PROPOSED

FY 2008

NON-ROUTINE MAINTENANCE LIST

MAY 24, 2007

May 2007				Approved (Revised) FY07 List of Hydropower Work Packages for Integrated System																
					Totals		FY07		FY08		FY09		FY10		FY11		FY12				
District		SWPA Region Priority	Project Name	Work Package Description	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)	MW AT RISK	Estimated Economic Risk ($1,000)	Cost Savings ($1,000)
SWL-01		1	Ozark	FY 2007 Rehabilitation Funding	5,700	5,700	5,700	5,700											100		
SWF-01		2	Whitney	Turbine and Generator Rehabilitation			1,500	7,200											15		
NWK-01		3	Truman	Inspection and Repair of Draft Tube Bulkheads, Cylinder Hoists, and Liner and Cavitation Damage (FY 05 & FY 06 Consolidated Project)	6,105	11,805	1,045	8,245	505	505	1,100	1,100	565	565	1,000	1,000	500	500	30	965/unit	
MVK-01		4	Blakely Mountain	Rewind Units (FY 06 & FY 07 Budget)	9,000	20,805	4,500	12,745		505		1,100		565		1,000		500	39	4,441	
SWL-02		5	Little Rock District	Replace SCADA - To be Compatible with Centralized Control (FY 06 Project)	4,230	25,035	1,133	13,878	1,457	1,962	840	1,940		565		1,000		500	129	360	
SWT-01		6	Webbers Falls	Unit 3 Turbine Rehabiltiation	19,500	44,535	19,500	33,378		1,962		1,940		565		1,000		500	23		
SWT-02		7	Webbers Falls	Unit 2 Turbine Rehabiltiation	15,500	60,035	15,500	48,878		1,962		1,940		565		1,000		500	23		
SWT-03		8	Webbers Falls	Intake Crane and Draft Tube Crane Crane Rehabilitation	2,500	62,535	2,500	51,378		1,962		1,940		565		1,000		500	23		
MVK-02		0	DeGray	Rewind Units (FY 07 & FY 08 Budget) - Defered One Year	0	62,535	0	51,378		1,962		1,940		565		1,000		500	32	3,345	
SWL-03		9	Bull Shoals	Transformer Bus Duct Repair / Upgrade	350	62,885	350	51,728		1,962		1,940		565		1,000		500	45	233	
SWL-04		10	Bull Shoals	Replace Intake Gate Roller Chains and Intake Gate Painting	1,637	64,522	1,637	53,365		1,962		1,940		565		1,000		500	40	1,682	
MVK-02		11	DeGray	Transformer Oil Containment	330	64,852	330	53,695		1,962		1,940		565		1,000		500	68	5,125	
SWT-03		12	Broken Bow Lake	Downstream Warning System	100	64,952	100	53,795		1,962		1,940		565		1,000		500	50	508	
SWT-04		13	Eufaula Lake	Replace 13.8 KV Air Circuit Breakers	250	65,202	250	54,045		1,962		1,940		565		1,000		500	30	263	
SWL-05		14	Dardanelle	Emergency Distribution System and Generator Upgrade	500	65,702	500	54,545		1,962		1,940		565		1,000		500	160		
SWT-05		15	Broken Bow Lake	Replace Raw Water System, Butterfly Valve HPU, Repair Expansion Joints, Replace Fasteners on Bypass Valves, Grout Powerhouse Joints, Repair Penstock Drain Piping and Paint Penstock	750	66,452	750	55,295		1,962		1,940		565		1,000		500	50	146	
SWL-06		16	Bull Shoals	Replace Oil Insulated Cable System 161kV (FY 07 Revised Funding)	2,200	68,652	2,200	57,495		1,962		1,940		565		1,000		500	50	146	

