

TO: Personnel Board  
FROM: Susan J. Gafner, Human Resources  
DATE: July 6, 2016  
SUBJECT: Electronic Maintenance Technician → Control Systems Programmer

To meet changes in Water Utility needs, Water Utility General Manager, Thomas Heikkinen, along with the Water Supply Manager, Joe Demorett are seeking to delete the vacant Electronic Maintenance Technician (CG16/R17) position (#3235) and add a new Control Systems Programmer (CG18/R12) position to his staff. The recreated position will oversee the Water Utility process controls, instrumentation, and SCADA systems. This request was triggered by the systems becoming increasingly more complex and complicated over the last decade which now requires a specialist to perform the work. Based on my conversations with Mr. Heikkinen and Mr. Demorett along with a review of the submitted position description, I recommend that a new classification of Control Systems Programmer be created in CG18, Range 12, and that the vacant Electronic Maintenance Technician position be deleted and recreated as a Control Systems Programmer position in the Water Utility budget.

To initiate this process, Mr. Heikkinen has submitted a Position Description which describes:

*...responsible specialized professional work within the Water Supply Section of the Madison Water Utility (MWU). The position is primarily responsible for the development, implementation, maintenance, and modification of the Utility's process controls and instrumentation, complex real-time automated process information and control network (e.g. SCADA); site security/access systems; and other computer and electronic systems. This work is performed under the general direction of the Water Supply Manager and may involve supervision of lower-level employees on a project basis, and general leadership to lower-level staff. Employees will assist the Water Supply Manager and other Section Managers at the Water Utility on more complex assignments and perform system maintenance on a stand-by/emergency basis.*

Specific duties detailed in the position description include:

*Oversee the development, implementation, maintenance, and modification of MWU's process controls/instrumentation and real-time automated process information and control network.*

- *Manage and support the instrumentation and process control equipment utilized to pump water to MWU's distribution system including but not limited to pump controls, motor drives, relays, flow meters, pressure transmitters, floats, valve controllers, status indicators.*
- *Design, program, maintain, and update the Utility's Supervisory Control and Data Acquisition (SCADA) system including servers, clients, networks, workstations, remote sites, and a real time database. Administer all aspects of the software related to SCADA system.*
- *Manage and update the SCADA Master Plan. Assist management in establishing clear direction and goals for the system including recommending upgrades, setting standards for the design, security, and reliability of its facets, and reviewing new components for applicability and compatibility.*

- *Program, configure, and monitor the performance of MWU's Programmable Logic Controllers (PLCs) at 38 remote sites utilized to monitor and control well/pump station functions. Ensure reliable communications.*
- *Oversee the installation and configuration of network hardware and software: including: fiber optic lines, data radios, modems, network switches, routers, firewalls and other associated communications equipment, to insure reliability and security of SCADA communications.*
- *Develop and maintain Human Machine Interfaces (HMI) applications and programs using software associated with SCADA and site process and real time data collection.*
- *Ensure maximum reliability and uptime for the SCADA system 24/7 operation.*
- *Ensure MWU systems are safe from cyber attacks.*
- *Participate in long-range and short-term planning, developing, and implementing projects as required. Review plans and specifications for all new facilities that include SCADA and control equipment to ensure proper design and installation criteria are met.*
- *Coordinate and conduct user training, education and problem solving sessions to department personnel. Respond to user complaints and inquiries.*

*Work with Electronics Maintenance Technician on MWU's electronic and computer systems.*

*Administer Historian Data Base and reporting/trending software.*

*Administer MWU security/access control systems*

*Manage and oversee MWU video security system*

*Operate and maintain MWU's distribution system hydraulic model and the WGNHS Dane County hydrogeological model.*

This work is very different from the existing classification of Electronics Maintenance Technician. The class specification for the Electronics Maintenance Technician describes "...responsible technical mechanical electronics specialist work at the Madison Water Utility..." and specific duties include:

