

PROPOSED

FY 2010

**NON-ROUTINE
MAINTENANCE
LIST**

JUNE 02, 2009

May 2009		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)													
SWL-01	1	Ozark	FY 2008 Rehabilitation Funding (FY 09 - FY 12 Work Plan)	94,000	94,000	17,300	17,300	23,000	23,000	14,000	14,000	2,300	2,300		0		0	100		
SWF-01	2	Whitney	Turbine and Generator Rehabilitation (FY 09 - FY 13 Work Plan)	22,700	116,700	5,130	22,430	6,000	29,000	4,000	18,000	1,670	3,970		0		0	30		
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	122,805	500	22,930	1,165	30,165	1,000	19,000	500	4,470		0		0	30	965/unit	
SWL-02	4	Little Rock District	Replace SCADA - To be Compatible with Centralized Control (FY 06 Project)	4,230	127,035	1,500	24,430		30,165		19,000		4,470		0		0	129	360	
MVK-01	5	DeGray	Rewind Units (2009 Recovery Act)	9,500	136,535	5,000	29,430		30,165		19,000		4,470		0		0	40	4,181	
SWT-01	6	Webbers Falls	Generator Rewind (FY 08 Project)	6,000	142,535	2,000	31,430	2,000	32,165		19,000		4,470		0		0	6	8,362	
SWT-02	7	Webbers Falls	Miscellaneous Electrical & Mechanical Rehabilitation Work (FY 08 Project)	4,000	146,535	1,000	32,430	2,000	34,165	500	19,500		4,470		0		0	6	2,508	
SWT-03	8	Broken Bow	Transformer Oil Containment	400	146,935	400	32,830		34,165		19,500		4,470		0		0	50	3,015	
SWT-04	9	Tenkiller	Transformer Oil Containment	400	147,335	400	33,230		34,165		19,500		4,470		0		0	19	1,176	
SWT -05	10	Webbers Falls	Intake Crane and Draft Tube Crane Rehabilitation (2009 Recovery Act)	4,000	151,335	1,500	34,730		34,165		19,500		4,470		0		0	69		
SWL-03	11	Bull Shoals	Replace Oil Insulated Cable Potheads Mod # 1	1,481	152,816	522	35,252		34,165		19,500		4,470							

Work/Funding Timeline: Rehabilitate Turbines 1 – 5 from May 2005 through May 2012 for \$94,000,000.

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):

- Rehabilitation will result in increased reliability.
- Timely repair with minimal interruption of service.
- Reduced likelihood of major failure.

Photographs: None.

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:

<u>Activity Item</u>	<u>Time frame</u>	<u>Dollars</u>
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	2,600,000

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.

Information Data Sheet for Customer Funding

Hydropower Plant: Harry S. Truman **Run of River** X **Storage**
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:

- | | |
|---------------------------|---------------------------------------|
| <u> X </u> Reliability | <u> X </u> Environmental |
| <u> </u> Efficiency | <u> </u> Forced Outage |
| <u> X </u> Safety | <u> X </u> Preventative Maintenance |
| <u> X </u> Cost Savings | <u> </u> Obsolete |
| <u> </u> NERC Compliance | |

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/repared 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 (FY 06 - \$1,390,000; FY07 - \$545,000; FY08 - \$1,005,000; FY09 - \$500,000; FY10 - \$1,165,000; FY11 - \$1,000,000; FY12 - \$500,000).

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:

<u>Activity Item</u>	<u>Time Frame</u>	<u>Dollars</u>
E&D, Protective Coating & Repair Alternatives	Feb – Aug 07	40,000
P&S, Cyl. Repair/Replacement	May 07 – Sep 08	30,000
Contract Admin. (Cyl. Repair)	Oct 08 – Nov 08	10,000
Cylinder Repair Contract	Dec 08 – Jul 11	3,060,000
S&A (Cyl. Repair)	Dec 08 – Jul 11	160,000
Bulkhead Inspection/Repair Work	Dec 08 – Jul 11	300,000
Anode Replacement	Dec 08 – Jul 11	30,000
P&S, Draft Tube/Turbine Painting	Jan – Jul 11	12,000
Contract Admin. (Paint Contract)	Aug - Oct 11	8,000
Cav. Repair/Blast & Paint 6 Units	Jan 11 – Sep 13	<u>2,455,000</u>
	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 \approx \$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:



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: 2 Units operational with the capability to run at 46 megawatts.