May 2007

Proposed FY08 List of Hydropower Work Packages for Integrated System

District		SWPA Region Priority	Project Name	Work Package Description	Totals		FY08		FY09		FY10		FY11		FY12		FY13		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 08 Budget and FY 09 - FY 12 Work Plan)	84,000	84,000	17,300	17,300	11,700	11,700	10,000	10,000	10,000	10,000	10,000	10,000			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	505	17,805	1,100	12,800	565	10,565	1,000	11,000	500	10,500		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	1,457	19,262	840	13,640		10,565		11,000		10,500		0	129	360	
MVK-01		4	DeGray	Rewind Units (FY 08 Budget & FY 09 Work Plan)	9,000	103,335	4,500	23,762	4,500	18,140		10,565		11,000		10,500		0	32	3,345	
SWT-01		5	Webbers Falls	Unit 1 Turbine Rehabiltiation	15,500	118,835	15,500	39,262		18,140		10,565		11,000		10,500		0	23	4,808	
SWT-02		6	Webbers Falls	Generator Rewind	5,000	123,835	2,000	41,262	1,500	19,640	1,500	12,065		11,000		10,500		0	6	6,271	
SWT-03		7	Webbers Falls	Micillaneous Electrical & Mechanical Rehabilitaiton Work	3,500	127,335	500	41,762	1,500	21,140	1,500	13,565		11,000		10,500		0	25	1,508	
SWF-01		8	Whitney	Turbine and Generator Rehabilitation	22,000	149,335	4,300	46,062	5,250	26,390	5,550	19,115	3,600	14,600		10,500		0	30		
		9	To Be Determined	Transformer Oil Containment	350	149,685	350	46,412		26,390		19,115		14,600		10,500		0			
NWK-02		10	Stockton	Inspection of intake bulkheads, intake gates, draft tube bulkheads	200	149,885	200	46,612		26,390		19,115		14,600		10,500		0	50	804	
SWT-04		11	Keystone Lake	Replace Air Coolers, raw water strainers and Water Blast Cooling Water lines	325	150,210	325	46,937		26,390		19,115		14,600		10,500		0	35	141	
SWT-05		12	R.S. Kerr Lock And Dam	Replace cooling water piping and Air Coolers	650	150,860	650	47,587		26,390		19,115		14,600		10,500		0	27	163	
SWL-03		13	Table Rock	Station Service House Unit Governors & Wicket Gate Stem Bushings Rehabilitation	250	151,110	250	47,837		26,390		19,115		14,600		10,500		0	200	241	
SWL-04		14	Ozark	Emergency Electrical Distribution System	350	151,460	350	48,187		26,390		19,115		14,600		10,500		0	100	201	
MVS-01		15	Clarence Cannon Dam	HVAC System Replacement	120	151,580	120	48,307		26,390		19,115		14,600		10,500		0	58	498	
NWK-03		16	Stockton	Replace/Upgrade Emergency Deisel Generator & 480V Electrical Distribution Center	325	151,905	325	48,632		26,390		19,115		14,600		10,500		0	50	804	
MVS-02		17	Clarence Cannon Dam	Conversion of Power Plant Voltage Regulators including P&S.	250	152,155	250	48,882		26,390		19,115		14,600		10,500		0	58	997	
NWK-04		18	Stockton	Replace Intake Gate Cables	183	152,338	183	49,065		26,390		19,115		14,600		10,500		0	50	603	
SWT-06		19	Tulsa District Plants	Replace plant event recorder and annunciator system	400	152,738	400	49,465		26,390		19,115		14,600		10,500		0	505	322	
SWL-05		20	Norfork	Fire Detection System	300	153,038	300	49,765		26,390		19,115		14,600		10,500		0	80		

May 2007												
Proposed FY 08 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 08 Budget and 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	Unit 1 Turbine Rehabiltiation	X	X					X	X	23
SWT-02	6	Webbers Falls	Generator Rewind	X	X					X	X	6
SWT-03	7	Webbers Falls	Micillaneous Electrical & Mechanical Rehabilitaiton Work	X	X					X	X	25
SWF-01	8	Whitney	Turbine and Generator Rehabilitation	X	X					X	X	30
	9	To Be Determined	Transformer Oil Containment	X				X	X			
NWK-02	10	Stockton	Inspection of intake bulkheads, intake gates, draft tube bulkheads	X		X				X		50
SWT-04	11	Keystone Lake	Replace Air Coolers, raw water strainers and Water Blast Cooling Water lines	X	X					X		35
SWT-05	12	R.S. Kerr Lock And Dam	Replace cooling water piping and Air Coolers	X						X	X	27
SWL-03	13	Table Rock	Station Service House Unit Governors & Wicket Gate Stem Bushings Rehabilitation	X						X	X	200
SWL-04	14	Ozark	Emergency Electrical Distribution System	X						X	X	100
MVS-01	15	Clarence Cannon Dam	HVAC System Replacement	X	X			X		X	X	58
NWK-03	16	Stockton	Replace/Upgrade Emergency Deisel Generator & 480V Electrical Distribution Center	X			X			X	X	50
MVS-02	17	Clarence Cannon Dam	Conversion of Power Plant Voltage Regulators including P&S.	X			X			X	X	58
NWK-04	18	Stockton	Replace Intake Gate Cables	X			X			X	X	50
SWT-06	19	Tulsa District Plants	Replace plant event recorder and annunciator system	X						X		505
SWL-05	20	Norfork	Fire Detection System	X								80

Funding Year 2008

Information Data Sheet for Customer Funding

Hydropower Plant: Sam Rayburn **Run of River** ___ **Storage** __X_
District: Fort Worth
No. of Units: __2___ **Capacity of Units (MW) (Overload)** _52 (59) MW
Estimated Average Annual Energy (MWh) 114,000 MWh

Current Status of Project: Both units are in service.

Item Proposed for Customer Funding: Replacement of existing CO2 system. The existing CO2 system uses electrically activated powder charge firing heads to discharge the CO2 bottles to protect the generator units. The firing heads are no longer available and without sufficient spare parts the CO2 system can not be placed back in service once it has been activated. The generators can not be run without the protection the CO2 system offers.

Reason for Item: (Check All that Apply)

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

History of Outages/Deficiency: The existing CO2 system is the original system installed in the 1960's. Replacement parts are no longer available

Solution: Replace the existing CO2 system with a modern centralized storage tank and activation system.

