

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: OCTOBER 27, 2025

SUBJECT: APPROVE PROFESSIONAL CONSULTANT SERVICES AGREEMENT WITH ABB, INC. OF CARY, NORTH CAROLINA TO PERFORM CONTROL SYSTEM UPGRADES AT THE CLEARWATER POWER PLANT IN THE AMOUNT OF \$1,640,971.17 AND APPROVE WORK ORDER NO. 2522296 IN THE AMOUNT OF \$1,430,486.17.

ISSUE:

Consider recommending approval of the Professional Consultant Services Agreement with ABB, Inc. of Cary, North Carolina to perform control system upgrades at the Clearwater Power Plant for \$1,640,971.17 and approval of Work Order No. 2522296 in the amount of \$1,430,486.17.

RECOMMENDATIONS:

That the Board of Public Utilities recommend that the City Council:

1. Approve the Professional Consultant Services Agreement with ABB, Inc. of Cary, North Carolina to perform control system upgrades at the Clearwater Power Plant for \$1,640,971.17; and
2. Authorize the City Manager, or designee, to execute the Professional Consultant Services Agreement with ABB, Inc., including the ability to make non-substantive changes.

That the Board of Public Utilities:

1. Approve Work Order No. 2522296 in the amount of \$1,430,486.17.

BACKGROUND:

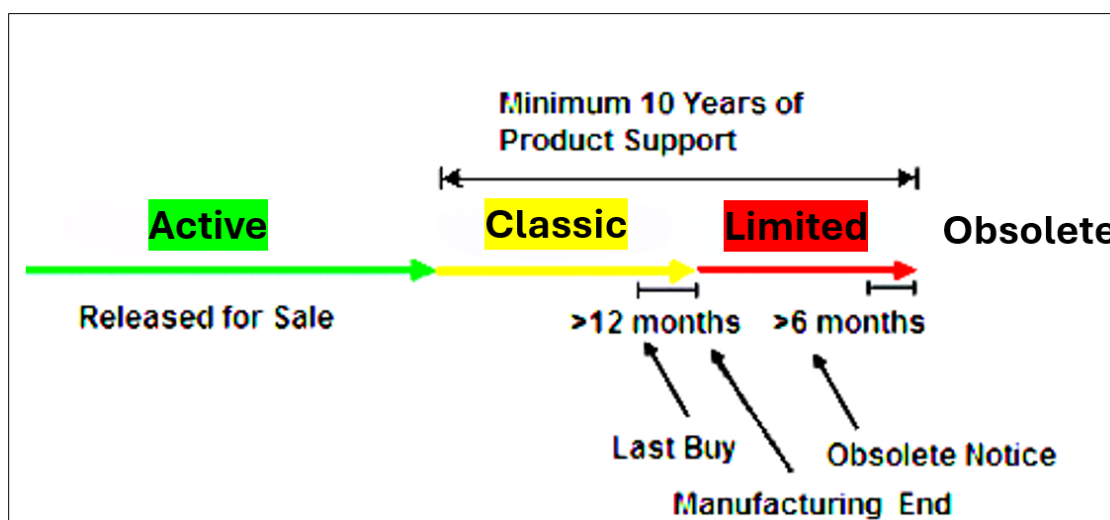
The Clearwater Power Plant (Clearwater) was first commissioned in 2005 and acquired by the City of Riverside in 2010. Clearwater is a combined cycle power plant that uses both gas and steam turbines together to produce electricity. The waste heat from the 22-megawatt gas turbine is captured and sent to the steam turbine to generate an additional 8-megawatts of electricity without requiring additional fuel. In total, Clearwater produces 30 megawatts of efficient power.

Clearwater's plant operations depend on a well-established Balance of Plant (BOP) control system, a proprietary product developed by ABB, Inc. (ABB) and implemented during the plant's original commissioning. This system is comprised of hardware and software components that are critical to key functions, including communication with the California Independent System

Operator (CAISO), emissions monitoring required by the South Coast Air Quality Management District (SCAQMD), and turbine operations. These functions depend on the BOP system's continuous reliability and full support.

In 2013, ABB performed a lifecycle assessment on the entire BOP control system, evaluating more than 250 components. Each component was categorized by color to indicate its current support status with ABB as outlined in Figure 1 below. The assessment classified several components as obsolete, prompting a recommendation to upgrade. However, since this occurred shortly after the plant's acquisition in 2010, a low-cost, minimal upgrade was implemented instead. This approach allowed staff to gain familiarity with the control system and apply strategies to extend its operational life.