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

Reason for Item:

<input checked="" type="checkbox"/> Reliability	<input type="checkbox"/> Environmental
<input checked="" type="checkbox"/> Efficiency	<input type="checkbox"/> Forced Outage
<input type="checkbox"/> Safety	<input checked="" type="checkbox"/> Preventative Maintenance
<input type="checkbox"/> Cost Savings	<input checked="" type="checkbox"/> Obsolete
<input type="checkbox"/> NERC Compliance	

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: \$6,000,000 (FY08 - \$2,000,000; FY09 - \$2,000,000; and FY10 – \$2,000,000)

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:

<u>Activity Item</u>	<u>Time frame</u>	<u>Dollars</u>
Rewind Unit 3	Sept 08 – May 09	\$2,000,000
Rewind Unit 1	Sept 09 – May 10	\$2,000,000
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.

$$6 \text{ MW} \times 520 \text{ weeks} \times 5 \text{ days/week} \times 8 \text{ hours/day} \times \$67/\text{MWh} \approx \$8,362,000$$

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.

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: 2 Units operational with the capability to run at 46 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:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input type="checkbox"/> Forced Outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative Maintenance |
| <input type="checkbox"/> Cost Savings | <input checked="" type="checkbox"/> Obsolete |
| <input type="checkbox"/> NERC Compliance | |

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 failing; the electrical distribution centers have breakers that are not properly rated for the duty and the spare parts are 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. All of these items need replacement to complete the major rehabilitation at Webbers Falls. 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: 23 MW
- 2) Environmental Risk: N/A
- 3) Cost Savings: N/A
- 4) Other:N/A

Work / Funding Timeline:

<u>Activity Item</u>	<u>Time frame</u>	<u>Dollars</u>
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.

$$6 \text{ MW} \times 156 \text{ weeks} \times 5 \text{ days/week} \times 8 \text{ hours/day} \times \$67/\text{MWh} \approx \$2,508,000$$

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.

Information Data Sheet – Appropriated Funding

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

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

Item Proposed for Customer Funding: Replace 15kV Transformer Feeders.

Reason for Item:

<input checked="" type="checkbox"/> Reliability	<input type="checkbox"/> Environmental
<input type="checkbox"/> Efficiency	<input type="checkbox"/> Forced Outage
<input type="checkbox"/> Safety	<input checked="" type="checkbox"/> Preventative Maintenance
<input type="checkbox"/> Cost Savings	<input type="checkbox"/> Obsolete
<input type="checkbox"/> NERC Compliance	

History of Outages/Deficiency Original Cables were installed in 1962. Outer Jacket has started to crack. Spliced repairs were made approximately 10 years ago. Cables continue to degrade. All four units are installed in same cable tray system. Failure of one cable could result in the loss of all four units at the plant.

Solution: Install new 15kV feeders for all four units.

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: \$2,100,000

Cost/Impacts if Item Not Funded:

- 1) Megawatts and Energy at Risk: 140 MW, 44,800 MWh
- 2) Environmental Risk: None
- 3) Cost Savings: None
- 4) Other: None

Work/Funding Timeline:

<u>Activity Item</u>	<u>Time Frame</u>	<u>Dollars</u>
Design Phase	Jan 09-April 09	50,000
Procurement	June 09	15,000
Construction Cost	Sep 09 - Dec 09	2,035,000

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

Estimated Losses in Revenue/Benefits/Risk Factor: Failure of the existing 15kV feeder system would cause a forced outage of one unit for approximately 8 months.

$35 \text{ MW} \times 32 \text{ weeks} \times 5 \text{ days/week} \times 8 \text{ hours/day} \times \$67/\text{MWh} \approx \$3,000,000$

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.

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Blakely Mountain	Vicksburg	Storage	2	86.3	169

Current status of project: One Unit Available, One Unit being Rewound

Item funded by the Appropriation: Surge Tank /Power Tunnel Rehabilitaion.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Rehabilitate the Hydropower Surge Tank and Power tunel.

Total estimated cost: \$1,000,000

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Dardanelle	Little Rock	Run of River	4	140	613

Current status of project: Four units operational with the capability to run at 140 megawatts.

