be unavailable for generation until the turbine is replaced.

Item Proposed for Customer Funding: Ozark Power Plant HVAC system.

Reason for Item:

__X__Reliability	_____Environmental
__X__Efficiency	_____Forced Outage
____Safety	__X__Preventative Maintenance
__X__Cost Savings	__X__Obsolete

History of Outages/Deficiency: The current system is becoming unreliable and replacement parts are no longer manufactured for most of the equipment. The temperature inside the turbine bay can exceed 120 degrees F during the summer months which will cause problems with the new exciter electronics that are being installed as part of the major rehabilitation.

Solution: Replace the HVAC system for all levels of the plant.

Scope of Work: Contract the procurement and replacement of the HVAC system for all levels of the power plant.

Total Estimated Cost: $500,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 20 MW
2) Environmental Risk: None
3) Cost Savings: The continual maintenance and upkeep of an obsolete system.
4) Other: None

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
E&D	Oct 08 – Apr 09	50,000
Procurement	Apr 09 – May 10	10,000
Contract	Jun 10 – Dec 10	440,000

Duration with/without Customer Funding: O&M funds not available for foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: Loss of service for respective unit for time period necessary to replace failed electrical equipment due to overheating caused by poor climate control. Estimated loss of service would 3 months.

20 MW x 12 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $482,000

Summary of Funding Argument(s):

- Corps funding is not available at this time.
- Increased reliability of electrical components.
- Increased ventilation.

Photographs:

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Stockton **Run of River**_____ **Storage** __X__
District: Kansas City
No. of Units: __1___ **Capacity of Units (MW) (Overload)** 45 (50) MW
Estimated Average Annual (MWH) (SWPA Annual Report) 47,000 MWh

Current Status of Project: Unit is currently available.

Item Proposed for Customer Funding: Retrofit governor with digital controls.

Reason for Item:

__X__ Reliability	_____ Environmental
__X__ Efficiency	_____ Forced Outage
_____ Safety	__X__ Preventative Maintenance
__X__ Cost Savings	__X__ Obsolete

History of Outages/Deficiency: The power plant has experienced unscheduled outages in recent years to replace worn or failed governor parts. The replacement of the governor's pilot valve and linkage assembly in 1999 ($10K Contract) is an example of one of the experienced unscheduled outages. The company who manufactured the governors is no longer in business and there is no source for replacement parts. Replacement parts require special manufacturing that result in high costs and long lead times. Unit stability has also been a problem during power generation (specifically at half and full loads). A digital governor retrofit would reduce governor maintenance costs, increase unit reliability, provide more consistent unit response, and improve unit stability.

Solution: Replace existing governor control mechanism with new digital programmable controls and electro-hydraulic valves.

Scope of Work: Perform E&D, prepare plans and specifications, and advertise/award a contract to retrofit existing governor with digital controls.

Total Estimate Costs: $456,000

Cost/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: Loss of 50 MW of available generating capacity.
2) Environmental: N/A.
3) Cost Savings: Reduced governor maintenance and repair costs.
4) Other: Prevents the risk of an extended unit outage. Improves unit response and stability.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
E&D	Oct 08 - Mar 09	50,000
P&S	Apr - Sep 09	40,000
Contract Admin.	Oct 09 – Mar 10	10,000
Governor Upgrade Contract	Apr – Sep 10	336,000
S&A (Approx. 6%)	Apr – Sep 10	20,000

Duration with/without Customer Funding: Item has been submitted through the Corps of Engineers' (COE) normal budget cycle and has not been funded due to budget constraints. Lack of available funding through COE channels appears to be getting worse. Customer funding would prevent a loss of generating availability and reduce governor repair/maintenance costs. Governor repair and maintenance costs will continue to increase and unit reliability will decrease without customer funding.

Estimated Losses in Revenue/Benefits/Risk Factor: Generating unit becoming unavailable due to failure of the governor system. 50 MW of available generating capacity would be lost until necessary repairs were made to the governor.

$$50 \text{ MW} \times 16 \text{ weeks} \times 5 \text{ days/week} \times 3 \text{ hours/day} \times \$67/\text{MWh} \approx \$804{,}000$$

Summary of Funding Argument(s):

- Corps funding is not available.
- Increased unit reliability and availability.
- Loss of 50 MW of available generating capacity.
- Unscheduled outage time required for governor repair/replacement work.