Figure 1 - Lifecycle Status Assessment Categories



Lifecycle Status	Description
Active GREEN	Product Actively Marketed, Sold and Supported
Classic YELLOW	Product Sold and Supported; Newer Technology Product Available
Limited RED	Product Supported; not Actively Marketed and Sold
Obsolete BLACK	Best Effort Support Only

In November 2024, ABB conducted another lifecycle assessment to evaluate the status of the BOP control system and its viability through the forecasted retirement of Clearwater in 2040. The assessment revealed a substantial increase in components that are either obsolete or no longer supported, or manufactured, by ABB as shown in Figure 2 below. Due to the advanced age of these components and the growing difficulty in sourcing replacement parts, a control system upgrade at Clearwater is now strongly recommended.

Figure 2 – Current Lifecycle Assessment for Clearwater Power Plant

City of Riverside, Clearwater Cogen, Harmony System Overview					
Installed system description:		Lifecycle Status	Support Status	Comments	Recommendation (Priority to Evolve)
Operator Workstations	Symphony + Operations v2.0	BLACK Obsolete	YELLOW Evolution Recommended	Upgrade path is S+ Operations v3.3	1 to 3 years
Engineering Tools	Composer v6.1	BLACK Obsolete	YELLOW Evolution Recommended	Upgrade path is S+ Engineering v2.4. Also, SPE v2.4 is the prerequisite for supporting newest controllers and newest I/O	1 to 3 Years
Server Cabinet Power Supplies	INFI 90 Power System (MPS I)	BLACK Obsolete	YELLOW Evolution Recommended	Upgrade to PNI800, and replace MPS I with 24VDC DIN power supply	At same time as "Operation Workstations" upgrade and PN800 upgrade
PCU Cabinet Power Supplies	Symphony Modular Power System (MPSIII)	RED Limited	YELLOW Evolution Recommended	MPS IV is the latest power supply system. Consider upgrading at same time as upgrading to PN800/SPC810ev Some PCUs may change to remote I/O drops and the power supplies can be replaced with 24VDC DIN power supplies at a reduced cost to customer	1 to 3 Years
System Communication	INFINET – PCU and CIUs	BLACK Obsolete	YELLOW Evolution Recommended	PCU communication modules are removed/not needed when upgrading to PN800/SPC810ev. CIUs are replaced by PNI800.	1 to 3 Years
System Communication	INFINET – Ethernet CIU	YELLOW Classic	GREEN OK	Replaced by PNI800 when upgrading to PN800 Network/SPC810ev	1 to 5 Years
Controllers	INFI 90 Controllers (MFP)	BLACK Obsolete	YELLOW Evolution Recommended	The MFP controllers are replaced by SPC810ev in pairs. For FDI, use replaced MFP as spares until next step.	1 to 3 Years
Controllers	Bridge Controllers (BRC)	YELLOW Classic	GREEN OK	The BRC410 controllers are replaced by SPC810ev	1 to 5 Years
I/O	INFI90/ Symphony Rack I/O	RED Limited	GREEN OK	After controller upgrade to SPC810ev, SDev I/O modules are direct replacement of Rack I/O modules while maintaining same Termination Units/field wiring.	No Action Required
I/O	Inf90 Termination Units	GREEN Active	GREEN OK		No Action Required

DISCUSSION:

Clearwater's current BOP control system includes obsolete components and outdated software, many of which are no longer supported. The existing balance of plant control system at Clearwater is a proprietary product developed, manufactured, and installed by ABB at the commissioning of the plant in 2005. However, as the original equipment manufacturer, ABB can upgrade obsolete hardware and update software while reusing existing infrastructure, avoiding the substantial costs of replacing the entire control system. ABB has immediate access to compatible replacement parts and the proprietary knowledge needed to complete the upgrades efficiently with minimal integration risks. Their direct experience with the specific hardware and software ensures a timely, cost-efficient, reliable upgrade, minimizing downtime and maintaining the plant's ability to meet operational demands. Therefore, after evaluating all options, including a full system replacement, staff determined that upgrading the existing system offers the best balance of cost, compatibility, and operational continuity.

ABB initially proposed a \$2 million upgrade that focused on replacing outdated hardware and software while retaining functional infrastructure. Through continued negotiations, staff secured a revised scope and pricing, reducing the total cost to \$1,510,971.17, which includes a three-year software support agreement. The project has now been structured into three primary tasks:

- **Task 1 – S+ (Human-Machine Interface) HMI Software Upgrade**

The HMI (Human-Machine Interface) software is a central component that allows technicians to monitor and control power plant operations and processes. It works in conjunction with integral systems such as Supervisory Control and Data Acquisition SCADA and programmable logic controllers (PLCs) throughout the facility. This task involves upgrading outdated software, computer equipment, and operator workstations. Currently, the control system runs on Windows 7, and ABB will implement an engineering solution to bring it up to a modern, supported, and maintainable version.