Scope of Work: Prepare the necessary specifications, drawings, and contract to remove and replace the old CO2 system.

Total Estimated Cost: $270,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 52 MW

2) Environmental Risk: None
3) Cost Savings: None.
4) Other: None.

Work / Funding Timeline: (This timeline is the best case scenario for the repair with customer funding.)

Activity Item	Time frame	Dollars
P&S	Jan 08 - Mar 08	60,000
Procurement	Apr 08 – Jun 08	10,000
Construction	Oct 08 – Nov 08	200,000

Duration with/without Customer Funding: The Fort Worth District has not funded the work. If the normal Corps budget processes are used it will be a minimum of three years before funding could be obtained. Customer funding will permit timely replacement and increased reliability.

Estimated Losses in Revenue/Benefits/Risk Factor: The failure of the CO2 system would result in both units being unavailable until the CO2 system could be repaired.

52 MW x 6 weeks x 5 days/week x 4 hours/day x $67/MWh ≈ $418,000

Summary of Funding Argument(s):

- Corps funding is not available at this time
- The activation or failure of the CO2 system would result in a forced outage of both units.
- Increased Unit reliability and availability.

Photographs: None.

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: Turbine Rehabilitation of Unit 1.

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 turbine for Unit 1 is the original equipment installed when the powerhouse was built in 1973. The Webbers Falls Powerhouse Major Rehabilitation Report identified the turbines as an equipment item that needed to be replaced due to defective design that has led to numerous long-term outages. The turbine rehabilitation for Unit 3 and Unit 2 have been approved for funding by the customers for FY 07. Rehabilitating the Unit 1 turbine at Webbers Falls will complete the turbine rehabilitation work at the powerplant. The work can be accomplished by an award of a priced option under the Ozark turbine rehabilitation project.

Solution: Award the option to Rehabilitate the Turbine for Unit 1.

Scope of Work: Rehabilitate the Turbine for Unit 1.

Total Estimated Cost: $15,500,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 23 MW
2) Environmental Risk: N/A
3) Cost Savings: N/A
4) Other:N/A

Work / Funding Timeline:

Activity Item	Time frame	Dollars
Rehab Turbine for Unit 3	May 08 – May 11	$15,500,000

Duration with/without Customer Funding: Without customer funding, the Unit 1 will continue to operate until a major failure prevents the unit from being repaired. Delay in the rehabilitation of Unit 1 will result in the continued operation of Unit 1 that will be encumbered by frequent outages due to the poor design of the existing turbine. 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 turbine rehabilitation will be delayed until funds are available. Federal funds are not expected in the next 3 years.

23 MW x 104 weeks x 5 days/week x 6 hours/day x $67/MWh ≈ $4,808,000

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: 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 2008

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: Inspection of intake bulkheads, intake gates, and draft tube bulkheads

Reason for Item:

__X__Reliability	_____Environmental
_____Efficiency	_____Forced Outage
__X__Safety	__X__Preventative Maintenance
_____Cost Savings	_____Obsolete

History of Outages/Deficiency: Stockton Power Plant has three intake gates, intake bulkheads, and draft tube bulkheads that have been in service for over 33 years. The Corps of Engineers' (COE) Engineering Regulation (ER) 1110-2-8157, Responsibility for Hydraulic Steel Structures (HSS), 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 gates and bulkheads are structurally sound and safe to use before Government or Contractor personnel enter a dewatered area to perform maintenance or repair work. To assure compliance with the ER and provide safety for Government and/or Contractor personnel, a qualified engineer or certified inspector must inspect the gates and bulkheads, determine their safety and document the inspections. Structural and/or weld defects found during the inspections must be repaired before the gates and/or bulkheads can be certified for use.

Solution: Inspect the intake gates, intake bulkheads, and draft tube bulkheads in accordance with COE criteria outlined in ER 110-2-8157.

Scope of Work: Prepare plans and specifications and advertise/award a contract to inspect the intake gates, intake bulkheads, and draft tube bulkheads. Work will include visual inspection of all welds and documentation of the inspection results. The intake and draft tube bulkheads will be removed from their individual slots and the intake gates will be raised within the intake gate chamber for the inspections. A mobile crane will be required to remove and install the intake bulkheads. COE (Kansas City District) will be responsible for the developing plans and specifications, advertising/awarding the contract and providing contractor oversight during the inspections.

Total Estimated Costs: $200,000

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: N/A
4) Other: Unanticipated failure of gates or bulkheads could lead to the loss of life and/or property damage. Prevents extended unit outages.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct – Nov 07	20,000
Contract Admin.	Dec 07 – Jan 08	15,000
Gate and Bulkhead Inspection	Feb – Apr 08	140,000
S&A	Feb – Apr 08	25,000

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 gates or bulkheads resulting in loss of life or property, extended unit outages, and loss of available generating capacity (50 MW).