Item funded by the Appropriation: Fire Protection System

Reason for item (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Install a fire detection system at the project.

Total estimated cost: \$350,000

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Bull Shoals	Little Rock	Storage	12	391	785

Current status of project: Eight units operational with the capability to run at 391 megawatts.

Item funded by the Appropriation: Fire Protection System

Reason for item (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Install a fire detection system at the project.

Total estimated cost: \$350,000

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2010

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
DeGray	Vicksburg	Storage	2	78.2	97

Current status of project: Two generators operational with the capability to run at 78 megawatts.

Item funded by the 2010 Budget: Replace/Upgrade CO2 fire protection system.

Reason for item (check all that apply):

- Reliability
- Efficiency
- Safety
- Cost savings
- Environmental
- Forced outage
- Preventative maintenance
- Obsolete

Scope of work (brief description of the project): Prepare plans and specifications and advertise/award a contract to replace the power plants two CO2 fire protection systems. Work includes the installation of new firing heads, braided hoses, control valves and associated piping.

Total estimated cost: \$150,000

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2010

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Dardanelle	Little Rock	Run of River	4	140	613

Current status of project: Four generators operational with the capability to run at 140 megawatts.

Item funded by the 2010 Budget: Intake Crane Rehabilitation.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Rehabilitate the intake gate crane at the project.

Total estimated cost: \$1,500,000

Information Data Sheet for Customer Funding

Hydropower Plant: Fort Gibson

Run of River X **Storage** _____

District: Tulsa

No. of Units: 2

Capacity of Units (MW) (Overload) 45 (50)

Estimated Average Annual Energy (MWH) (SWPA Annual Report) 191,000

Current Status of Project: 4 generators operational with the capability to run at 45 megawatts.

Item Proposed for Customer Funding: Transformer Oil Containment.

Reason for Item:

X Reliability

X Environmental

_____ Efficiency

X Forced Outage

_____ Safety

_____ Preventative Maintenance

_____ Cost Savings

_____ Obsolete

_____ NERC Compliance

History of Outages/Deficiency: The transformers are 55 years old and new SPCC regulations require oil containment. If a transformer fails and oil is released into the tailrace, the environmental cleanup would impact the plant availability until cleanup has been completed. This project was identified to be funded in FY 2010 by the Transformer Oil Containment Work Group (TOCWG).

Solution: Construct oil containment.

Scope of Work: Produce plans and specifications for oil containment.

Total Estimated Cost: \$400,000

Costs/Impacts if Item is Not Funded:

- 1) Megawatts and Energy at Risk: 11 MW
- 2) Environmental Risk: Potential of an oil release.
- 3) Cost Savings: N/A
- 4) Other: N/A

Work / Funding Timeline:

<u>Activity Item</u>	<u>Time frame</u>	<u>Dollars</u>
E&D/P&S	Jan 10 – Apr 10	40,000
Procurement	May 10 – Aug 10	5,000
Contract	Sep 10 – May 11	355,000

Duration with/without Customer Funding: Customer funding would prevent possible extended outages, thereby increasing unit 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 case of a failure that cannot be controlled 11 MW of capacity could be lost. Estimated forced outage time would be about 30 weeks.

$$11 \text{ MW} \times 30 \text{ weeks} \times 5 \text{ days/week} \times 6 \text{ hours/day} \times \$67/\text{MWh} \approx \$663,000$$

Summary of Funding Argument(s):

- Reduced likelihood of an extended outage due to environmental remediation caused by a transformer failure.
- The TOCWG has reported that this project should be customer funded in FY 2010.

Photographs: None.

Information Data Sheet for Customer Funding

Hydropower Plant: Harry S. Truman **Run of River** X **Storage**
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: Oil Containment for Main Power Transformers

Reason for Item: (Check All that Apply)

<u> X </u> Reliability	<u> X </u> Environmental
<u> </u> Efficiency	<u> </u> Forced Outage
<u> </u> Safety	<u> </u> Preventative Maintenance
<u> </u> Cost Savings	<u> </u> Obsolete

History of Outages/Deficiency: Truman Power Plant has two main power transformers that each contains approximately 9,000 gallons of insulating oil. If one or both of the transformers would develop a significant oil leak or experience a catastrophic failure, the oil would be released into unit 1 draft tube bulkhead slot and tailrace water via the powerhouse drainage system. The release of oil into the water would result in a costly environmental cleanup and potential EPA and State environmental violations and fines. Spill plan regulations require facilities with oil filled equipment to have secondary containment or procedures established to prevent oil spills from reaching a waterway. A release of oil into the water would result in the plant becoming unavailable for power generation until cleanup operations were completed and/or repairs were made to the transformers. Installation of an oil containment system is required to become compliant with the spill plan regulations and prevent the release of oil into the draft tube bulkhead slot and/or tailrace downstream of the power plant.

