

All Agency Project Request

2009 - 2011 Biennium

<u>Agency</u>	<u>Institution</u>	<u>Building No.</u>	<u>Building Name</u>
University of Wisconsin	Milwaukee	285-0B-1985	ENGINEERING-MATH-SCIENCE
<u>Project No.</u>	1011V	<u>Project Title</u>	EMS Emergency Generator Repl

Project Intent

This project replaces an obsolete emergency electrical generator serving building life-safety and critical building system equipment, and provides adequate emergency power to critical data center equipment and ancillary support systems.

Project Description

This project will install a new approximate 500 kW exterior pad mounted diesel generator just north of the dry coolers located adjacent to the northwest corner of the building. A new emergency feeder will be routed underground through the parking structure to the electrical room in the sub-basement. One new automatic transfer switch will be installed in the electrical room to serve the 480V and 208/120V critical building equipment loads (including storm and sanitary sump pumps). A second automatic transfer switch will be installed in a storage room adjacent to the data center. This storage room, which currently contains electrical panels and 480 - 208/120V transformers, will be converted to an electrical equipment room to house the new distribution equipment.

Four uninterruptible power supply (UPS) units serving the data center equipment and five computer room air conditioning units serving the data center will be connected to emergency power. There are one 80 kW and three 60 kW UPS units; and two 20-ton, two 15-ton, and one 10-ton computer room air conditioning units. The electrical distribution within the data center will be modified to serve these loads. The 480V distribution configuration that allows data center equipment to be served from either of the two 1500 kVA medium voltage building service transformers will be retained. A new 200A, 480V emergency riser with distribution panels on floors 7-12 will be installed in the EMS Tower.

The 1968 vintage 50 kW generator will be removed and the space converted to storage. The 1999 vintage 80 kW generator located in the parking structure generator room will be re-circuited to serve the building life-safety systems (including the fire alarm, egress lighting, and a 40 HP elevator serving floors 1-13). This generator currently supports one 60 kW UPS and other data center loads.

Project Justification

The 247,872 GSF Engineering and Mathematical Sciences (EMS) building was constructed in 1969. The building contains the College of Engineering and Applied Science, the Department of Mathematics, the campus computing facility, and an indoor parking structure.

The Division of Information & Media Technology administers the data center located in the east basement of the Engineering Math Sciences Building. This facility provides computing support for the university community on a 24 hours/day basis. It consists of mainframe computers, complex data communications networks, campus fiber ethernet networks, multiple departmental LANs, multiple Unix platforms, web servers, modem pools, and internet networking connections. It also provides direct data transfer links with the DoIT processing facilities at UW Madison and other state agencies. The data center is served by an 80 kW generator which can support a small portion of the equipment load but is not adequate to support the HVAC system. In an emergency, staff must manually shut down the computing equipment within an hour of a power outage to avoid damage to the equipment due to heat buildup. It is critical to have emergency power back-up so a power outage does not interrupt service to campus operations and activities of other governmental agencies.

The Fire Egress and Security Improvements project (09A1U) recommendations include connecting the building elevator to an emergency power source to comply with the current high-rise code. The 50 kW building generator does not have adequate capacity to support this additional load. The 50 kW emergency generator feeder is tapped in various locations to serve engineering research projects in the EMS tower. A new riser is needed to continue to support these emergency loads

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and provide emergency power for future loads in the research tower.

A/E Consultant Requirements

A/E Selection Required?

Consultants should have specific expertise and experience in the design and coordination of normal and emergency power distribution systems. Work includes site surveys, acquiring field data, and verifying as-built conditions to assure accurate development of design and bidding documents, and production of necessary design and bidding documents. Consultants should indicate specific projects from past experience (including size, cost, and completion date) in their letter of interest and when known, include proposed consulting partners and specialty consultants.

Commissioning

- Level 1
- Level 2

Project Budget

Construction Cost:		\$456,100	
Haz Mats:		\$0	
Construction Total:		\$456,100	
Contingency:	15%	\$68,400	
A/E Design Fees:	8%	\$36,500	
DFD Mgmt Fees:	4%	\$21,000	
Equipment/Other:		\$0	
		\$582,000	

Funding Source

GFSB - Facilities Maintenance & Renovation [Z060]	\$582,000
PRSB - <input type="checkbox"/>	\$0
Agency/Institution Cash <input type="checkbox"/>	\$0
Gifts	\$0
Grants	\$0
Building Trust Funds [BTF]	\$0
Other Funding Source	\$0
	\$582,000

Project Schedule

- SBC Approval: 10/2010
- A/E Selection: 11/2010
- Bid Opening: 04/2011
- Construction Start: 05/2011
- Substantial Completion: 08/2011
- Project Close Out: 12/2011

Project Contact

- Contact Name: Andrew C. Nelson
- Email: <acnelson@uwm.edu>
- Telephone No.: (414) 229-4013 x

Project Scope Consideration Checklist

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1. Will the building or area impacted by the project be occupied during construction? If yes, explain how the occupants will be accommodated during construction.

All project work will be coordinated through campus physical plant staff to minimize disruptions to daily operations and activities.
2. Is the project an extension of another authorized project? If so, provide the project #...
3. Are hazardous materials involved? If yes, what materials are involved and how will they be handled?

Hazardous materials abatement is not anticipated on this project. Comprehensive environmental survey inventory data is available on Wisconsin's Asbestos & Lead Management System (WALMS) <<http://walms.doa.state.wi.us/>>.

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4. Will the project impact the utility systems in the building and cause disruptions? If yes, to what extent?
- All project work will be coordinated through campus physical plant staff to minimize disruptions to daily operations and activities.
5. Will the project impact on the utility capacities supplying the building? If yes, to what extent?
6. Will the project impact the heating plant or the primary electrical system supplying the campus or institution? If yes, to what extent?
7. Have you identified the WEPA designation of the project...Type I, Type II, or Type III?
- Type III.
8. Is the project affected by historic status?
9. Are there any other issues affecting the cost or status of this project?
10. Will the construction work be limited to a particular season or window of opportunity? If yes, explain the limitations and provide proposed solution.
- Project work is limited to summer session. All project work will be coordinated through campus physical plant staff to minimize disruptions to daily operations and activities.