- **Task 2 – (Distributed Control Systems) DCS Evolution**

As part of the control system infrastructure, six field cabinets support and facilitate the operation of various systems within the power plant. These cabinets have been in continuous use since 2005, and due to the lack of available spare parts, continued maintenance is no longer viable. More than 115 components within these cabinets are now obsolete and will be replaced as part of this upgrade.

To manage costs effectively, staff approached this task with two strategies. First, was to include the use of existing spare parts and salvaged components from the upgrade process, avoiding waste, and minimizing capital expenditures. Second, was that the work will be divided into three phases, allowing the project team to negotiate more favorable pricing based on the full scope of work. Together, these strategies resulted in a total cost reduction of \$164,000.

- **Task 3 – Three-Year Software License Agreement**

Maintaining active software licenses is essential for receiving updates and ensuring the continued reliability of the control system. Following negotiations, staff recommend a three-year software license agreement that reduces the overall project cost by \$230,000,

effectively offsetting its own expense. The agreement also provides ongoing benefits, including regular software updates, security patches, unlimited technical support, and access to future vendor discounts.

Staff anticipate completing the controls upgrade project within two weeks of initiation. This timeline requires careful coordination of generation unit outages, post-upgrade testing, and overall project management. To ensure success of this project, prompt decisions and approvals will be essential, particularly if unforeseen issues arise during the installation. Any delays will increase costs and prolong the non-operational period at Clearwater.

To protect against such delays, the agreement with ABB includes a 10% contingency option for the software and hardware upgrades (not including the software licensing) as a precaution for any unanticipated circumstances that could occur during the installation and commissioning of the new upgraded control system. The contingency is included in the agreement in order to avoid administrative and procedural delays in processing and executing an amendment to the agreement. Processing an amendment can take up to 30 days to complete and cause work to cease until the amendment is fully executed – during which time Clearwater would be unable to operate and generate electricity.

The inclusion of a contingency is a precaution only and will allow approval of reasonable unexpected changes in the work scope during the installation and commissioning of the new upgraded control system. ABB is not guaranteed payment of the 10% contingency. The 10% contingency will only be used with Riverside's prior approval. If not used, the funds remain within the Public Utilities Electric Capital Account.

Project and Fiscal Breakdown:

Controls Upgrade Project and Fiscal Breakdown - Work Order No. 2522296		
Work Type	Performed By:	Amount (\$)
S+ HMI Software Upgrade	ABB, Inc.	\$525,499.17
DCS Evolution Upgrade	ABB, Inc.	\$774,987.00
<i>Upgrades Subtotal</i>		<i>\$1,300,486.17</i>
10% Contingency		\$130,000.00
Work Order Total:		\$1,430,486.17

Three-Year Software License Agreement		
Contract Year	Performed By:	Amount (\$)
Year 1	ABB, Inc.	\$66,768.00
Year 2	ABB, Inc.	\$70,106.00
Year 3	ABB, Inc.	\$73,611.00
Total:		\$210,485.00

Purchasing Resolution No. 24101, Section 702(c) states "Competitive procurement through the Informal Procurement or Formal procurement process shall not be required: When the procurement can only be obtained timely from a sole source and the Manager is satisfied that the best price, terms and conditions for the Procurement thereof have been negotiated."

The Purchasing Manager concurs that the recommended actions are in compliance with Purchasing Resolution No. 24101.

FISCAL IMPACT:

The total fiscal impact is \$1,640,971.17. Sufficient funds in the amount of \$1,430,486.17 are available in the Public Utilities Capital – Generating Station Account No. 6130100-470627. The remaining funds of \$210,485.00 will be budgeted as shown in the following table below. For Fiscal Year 2025/26, sufficient funds of \$66,768.00 are available in the Public Utilities Clearwater Maintenance Generating Plant Account No. 6120140-424131. Future years funding will be included as part of the biennial budgeting process for the term of this agreement.

Fiscal Year	Contract Year	Total
FY 2025/26	Year 1	\$66,768.00
FY 2026/27	Year 2	\$70,106.00
FY 2027/28	Year 3	\$73,611.00
	3-Year Total	\$210,485.00

Prepared by: Scott Lesch, Utilities Assistant General Manager/Power Resources
 Approved by: David A. Garcia, Utilities General Manager
 Certified as to availability of funds: Kristie Thomas, Finance Director/Assistant Chief Financial Officer
 Approved by: Rafael Guzman, Assistant City Manager
 Approved as to form: Rebecca McKee-Reimbold, Interim City Attorney

Attachments:

1. Professional Consultant Services Agreement with ABB, Inc.
2. Sole Source Justification
3. Presentation