Solution: Design and install an oil containment system.

Scope of Work: Design, prepare plans and specifications, and advertise/award a contract to install an oil containment system.

Total Estimated Cost: \$546,000

Costs/Impacts if Item is Not Funded:

- 1) Megawatts and Energy at Risk: Loss of 90 MW/transformer of available generating capacity (180 MW total for both transformers) until cleanup operations and transformer repairs were completed.
- 2) Environmental: High risk for the introduction of oil into the Lake of the Ozarks.
- 3) Cost Savings: Prevent environmental cleanup costs and potential fines.
- 4) Other: Prevents the risk of an extended unit outage.

Work / Funding Timeline:

<u>Activity Item</u>	<u>Time frame</u>	<u>Dollars</u>
E&D	Nov 09 – Jan 10	50,000
P&S	Feb – Apr 10	50,000
Contract Admin.	May – Jun 10	20,000
Installation Contract	Jul – Dec 10	400,000
S&A (approx. 6.5%)	Jul – Dec 10	26,000

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 costly environmental cleanups, extended unit outages, and potential EPA and State violations and fines. Without customer funding there will always be the risk of insulating oil entering the tailrace water resulting in environmental cleanup costs, unit unavailability, and potential violations and fines.

Estimated Losses in Revenue/Benefits/Risk Factor: Generating units becoming unavailable due to an oil spill from one or both of the main power transformers. 180 MW of available generating capacity would be lost until oil cleanup operations were completed. 90 MW of available generating capacity would be lost for one transformer. The estimated loss in revenue figure below assumes a catastrophic failure of a one transformer and extensive environmental cleanup work.

90 MW/transf x 20 weeks x 5 days/week x 3 hours/day x \$67/MWh \approx \$1,809,000/Xfmr

Summary of Funding Argument(s):

- Corps funding is not available.
- Loss of 90 MW/transformer of available generating capacity (180 MW total for two transformers).
- Increased unit reliability and availability.
- Decreases the risk of oil entering the tailrace water preventing costly environmental cleanup costs and fines.
- High potential for environmental pollution.
- Spillway erosion due to inability to generate.
- Dam Safety risk due to spillway erosion.

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Recover Failed Turbine Runner Blade

Reason for item (check all that apply):

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work includes underwater recovery of the failed turbine runner blade from the draft tube using divers. The blade must be recovered so it can be inspected, tested, and prepared for an in-place weld repair.

Total estimated cost: \$75,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Inspect and Repair the Intake Gates and Intake and Draft Tube Bulkheads

Reason for item (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input checked="" type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Inspect and repair the intake gates, intake bulkheads, and draft tube bulkheads in accordance with COE criteria outlined in ER 110-2-8157, Responsibility for Hydraulic Steel Structures (HSS). Work will include visual inspection of all welds, weld repair, and seal and anode replacement on each HSS. This work must be completed to allow dewatering of the draft tube, inspection of the turbine runner, and repairs of the failed turbine runner blade.

Total estimated cost: \$925,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Retrofit governor with digital controls

Reason for item (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input checked="" type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace existing governor control mechanism with new digital programmable controls and electro-hydraulic valves and install kidney loop filtration system. The new governor controls are required to ensure compatibility and optimum unit efficiency with the restored turbine runner.

Total estimated cost: \$1,500,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Replace Main Power Transformer

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input checked="" type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work includes replacement of the main power transformer (includes relocation of transformer to switchyard and oil containment system), buss system, excitation system, G/M vacuum breaker, etc.

Total estimated cost: \$9,000,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Repair/Replace Turbine

Reason for item (check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work includes the temporary in-place blade repair of the existing turbine runner, replacement of the turbine runner (design, model testing, manufacturing, installation, etc.), refurbishment of bearings, replacement of wicket gate bushings and lubrication system, etc.