Estimated Losses in Revenue/Benefits/Risk Factor: All units becoming unavailable as the gates and/or bulkheads failed. 50 MW of available generating capacity would be lost until necessary repairs were made to the gates and/or bulkheads.

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

Summary of Funding Argument(s):

- Corps funding is not available.
- Possible loss of life and/or property if gate and/or bulkhead would fail.
- Increased unit reliability and availability.
- Extended unit outage times required for extensive repair work.
- Loss of 50 MW of available generating capacity.
- Unable to dewater unit for inspection and maintenance work.

Photographs: None.

Funding Year 2008

Maintenance 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: Water blast cooling water lines and replace generator air coolers and raw water strainers.

Reason for Item:

_X__Reliability
__X_Efficiency
____Safety
____Cost Savings
____Environmental
____Forced Outage
_X__Preventative Maintenance
____ Obsolete

History of Outages/Deficiency: The unit cooling water discharge line is a 3" line in which the internal diameter has been significantly reduced with mineral deposits. These deposits are reducing the cooling water flow and will ultimately reduce the unit output capacity because of over heating. These lines are imbedded in concrete. Inspection of the generator air coolers revealed the cast iron water box and end boxes to be deteriorating almost to the point of failure. The boxes were blast cleaned which revealed approximately 75% loss of the diverter partition on the end boxes. Interim actions were taken to delay failure and allow time to replace the coolers before a forced outage occurs**.** The raw water strainers have reached their service life and no longer function as designed. The bypass capability in the strainers has been lost and thereby prevents maintenance on the strainers without valving off the cooling water to the strainers and stopping cooling water flow to the units.

Solution: Replace the generator air coolers and raw water strainers. Contract to have the cooling water lines water blasted to remove internal deposits.

Scope of Work: Prepare plans and specifications for new generator air coolers and raw water strainers. Water blast the cooling water lines.

Total Estimated Cost: $325,000

Costs/Impacts if Item is 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
Plans & Specs	Jan 08 – Mar 08	5,000
Procurement	Apr 08 – Jun 08	5,000
Contract	Jan 09 – Mar 09	315,000

Duration with/without Customer Funding: Without customer funding, the units will continue to operate but with reduced capacity during summer, high ambient temperature, months. Delay in cooler replacement may result in failure which could spray water into generator resulting in winding failure. More accumulation of mineral deposits is expected which will continue to reduce the output capacity of the units.

Estimated Losses in Revenue/Benefits/Risk Factor:

Cooler failure could result in:

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

Summary of Funding Argument(s):

- Restoring cooling water flow rates will reduce operating temperatures and increase unit life.
- Restoring cooling water flow rates will allow overload capacity during summer months.
- Inability to operate in the overload condition without exceeding recommended temperatures on the stator winding. Operating at elevated temperatures has detrimental effect on the stator winding life. Probable forced outage due to physical failure of the existing coolers due to internal corrosion.
- Strainer replacement will allow maintenance activities to occur without stopping cooling water flow to the main units. This will ensure unit availability during long run periods when high flows are present in the Arkansas River.

Photographs:

Corroded Cooling Water Line

Raw Water Strainers

Funding Year 2008

Information Data Sheet for Customer Funding

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

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

Item Proposed for Customer Funding: Replace turbine vacuum breakers, associated piping, main cooling water system piping, pumps and valves.

Reason for Item: (Check All that Apply)

X Reliability	____Environmental
_____Efficiency	____Forced Outage
____Safety	X Preventive Maintenance
____Cost Savings	X Obsolete

History of Outages/Deficiency: The turbine vacuum breakers and local piping have deteriorated to the point where the piping occasionally leaks water. The four raw water strainers are used to filter the lake water before the water can enter the generators' coolers. The cooling water header piping, strainers, pumps, and valves have deteriorated.

Solution: Replace deteriorated cooling water piping system, pumps, and valves.

Scope of Work: Prepare the necessary specifications, drawings, and contract for the required materials and labor to accomplish the replacement of vacuum breaker piping, cooling water piping, pumps and valves.

Total Estimated Cost: $650,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 27 MW
2) Environmental Risk: none
3) Cost Savings:
4) Other:

Work / Funding Timeline:

Activity Item	Time frame	Dollars
P&S	Jan 08 – May 08	10,000
Procurement	June 08 – Sept 08	5,000
Contract	Sept 08 – April 09	$635,000

Duration with/without Customer Funding: Without customer funding, a forced hydropower unit outage due to a failure of the vacuum breaker piping, cooling water header piping, pumps, and valves could result in the unavailability of 27 MW per unit of electrical power.

Estimated Losses in Revenue/Benefits/Risk Factor:

27 MW x 3 weeks x 5 days/week x 6hrs/day x $67/MWh ≈ $163,000

Summary of Funding Argument(s):

- Due to the deteriorated condition of the vacuum breaker piping, cooling water header piping, pumps and valves, the reliability of the cooling systems for the generators will only decrease and the unavailability and reduced generating capacity of the hydropower generation units will increase if customer funding is not provided and the items are not replaced.