Photographs: None.

Funding Year 2009

Maintenance Data Sheet for Customer Funding

Hydropower Plant: Tenkiller **Run of River** ____ **Storage** _X_
District: Tulsa
No. Of Units: __2_____ **Capacity of Units (MW) (Overload)** 39 (44)
Estimated Average Annual Energy (MWh) (SWPA Annual Report) 95,000

Current Status of Project: All units are currently available for service.

Item Proposed for Customer Funding: Replace the existing generator and transformer protective relays and upgrade control scheme to District standard.

Reason for Item:

__X__ Reliability	_____ Environmental
_____ Efficiency	_____ Forced Outage
_____ Safety	_____ Preventative Maintenance
__X__ Cost Savings	__X__ Obsolete

History of Outages/Deficiency: Microprocessor-based Protective Relays have been purchased for Tenkiller. The existing electromechanical relays do not have self-diagnostic features, so relay failure is only detected during annual maintenance. If an electro-mechanical relay fails, the protected equipment will have to be taken out of service until the relay is replaced. In addition, the control scheme at Tenkiller is different from the control scheme used at all other Tulsa District Hydropower Plants. The standard control scheme incorporates additional protective features and control capabilities that will enhance the operation of the Tenkiller Powerplant from the master powerplant. The main board panels and wiring will be modified along with the unit controls to incorporate the new protective relays so it would be cost beneficial to standardize the controls at the same time. Control automation using programmable controllers will also be accomplished to the maximum extent practical.

Solution: Replace the existing switchboard panels at Tenkiller with new panels that incorporate the microprocessor-based relays on hand. The solid state relays do not have to be tested annually, which will reduce maintenance costs. System redundancy will allow generation availability in case of a single relay failure. Control scheme standardization and automation will be incorporated into the new panels as well using PLCs and microprocessor based instrumentation where practical.

Scope of Work: Complete design work necessary to build and install new switchboard panels that incorporate the protective relays on hand for two generators, one station service, and one power transformer. Also purchase control and instrumentation components and Programmable Logic Controllers for

scheme standardization and incorporate into the new panels as well. Install new panels and controls with powerhouse maintenance personnel.

Total Estimated Cost: $200,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 20 MW
2) Environmental Risk: none
3) Cost Savings: $8,000/year of reduced O&M Cost
4) Other

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Jan 09 – Mar 09	25,000
Procurement	Apr 09 – Jun 09	5,000
Purchase Equipment	Jul 09 – Oct 09	160,000
Installation	Nov 09 – Feb 10	10,000

Duration with/without Customer Funding: Without customer funding, the existing relays will continue to provide protection, but their unreliability to detect abnormalities in the system remain. Federal funding is not anticipated in the next three years. The benefit of customer funding for this item is reduced maintenance and redundancy that will provide longer generation availability.

Estimated Losses in Revenue/Benefits/Risk Factor: $8,000/year savings in O&M costs. Maintenance requirement will be reduced from annual to 3-year interval with new relays. Automated controls will prevent forced outages and reduce maintenance call outs due to failure of antiquated control components.

Existing relays do not have self diagnostic features to indicate an internal relay failure and the settings fluctuate and are not repeatable. In addition, these relays do not have the same level of protection modern relays would provide. Because of this, failure of any protected equipment may not be sensed adequately resulting in additional damage, increase outage and/or upstream protection operation.

20 MW x 6 weeks x 5 days/week x 5 hours/day x $67/MWh ≈ $201,000

Summary of Funding Argument(s):

- Safety and reliability of the equipment is jeopardized by failure of the relays to detect and respond to critical alarms, resulting in loss of power generation capabilities.
- Possible loss of 20 MW of generating capacity.
- Probable extended outage time of six weeks due to failure of equipment.
- Standardization of control scheme will facilitate centralizing remote control at the RS Kerr powerhouse.
- The relays to be replaced were installed approximately 50 years ago. They require frequent maintenance and adjustments. Modern relays require less maintenance.