Total estimated cost: \$17,475,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Generator Rewind

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work includes the installation of new stator coils and windings, Resistance Temperature Detectors (RTD's), Partial Discharge Analysis (PDA) system, generator coolers, etc. and required field testing.

Total estimated cost: \$5,000,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Stockton	Kansas City	Storage	1	52	55

Current status of project: Unit is currently unavailable

Item funded by the ARRA (Stimulus): Repair, Replacement, and Maintenance of Hydropower Equipment

Reason for item (check all that apply):

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work and equipment funded under this item includes (1) bucket truck replacement, (2) sewage treatment plant replacement, (3) CT tester, (4) high pressure washer, (5) horizontal and vertical band saws, etc.

Total estimated cost: \$205,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Harry S. Truman	Kansas City	Storage	6	184	244

Current status of project: All six units are currently available.

Item funded by the ARRA (Stimulus): Inspection/Repair of Hydraulic Steel Structures (HSS)

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input checked="" type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work includes the repair of deficient welds identified on intake bulkhead #3 in accordance with COE criteria outlined in ER 110-2-8157, Responsibility for Hydraulic Steel Structures (HSS).

Total estimated cost: \$50,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Harry S. Truman	Kansas City	Run of River	6	184	244

Current status of project: All six units are currently available.

Item funded by the ARRA (Stimulus): Repair, Replacement, and Maintenance of Hydropower Equipment

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Work and equipment funded under this item includes (1) mechanic shop lathe, (2) arc flash survey, (3) replacement of generator relays, (4) stake body truck, (5) rebuilding of governor pumps, (6) bridge crane load testing, etc.

Total estimated cost: \$415,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Beaver	Little Rock	Storage	2	128.8	172

Current status of project: Two units operational with the capability to run at 128 megawatts.

Item funded by the ARRA (Stimulus): Repair powerhouse roof.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace the powerhouse roof to protect the equipment from failure and reduce future maintenance costs.

Total estimated cost: \$1,000,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Beaver	Little Rock	Storage	2	128.8	172

Current status of project: Two units operational with the capability to run at 128 megawatts.

Item funded by the ARRA (Stimulus): Repair / replace intake gate roller chains.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace / repair intake roller chains at the project.

Total estimated cost: \$500,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Dardanelle	Little Rock	Run of River	4	140	613

Current status of project: Four units operational with the capability to run at 140 megawatts.

Item funded by the ARRA (Stimulus): Repair powerhouse roof.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace the powerhouse roof to protect the equipment from failure and reduce future maintenance costs.

Total estimated cost: \$700,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Dardanelle	Little Rock	Run of River	4	140	613

Current status of project: Four units operational with the capability to run at 140 megawatts.

Item funded by the ARRA (Stimulus): Replace the existing gearboxes in powerhouse.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace the existing gearboxes in powerhouse to reduce the risk of gate failure.

Total estimated cost: \$750,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Greers Ferry	Little Rock	Storage	2	110.4	189

Current status of project: Two units operational with the capability to run at 110 megawatts.

Item funded by the ARRA (Stimulus): Repair powerhouse roof.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace the powerhouse roof to protect the equipment from failure and reduce future maintenance costs.

Total estimated cost: \$1,000,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Ozark	Little Rock	Run of River	5	115	429

Current status of project: Three units operational with the capability to run at 69.0 megawatts.

Item funded by the ARRA (Stimulus): New Intake and Bulkhead Gates.

Reason for item (check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Procure new intake and bulkhead gates to reduce future maintenance costs and provide increased power plant availability.

Total estimated cost: \$2,000,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Table Rock	Little Rock	Storage	4	230	495

Current status of project: Four units operational with the capability to run at 230 megawatts.

Item funded by the ARRA (Stimulus): Replace Powerhouse roof.

Reason for item (check all that apply):

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replace the powerhouse roof to protect the equipment from failure and reduce future maintenance costs.