PHOTOGRAPHS:

Vacuum Breaker Piping

Main Cooling Water Piping

Funding Year 2008

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 original hydraulic governors with new governors and make repairs to wicket gate stems on the station service units.

Reason for Item:

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

History of Outages/Deficiency:

The station service units are the original equipment and they are in need of repairs to the wicket gate assembly and replacement of the outdated governor controls.

Solution: Replace station unit governors and repair wicket gate stems. Equipment is the original equipment and is about 50 years old.

Scope of Work: Purchase equipment and install by power plant personnel.

Total Estimated Cost: $250,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 200 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other:

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct 07 – May 08	35,000
Procurement (Equipment)	Jun 08	205,000
Installation	Sep 08 – Sep 09	10,000

Duration with/without Customer Funding: O&M funds not available for foreseeable future and needed repair work will not be completed without customer funding.

Estimated Losses in Revenue/Benefits/Risk Factor:

Failure of station service units will result in loss of power to critical components for all powerhouse generation units. Station service power also supplies electricity to the UPS which provides power to the to Southwestern's backup dispatch center. If a station service unit fail while the other station service unit is not available due to repair work, an outage of approximately 3 days would occur at the Table Rock powerhouse.

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:

Funding Year 2008

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)
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 Emergency Distribution system. Provide new emergency generator and redesign the existing emergency distribution system.

Reason for Item: (Check All that Apply)

__X__Reliability	_____Environmental
_____Efficiency	_____Forced Outage
____Safety	__X__Preventative Maintenance
____Cost Savings	__X__Obsolete

History of Outages/Deficiency: The existing emergency distribution system is approximately 35 years old and is shared between the lock and dam and powerhouse. The existing emergency generator is not sized to handle the powerhouse and lock and dam loads. There are three transformers (13800 volts, 4160 volts, and 480 volts) and 6 breakers/switches between the station service system in the plant and the emergency generator located at the lock, and the emergency distribution panels are not located in the power plant; therefore, the existing emergency power distribution system should be revised. There have been recent failures of the system which resulted in a blackout condition at the plant. When installed, the new emergency generator would support critical powerhouse equipment such as station sumps, provide for greater reliability to recover from a blackout condition, and support other essential powerhouse systems. Given the critical nature of the emergency distribution system, it is highly recommended to install a new emergency distribution system which would include new panels, 300 KW generator (for powerhouse only), revisions to emergency distribution system, and ancillary equipment for the system.

Solution: Redesign the emergency distribution system and install a new emergency generator for the powerhouse.

Scope of Work: Prepare the necessary equipment specifications, drawings and description of work and contract for the purchase and installation of an emergency generator and emergency distribution system changes.

Total Estimated Cost: $350,000

Cost/Impacts if Item Not Funded:

1) Megawatts and Energy at Risk: 100 MW
2) Environmental Risk: None
3) Cost Savings: The continual maintenance and upkeep of an obsolete system.
4) Other:

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct 07 – Mar 08	40,000
Procurement	Jun 08	14,000
Contract Cost	Jul 08	270,000
Construction	Sep 08 – Nov 08	26,000

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

Estimated Losses in Revenue/Benefits/Risk Factor: Failure of emergency generator system during a black out condition could result in the powerhouse being flooded in several hours. Millions of dollars of damage would result due to damage/destruction of sensitive electronic powerhouse equipment.

100 MW x 1 week x 5 days/week x 6 hours/day x $67/MWh ≈ $201,000

Summary of Funding Argument(s):

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

Photographs: None - No existing emergency generator at the power plant.

Funding Year 2008

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 MW (70)
Estimated Average Annual (MWH) (SWPA Annual Report) 90,000 MWh

Current Status of Project: Both units are operational.

Item Proposed for Customer Funding: Replacement of powerhouse HVAC system.

Reason for Item:

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

History of Outages/Deficiency: The existing HVAC system was manufactured by TRANE Corp. and has been in operation since 1984. Although operational, annual upkeep and maintenance the last two years has exceeded $10,000 per year. Compressor, plumbing system, and other components are at the end of their normal service life. Failure of either the heating or air conditioning component could result in control room and employee office area temperature extremes. Depending upon time of year, temperature extremes would result in over-heating of the control room area or refrigerator like temperatures in the employee office and main work area. Overheating and high humidity would result in failure of switches and relays resulting in non-operational status of both units.

Solution: Replace the existing HVAC system, compressor, heating unit, water system, controls, and miscellaneous parts. Existing ducts and duct controls and motors are in good condition and do not require replacement.

Scope of Work: Replacement of the existing HVAC system (interior components) at Clarence Cannon Power Plant. Work will include all labor for removal and disposal of the existing air conditioning unit, heating unit, fresh water plumbing, and controls. It will also include all parts and work necessary to install new compressor, heating unit, fresh water plumbing, and controls to properly heat and cool the Clarence Cannon Powerhouse.

Total Estimated Cost: $120,000 for engineering review, dismantle, removal, and installation of new HVAC unit.