Photographs:

Protective Relays Panels

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Eufaula **Run of River**_____ **Storage** _X__
District: Tulsa
No. of Units: _3__ **Capacity of Units (MW) (Overload)** _90 (103) MW

Estimated Average Annual (MWH) (SWPA Annual Report) 260,000 MWh

Current Status of Project: The hydropower plant has three 30 MW generating units with Francis type turbines. The three units are in good condition and are available except during scheduled annual inspections and occasional short term forced outages.

Item Proposed for Customer Funding: Rehabilitate the unit penstocks.

Reason for Item:

_X__Reliability	____Environmental
_____Efficiency	_X__Forced Outage
_X__Safety	_X__Preventative Maintenance
_____Cost Savings	____Obsolete

History of Outages/Deficiency: The existing expansion joints on the penstocks have deteriorated with rust and corrosion. In addition the paint system on the penstock has failed. Deterioration will continue until rehabilitation is performed will increase the rate of water leakage, corrosion and metal loss.

Solution: Rehabilitate all three penstocks.

Scope of Work: Prepare specifications and drawings, contract for the rehab of the three penstocks

Total Estimated Cost: $325,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 30 MW per unit
2) Environmental Risk: None.
3) Cost Savings: None.
4) Other: None.

Work / Funding Timeline:

Activity Item	Time frame	Dollars
P&S	Jan 09 – Apr 09	20,000
Procurement	May 09 – Jul 09	5,000
Contract	Aug 09 – May 10	300,000

Duration with/without Customer Funding: Without Customer funding, the existing penstocks will continue to deteriorate eventually resulting in significant water leakage forcing a long term outage.

Estimated Losses in Revenue/Benefits/Risk Factor: Eventually unit will have to shutdown to repair damage to metal. This will require a 6 month outage to contract the work and repair the damage.

30 MW x 24 weeks x 5 days/week x 3 hours/day x $67/MWh ≈ $724,000

Summary of Funding Argument(s):

- Corps funding is not available.
- Increased unit reliability and availability.
- Unscheduled outage time required for valve and strainer maintenance and repair/replacement work.
- Unable to dewater unit for inspection.
- The hydropower unit will not be able to operate if significant water leakage through the penstock expansion joint forces the lowering of the head gates and the unwatering of the penstock.

Photographs:

Penstock Expansion Joint

Penstock Deterioration and Leakage

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Dardanelle **Run of River** X **Storage** ____
District: Little Rock
No. of Units: 4 **Capacity of Units (MW) (Overload)** 140 (140) MW
Estimated Average Annual (MWH) (SWPA Annual Report) 613,000 MWh

Current Status of Project: The project has all units available for operation. The generators were originally placed in service in 1965 and 1966. The major rehabilitation of the power plant was completed in August 2000.

Item Proposed for Customer Funding: Replace spiral case drain valves, headcover pumps, and associated equipment.

Reason for Item:

X Reliability	____ Environmental
____ Efficiency	____ Forced Outage
____ Safety	X Preventative Maintenance
X Cost Savings	X Obsolete

History of Outages/Deficiency: The spiral case drain valve flange/piping at the floor level is corroded also. The headcover pumps mechanical components have exceeded their anticipated life expectancy and electrical motors have been rebuilt on several occasions.

Solution: Replace the four spiral case drain valves with new valves, valve operators and associated equipment. The new valves will be constructed of corrosion resistant material, which can withstand the Arkansas River water.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work and contract for the purchase and installation of spiral case drain valves, gallery drainage and headcover pumps.

Total Estimated Cost: $350,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 35 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
E&D	Oct 08 – Jan 09	35,000
Pre-Procurement	Apr 09 – Jun 09	15,000
Construction	Jul 09 – Dec 09	300,000

Duration with/without Customer Funding: O&M funding not available for the foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: Failure of the gallery drainage, spiral case or headcover pumps would take a minimum of four weeks to purchase and install.