Total estimated cost: \$765,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Broken Bow	Tulsa	Storage	2	115	129

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Paint Surge tank

Reason for item (check all that apply):

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This paints the surge tank at Broken Bow

Total estimated cost: \$200,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Broken Bow	Tulsa	Storage	2	115	129

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Replace Butterfly control valve equipment

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This item deteriorated and obsolete equipment in the butterfly valve control cabinet

Total estimated cost: \$100,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Broken Bow	Tulsa	Storage	2	115	129

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Replace Penstock raw water piping

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This item replaces the degraded raw water piping in the powerhouse

Total estimated cost: \$850,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Denison	Tulsa	Storage	2	80.5	219

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Prepare plans and specs for Denison turbine replacement

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This funds the work to develop the plans and specifications to replace the turbine at Denison

Total estimated cost: \$400,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Eufaula	Tulsa	Storage	3	103.5	260

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Replace disconnects

Reason for item (check all that apply):

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This replaces the high voltage disconnects at Eufaula

Total estimated cost: \$100,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Fort Gibson	Tulsa	Run of River	4	50	191

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Replaces sump pumps and valves

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This replaces the unwatering and station drainage pumps and associated piping

Total estimated cost: \$300,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Keystone	Tulsa	Storage	2	80	228

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Replace Generator air coolers

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This replaces deteriorated generator air coolers at Keystone

Total estimated cost: \$350,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Robert S. Kerr	Tulsa	Run of River	4	126.5	459

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Replaces Automation equipment

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This upgrades the automation equipment at Kerr

Total estimated cost: \$200,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Robert S. Kerr	Tulsa	Run of River	4	126.5	459

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Rehab intake and draft tube gates

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This rehabilitates the deteriorated intake gates and the draft tube gates at Kerr

Total estimated cost: \$1,600,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Robert S. Kerr	Tulsa	Run of River	4	126.5	459

Current status of project: All units are operational

Item funded by the ARRA (Stimulus): Repair powerhouse road

Reason for item (check all that apply):

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This repairs the powerhouse access road at RS Kerr

Total estimated cost: \$100,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Webbers Falls	Tulsa	Run of River	3	69	213

Current status of project: Two units are operational

Item funded by the ARRA (Stimulus): Replace main power cables and electrical distribution equipment

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This replaces the main power cables for the generators and the motor control centers at Webbers Falls

Total estimated cost: \$1,500000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Webbers Falls	Tulsa	Run of River	3	69	213

Current status of project: Two units are operational

Item funded by the ARRA (Stimulus): Replace Generator circuit breakers

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): This replaces generator switchgear at Webbers Falls

Total estimated cost: \$500,000

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Blakely Mountain	Vicksburg	Storage	2	86.3	169

Current status of project: One Unit Available, One Unit being Rewound

Item funded by the Appropriation: Replace 115 KVA disconnect switch gear at power plant.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Replacement of the 115 KVA disconnect switch gear at the power plant will allow for the production of more efficient electricity.

Total estimated cost: \$350,000

APPROPRIATED FUNDING INFORMATION DATA SHEET

Funding Year: 2010

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
DeGray	Vicksburg	Storage	2	78.2	97

Current status of project: Two generators operational with the capability to run at 78 megawatts.

Item funded by the 2010 Budget: Unit # 2 Rewind.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input checked="" type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input checked="" type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Rewind Unit # 2.

Total estimated cost: \$5,000,000

AMERICAN RECOVERY AND REINVESTMENT ACT INFORMATION DATA SHEET

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Narrows	Vicksburg	Storage	3	29.3	30

Current status of project: Three units operational with the capability to run at 29 megawatts.

Item funded by the ARRA (Stimulus): Rehabilitate the main power transformer.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input checked="" type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Rehabilitate the main power transformer to reduce maintenance costs and increase efficiency.

Total estimated cost: \$400,000

**AMERICAN RECOVERY AND REINVESTMENT ACT
INFORMATION DATA SHEET**

Funding Year: 2009

Hydropower Plant	District	Type	# of Units	Overload Capacity MW	Average Annual Energy GWh
Narrows	Vicksburg	Storage	3	29.3	30

Current status of project: Three units operational with the capability to run at 29 meggawatts.

Item funded by the ARRA (Stimulus): Rehabilitate the oil containment and crane controls.

Reason for item (check all that apply):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Reliability | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Efficiency | <input type="checkbox"/> Forced outage |
| <input type="checkbox"/> Safety | <input checked="" type="checkbox"/> Preventative maintenance |
| <input type="checkbox"/> Cost savings | <input type="checkbox"/> Obsolete |

Scope of work (brief description of the project): Rehabilitate the oil containment and crane controls

Total estimated cost: \$400,000