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 58 MW
2) Environmental Risk: External risk is minimal. Interior air quality and temperatures could reach conditions unsafe for normal work.
3) Cost Savings: Loss of service for respective unit for time period necessary to replace system if failure occurs prior to replacement. Minimal loss of service would 4 to 5 months.

Work/Funding Timeline:

Activity Item	**Time Frame**	**Dollars**
P&S	Nov – Dec 07	15,000
Procurement	Jan – Mar 08	5,000
Installation	May – Jul 08	100,000

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 as only "highest priority" items nation wide receive funding through budget and ranking process. Funding through normal appropriations is not expected in the near future.

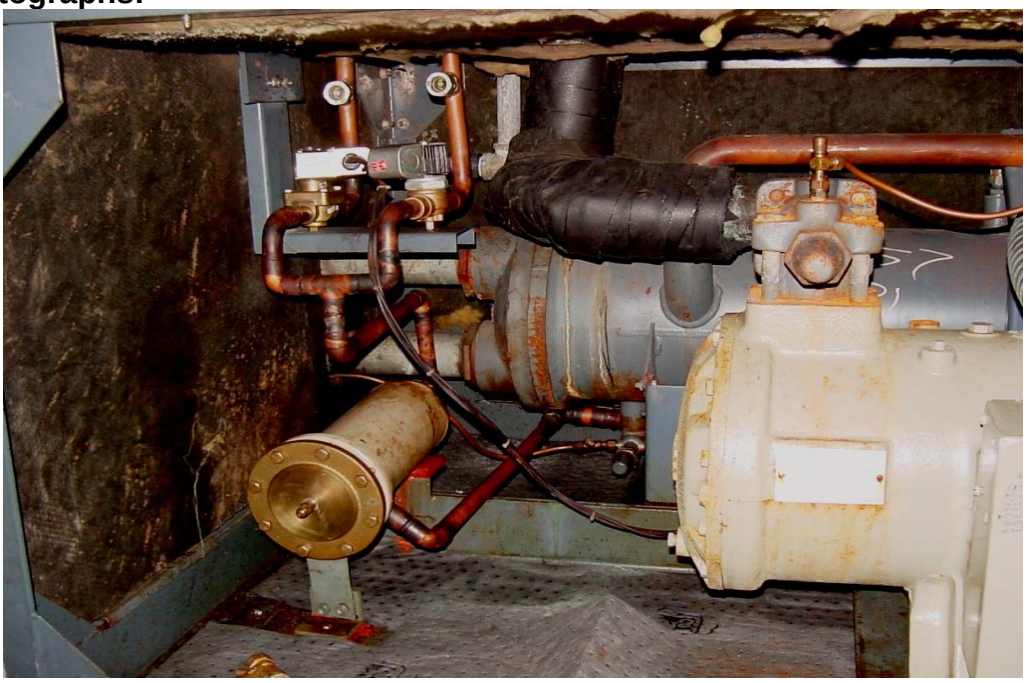
Estimated Losses in Revenue/Benefits/Risk Factor: Loss of service for respective unit for time period necessary to replace excitation system if failure occurs prior to replacement. Minimal loss of service would 4 months.

31 MW x 16 weeks x 5 days/week x 3 hours/day x \$67/MWh ≈ \$498,000

Summary of Funding Argument(s):

- Timely replacement of critical HVAC components will reduce forced outage duration.
- Avoidance of costly loss of service from unit.

Photographs:



Aged Compressor & Plumbing

Aged Controls

Funding Year 2008

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 Emergency Diesel Generator and 480-Volt Station Voltage System.

Reason for Item:

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

History of Outages/Deficiency: The Emergency Diesel Generator is over 34 years old and replacement parts are no longer available. The capacity and location of the existing generator is also a concern. The generator is barely adequate in keeping critical power plant equipment operational during a black out and power plant personnel must carefully monitor the load to avoid overloading the unit. The generator is located in the mechanics shop in an open area which creates a noise and air quality hazard. Power plant staff must wear hearing protection when the generator is running and there is the risk of carbon monoxide buildup inside the plant from exhaust leakage. The 480-Volt station voltage system comprises the 500kVA station service transformer (13.8 kV to 480 V), 480-Volt switchgear, plant lighting panels, and motor control centers. Added loading has resulted in dry-type transformer insulation discolorization, 480-Volt circuit breaker trip mechanism adjustment out of limits resulting in loss of tripping coordination, and lighting panel circuit breaker trip mechanisms are losing the ability to maintain adequate trip characteristics thereby producing nuisance tripping. Powerhouse personnel have difficulty resetting breakers when tripping occurs due to excessive wear of the switchgear's mechanical components. Resetting these breakers can take as long as 2 to 4 hours and delay the return of service of the generating unit. Direct drop-in panel circuit breaker replacements are no longer available and replacement parts are costly due to special manufacturing requirements. The system is over 34 years old and continues to require additional maintenance every year to keep it operational.

Solution: Procure and install new Emergency Diesel Generator and equipment to replace/upgrade the 500kVA station service transformer (13.8 kV to 480 V), 480-Volt switchgear, plant lighting panels, and motor control centers.