35 MW x 4 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $281,000

Summary of Funding Argument(s):

- Failure of a spiral case drain valve would not allow the unwatering of a unit for maintenance.
- Failure of a headcover pump would require the powerplant to operate for a limited time on the DC pump only.
- Increases unit reliability and availability.

Photographs:

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Bull Shoals **Run of River**_____ **Storage** __X__
District: Little Rock
No. of Units: __8___ **Capacity of Units (MW) (Overload)** _340 (391) MW
Estimated Average Annual (MWH) (SWPA Annual Report) 785,000 MWh

Current Status of Project: The project has seven of eight units available for operation (Unit 1 is out due to a failed oil insulated cable). The generators were placed in service in 1952, 1953, 1962, and 1963.

Item Proposed for Customer Funding: Replace neutral breakers for Unit 5, Unit 6, Unit 7 and Unit 8 with high impedance grounds.

Reason for Item:

__X__Reliability	_____Environmental
_____Efficiency	_____Forced Outage
____Safety	__X__Preventative Maintenance
_____Cost Savings	____Obsolete

History of Outages/Deficiency: The neutral breakers on Units 5 through 8 have had numerous failures with the mechanical operating mechanism. Units 1 through 4 have already been replaced with high impedance grounds.

Solution: Install new impedance ground system on units 5 through 8.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work, and contract for the purchase and installation of new components.

Total Estimated Cost: $400,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 45MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: None.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
Design Phase	Oct 08 – May 09	35,000
Procurement	June 09	10,000
Construction	Sep 09 – Jun 10	355,000

Duration with/without Customer Funding: O&M funds not available for the foreseeable future.

Estimated Losses in Revenue/Benefits/Risk Factor: In case of a failure that cannot be fixed 45 MW of capacity would be lost. Estimated forced outage time would be two weeks before replacement parts can be obtained and the breaker repaired.

45 MW x 2 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $181,000

Summary of Funding Argument(s):

- Corps funding is not available at this time.
- Increased unit reliability and availability.

Photographs: None.

Funding Year 2009

Information Data Sheet for Customer Funding

Hydropower Plant: Tenkiller **Run of River** ____ **Storage** _X_
District: Tulsa
No. Of Units: __2_____ **Capacity of Units (MW) (Overload)** 39 (44)
Estimated Average Annual Energy (MWh) (SWPA Annual Report) 95,000

Current Status of Project: Both units are currently available for service.

Item Proposed for Customer Funding: Paint surge tank exterior.

Reason for Item:

___X___Reliability	_____Environmental
_____Efficiency	_____Forced Outage
_____Safety	___X___Preventative Maintenance
_____Cost Savings	_____Obsolete

History of Outages/Deficiency: The existing paint system on the surge tank exterior has deteriorated and corrosion is occurring. The tank was previously painted in the 1980's. The tank is located well above the powerhouse roadway deck and is difficult to access with equipment**.** The surge tank is approximately 45 feet in diameter and 110 feet in height with surface area of approximately 15,550 square feet.

Solution: Sand blast corrosion on surge tank and paint exterior of the surge tank. An outage would be required for repainting the surge tanks due to condensation and moisture around the surge tank.

Scope of Work: Prepare the necessary specifications, drawings, and contract for the required materials and labor to accomplish the sandblasting and painting of the exterior of the surge tank.

Total Estimated Cost: $150,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 40 MW
2) Environmental Risk: None.
3) Cost Savings: None.
4) Other: None.

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Dec 08 – Mar 09	10,000
Procurement	Apr 09 – Jun 09	2,500
Contract	Jul 09 – Oct 09	137,500

Duration with/without Customer Funding: Without customer funding, the metal on the surge tank will continue to deteriorate to a point where structural steel of tank will become affected, possibly leaking or catastrophic failure. Delays in painting of the surge tank will only allow the rust and corrosion to increase, possibly requiring structural steel repairs.

Estimated Losses in Revenue/Benefits/Risk Factor:

40 MW x 4 weeks x 5 days/week x 5 hrs per day x $67/hr ≈ $268,000

Summary of Funding Argument(s):

- Failure to protect surge tank steel will lead to further deterioration and additional repair costs.

Photographs:

View of Surge Tank Corrosion