*Assist...in the development and maintenance of computerized telemetering system. Build, test, install and maintain remote computers. Construct, test, troubleshoot and modify central backup computer and switching circuits. Test data transmission equipment (modems, telephone lines, and amplifiers) by sending various frequencies across telephone lines and measuring decibel losses at the other end to ensure accurate transmission. Write and update, on an ongoing basis, maintenance manual and documentation to reflect changes and additions to system. Project future needs, control on-hand inventory for production, and advance order equipment required to maintain telemetry system and implementation process. Update computer programs. Service related electronic equipment. Establish and maintain good communications and rapport with vendors and management.*

*Assist ... in solving problems and development of preventive maintenance schedules. Assist in preparation of schematic diagrams for the installation of and modification of pumping and purification equipment and related work.*

*Maintain basic electron instrumentation of chlorinators, fluoridators, flow meters, switchgears, pumps, motors, venturi meters, transducers, metering equipment, valves, and related equipment.*

*Assist ... in ongoing maintenance of deepwell and booster pump systems and related equipment.*

*Assist in the maintenance and repair of chemical and leak detection devices; maintain fluoride and chloride concentration analyzers, spectrometers, and related equipment for use in analysis of water samples as required by law.*

*Install and maintain security systems in the Utility Main Office, Field Operations Center, unit wells and reservoirs, including all security systems designed to safely secure Utility property and to protect the delivery of a potable water supply to the public.*

It is clear that the Electronic Maintenance Technician provides assistance and support to higher level positions, which includes maintenance and repair of a computerized telemetering system and other instrumentation. However, the proposed Control Systems Programmer has professional-level responsibility for the development, implementation and maintenance of a complex real-time automated process information and control network (e.g. SCADA). As noted above, the proposed PD states the new position is "responsible for the development, implementation, maintenance, and modification of the Utility's process controls and instrumentation; complex real-time automated process information and control network; site security/access systems; and other computer and electronic systems," higher level work than that required by the Electronic Maintenance Technician. Most of the duties outlined above are not expected of someone in the Electronic Maintenance Technician classification. The deletion of the Electronic Maintenance position, along with the creation of a Control Systems Engineer position, allows the Water Utility to fulfill its service responsibilities of providing professional work within the Water Supply Section of the Madison Water Utility (MWU). It is important to note, however, that there will continue to be an Electronic Maintenance Technician who will assist this new position in maintaining the Utility systems.

The City does not currently have a classification that reflects the nature of the proposed work. The Water Utility has indicated that a candidate may have a background in computer or electrical engineering or computer science/programming. This is a unique skill set that is not reflected in other City classifications. However, review of a position description for a similar position within the Madison Metropolitan Sewerage District, Process Control System Programmer, identified similar duties and qualifications such as a minimum of an Associate Degree in Electrical Engineering or a related field of two years of Computer Engineering or Computer Science/Programming experience. I am recommending placement of the new position in CG18, Range 12, which would be comparable to an IT Specialist 4 or an Engineer 4. The position requires in-depth knowledge of complex systems, similar to an IT Specialist 4, and will be expected to perform high-level design work to implement systems, similar to an Engineer 4. However, the unique training and experience requirements and knowledge, skills, and abilities that are required justify a new classification. The range for this position is similar to the position at the Sewerage District.

After reviewing the submitted position description, I recommending creating a new classification of Control Systems Programmer in CG18, Range 12, and that the current vacant position of Electronic Maintenance Technician be deleted and recreated as a Control Systems Programmer in the Water Utility operating budget. It should also be noted that this upgrade will not only address technological advancements in the area, but will also minimize the financial impacts of hiring specialized contractors or consultants to conduct this work. I have prepared the necessary resolution to implement this recommendation.

Attachments

Compensation Group/Range	2016 Annual Minimum (Step 1)	2016 Annual Maximum (Step 5)	2016 Annual Maximum + 12% longevity
16/17	\$56,236	\$64,891	\$72,679
18/12	\$69,730	\$84,184	\$94,285

cc: Thomas Heikkinen – Water Utility General Manager  
 Joe Demorett – Water Supply Manager  
 Greg Leifer-Employee and Labor Relations Manager