Scope of work: Prepare plans and specifications and advertise/award a contract for the procurement and installation of a new Emergency Diesel Generator and equipment to replace/upgrade the 480-Volt station voltage distribution system. The new emergency generator will be located outside of the powerhouse in an outdoor enclosure with a double wall base fuel tank which will eliminate the noise and air quality hazards inside the powerhouse.

Total Estimated Costs: $325,000

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 maintenance and repair costs.
4) Other: Prevents the risk of an extended unit outage. Unable to black start the unit or keep critical power plant systems operation during a black out.

Work/Funding Timeline:

Activity Item	**Time Frame**	**Dollars**
P&S	Oct – Dec 07	26,000
Contract Admin.	Jan – Mar 08	10,000
Procurement & Installation Contract	Apr – Sep 08	273,000
S&A (approx. 6%)	Apr – Sep 08	16,000

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 will permit timely procurement and installation of equipment and prevent costly repair/maintenance work and unit unavailability if these systems would fail.

Estimated Losses in Revenue/Benefits/Risk Factor: Generating unit becoming unavailable due to failure of the Emergency Diesel Generator and/or 480-Volt station voltage distribution system. 50 MW of available generating capacity would be lost until necessary repairs were made to these systems.

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

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 equipment repair/maintenance.
- Reduces noise and air quality hazards inside powerhouse.
- Unable to black start the unit and keep critical power plant systems operational during a black out.

Photographs: None.

Funding Year 2008

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 MW (70)
Estimated Average Annual (MWH) (SWPA Annual Report) 90,000 MWh

Current Status of Project: Both units are operational.

Item Proposed for Customer Funding: Replacement of excitation systems (voltage regulators).

Reason for Item:

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

History of Outages/Deficiency: The excitation system was manufactured by General Electric and has been in operation since 1984. Although operational, parts for the voltage regulators are no longer available from the company. Failure of any component would render the respective unit unavailable for a long period of time.

Solution: The solution to the problem is to replace the voltage regulators for the excitation systems for both units prior to mechanical/electrical failure.

Scope of Work: Replacement of voltage regulators for the excitation systems for both units at Clarence Cannon Power Plant. Work will include removal of the existing systems for both units, installation of new digital regulators in existing cabinets and all work necessary to integrate the electrical/mechanical interfaces and connections. As-builts and O&M instruction will also be required for the project.

Total Estimated Cost: $250,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 58 MW
2) Environmental Risk: Minimal
3) Cost Savings: Loss of service for respective unit for time period necessary to replace excitation system if failure occurs prior to replacement. Minimal loss of service would 8-10 months.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S and Quality Assurance (HDC)	Oct – Feb 08	70,000
Procurement	Feb – May 08	15,000
Contract and Installation	May – Dec 08	165,000

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 as only "high priority" items receive funding through budget and ranking process. Funding through normal appropriations is not expected in the near future.

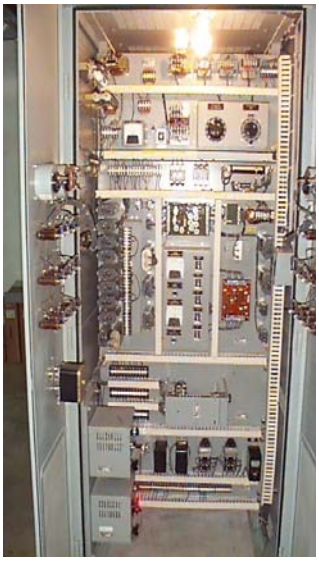
Estimated Losses in Revenue/Benefits/Risk Factor: Loss of service for respective unit for time period necessary to replace excitation system if failure occurs prior to replacement. Minimal loss of service would 8 months.

31 MW x 32 weeks x 5 days/week x 3 hours/day x $67/MWh ≈ $997,000

Summary of Funding Argument(s):

- Timely replacement of critical generation components.
- Avoidance of costly loss of service from unit.

Photograph(s):



Funding Year 2008

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 intake gate hoist cables (wire ropes).

Reason for Item:

__X__Reliability	_____Environmental
_____Efficiency	_____Forced Outage
_____Safety	__X__Preventative Maintenance
__X__Cost Savings	_____Obsolete

History of Outages/Deficiency: Stockton Power Plant has three intake gate hoists that have been in service for over 34 years. Corps of Engineers' (COE) criteria (EM 1119-2-3200, Wire Rope Selection Criteria for Gate Operating Devices) recommends that wire rope used on gate-operating devices be assumed to have a maximum service life of 20 years. The intake gate hoists' wire ropes have never been replaced and are beginning to show significant signs of wear. Therefore, it is recommended that the wire ropes be replaced in accordance with COE criteria before a failure occurs.

Solution: Replace wire ropes on the intake gate hoists.

Scope of Work: Prepare plans and specifications and advertise/award a contract to replace the wire ropes on the intake gate hoists. Work will include the removal of existing wire rope from each intake gate hoist, inspection of gate hoists, and installation of new wire ropes.

Total Estimated Costs: $183,000

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: Prevents risk of an extended unit outage and repair costs associated with a wire rope failure.
4) Other: Avoid possible equipment damage due to the loss of unit shutdown capability. Unable to dewater unit for inspection and maintenance work.

Work/Funding Timeline:

Activity Item	Time Frame	Dollars
P&S	Oct – Dec 07	12,000
Contract Admin.	Jan – Apr 08	8,000
Installation Contract	May – Sep 08	153,000
S&A	May – Sep 08	10,000

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 wire rope failure on the intake gate hoists, equipment damage, and loss of available generating capacity (50 MW).

Estimated Losses in Revenue/Benefits/Risk Factor: Generating unit becoming unavailable due to a wire rope failure on the intake gate hoists. 50 MW of available generating capacity would be lost until necessary repairs were made to the intake gates and hoists.

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

Summary of Funding Argument(s):

- Corps funding is not available.
- Increased unit reliability and availability.
- Intake gates' hoist cables have exceeded useful life based on COE criteria (EM 1119-2-3200, Wire Rope Selection Criteria for Gate Operating Devices).
- Unscheduled outage time required for intake hoist/gate repair/replacement work.
- Loss of 50 MW of available generating capacity.
- Unable to dewater unit for inspection and maintenance work.

Photographs: None.

Funding Year 2008

Maintenance Data Sheet for Customer Funding

Hydropower Plant: Tulsa District Plants **Run of River** _X__ **Storage** __X__
District: Tulsa
No. of Units: 22 **Capacity of Units (MW) (Overload)** 505 (580)
Estimated Average Annual Energy (MWh)(SWPA Annual Report) 1,794,000

Current Status of Projects: All units except Webbers Falls Unit 1 and Unit 3 are currently available for service.

Item Proposed for Customer Funding: Replace Powerplant Event Recording and Annunciation Systems.

Reason for Item:

__X__Reliability	____Environmental
____Efficiency	____Forced Outage
____Safety	__X__Preventive Maintenance
____Cost Savings	__X__Obsolete

History of Outages/Deficiency: The Powerplant one-millisecond event recording and annunciation systems were manufactured by Rochester Instrument Systems and were originally installed between 1996 and 1998. The systems are becoming unreliable and replacement parts are difficult to obtain. When parts are available, they are expensive. The one-millisecond resolution time-stamping of events that occur within the powerplant is required for accurate troubleshooting and determination of root causes of abnormal occurrences within the powerplant generation and power delivery systems. A complete failure of one of the existing systems could cause critical information to be lost and the failure of the annunciation system will result in the units being placed out of service. This information is crucial to the decision making process required for proper operation and maintenance of the District's hydroelectric generating facilities. Also, complete loss of the alarm/annunciation system would cause the generating units to be unavailable for generation.

Solution: Replace the RIS event recording systems with a more reliable and maintainable recording system with accurate one-millisecond time-stamping capability.

Scope of Work: Prepare the necessary specifications and drawings for the procurement of replacement event recording system. Installation, configuration, and programming will be accomplished with Hired Labor.

Total Estimated Cost: $400,000

Costs/Impacts if Item is Not Funded:

1) Megawatts and Energy at Risk: 505 MW
2) Environmental Risk: None
3) Cost Savings: None
4) Other: Loss of critical information required for proper powerplant operation.

Work / Funding Timeline:

Activity Item	Time frame	Dollars
E&D/P&S	Nov 07 – Jan 08	30,000
Procurement	Feb 08 – Mar 08	5,000
Contract	Apr 08 – Dec 08	365,000

Duration with/without Customer Funding: Without Customer funding, the event recording systems will not be replaced and the potential for loss of critical data will increase over time.

Estimated Losses in Revenue/Benefits/Risk Factor: Possible loss in availability of hydro-generating units in the event of a total failure of the existing system. Loss of a system at a single plant (i.e. Tenkiller):

40 MW x 4 weeks x 5 days/wk x 6 hrs/day x $67/Mwh ≈ $322,000

Summary of Funding Argument(s):

- The existing event recorders are obsolete and difficult to repair due to unavailability of spare parts.
- The loss of critical information in the event of a failure of the existing event recorder could lead to operational decisions that are not based on complete information.
- Unavailability of an alarm and annunciation system will cause the hydrogenerating units to be unavailable.

Photographs: None.

Funding Year 2008

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: All units currently available for service.

Item Proposed for Customer Funding: Install fire detection system at Norfork powerhouse.

Reason for Item:

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

History of Outages/Deficiency: Norfork does not currently have a fire detection system. One event where a fire is allowed to propagate could result in significant damage to the powerhouse.

Solution: Install fire detection system at the Norfork powerhouse.

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: $300,000

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
P&S	Oct 07 – May 08	20,000
Procurement	Jun 08	10,000
Construction	Sep 08 – Sep 09	270,000

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

Estimated Losses in Revenue/Benefits/Risk Factor: Norfork is a remote powerhouse that is occupied only 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. Norfork should have had a fire detection system installed when the plant was remoted.

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.