



# City of Homer

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## Public Works

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## Memorandum 21-169

TO: Mayor Castner and Homer City Council  
Through: Robert Dumouchel, City Manager  
FROM: Janette Keiser, PE, Public Works Director  
DATE: September 13, 2021  
SUBJECT: CMMS Software Part 2 - Capital Planning

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**Summary:** The purpose of this memorandum is to request authorization to award a contract to acquire the Capital Planning component of a Computerized Maintenance Management System (CMMS) software for Public Works. A CMMS is software designed to track and monitor preventive maintenance of most Public Works assets, such as heavy equipment and rolling stock as well as mechanical and electrical equipment. The upgrade of CMMS software was approved in the FY 22 Capital Budget.

Part 1 of the CMMS software is the Asset Management component, which tracks the condition of individual pieces of rolling stock as well as individual pieces of electrical/mechanical equipment. This is addressed in a separate memorandum.

Part 2 of the CMMS software is the Capital Planning component, which takes that information and predicts which systems are likely to experience failure and thus, need focused repair and replacement. This is the subject procurement.

The AK Department of Environmental Conservation recently notified us that the City will be awarded a \$75,000 Principal Forgiveness Subsidy for Sustainable Infrastructure Planning Projects (SIPP). The CMMS Software Project is a qualifying project.

**Background:** Asset Management software tracks preventative maintenance of equipment by individual pieces of equipment. Capital Planning software allows utilities to monitor the health of their equipment and other assets by systems, not just the condition of individual pieces of equipment. For example, the blowers are two individual pieces of equipment at the Waste Water Treatment Plant (WWTP). Asset Management software tracks these blowers as individual pieces of equipment. The "aeration system" includes these blowers as well as the network of piping, electrical lines and other assets, which are part of the aeration process. Capital Planning software monitors the aeration system, as well as the other electrical/mechanical systems in the waste water process, as systems.

Monitoring the health of systems enables a utility to make more effective data-based decisions about when to repair or replace the systems. For example, a capital planning program provides a data-driven means of determining whether it would more cost effective to continue repairing a particular asset than to replace it.

Capital Planning software predicts the likelihood systems will fail and helps utilities plan for repair and replacement before failure occurs.

We identified three software programs, which were designed for this type of predictive capital planning: Capital Predictor, Cartegraph and a custom program offered by HDR Engineering, Inc. Here is a summary of their features and benefits:

- a. **Capital Predictor** is a dedicated capital planning program developed by Dude Solutions and designed to run alongside their CMMS program, Asset Essentials. Capital Predictor's functionality was exactly what we were looking for. It uses maintenance cost data, collected through Asset Essentials, to predict future maintenance costs. This would enable us to predict when future maintenance costs would likely exceed the cost of replacing the equipment and reduce the likelihood of failure. Capital Predictor also features a funding prioritization system, in which a single report identifies the best way to spend a particular budget.

However, Capital Predictor is expensive, costing \$15,000 for the initial implementation and training and \$7,495 for the annual subscription fee. Plus, the typical escalation for annual subscription fees is 10-15% per year so after 10 years of using the software, the subscription fee would be significantly more than \$7,495.

- b. **Cartegraph** functions as both a CMMS program for processing work orders and equipment cataloguing as well as a capital planning program. The capital planning portion of Cartegraph is called Scenario Builder, which has the ability to predict future expenses, like Capital Predictor, and significant capabilities for project management. Cartegraph does not have the ability to create condition reports on larger systems within the utility's treatment plants. Further, Cartegraph is expensive, costing \$21,000 - \$24,000 for the initial training and implementation and the annual subscription fee starting at \$6,500.

- c. **Customized software by HDR Engineering, Inc. (HDR).** While we were researching the off-the-shelf options, we had the occasion to talk with Eric Packer, an engineer with HDR who is working with us on the Utility Financial Policies. Eric told us about work he had done with the Eagle River waste water treatment plant, owned by the Municipality of Anchorage. They were facing the same issue Homer is facing – how to get the information they needed to make data-based decisions about repairs and replacements. After researching their options, much as we did, they decided to get the simplest asset management software they could find and then, commission HDR to write a customized program to address their particular needs for capital planning. We asked HDR to submit a proposal for doing something similar for Homer. The proposal describes how they would develop methodologies to determine (a) the likelihood of failure (LOF) and (b) the consequence of failure (COF) for each asset, and electrical/mechanical system, in the City's water/sewer utilities.

The product would be an Excel spreadsheet with an aggregate risk matrix for each asset based on the likelihood and consequence of failure for that asset. HDR's product would address Homer's particular needs. While the up-front cost is higher, the long term cost would be less than the off-the shelf options because there would be no on-going, annual subscription fee. We already have a Term Contract with HDR Engineering. We would issue a Task Order for this work.

Here is a summary of the costs:

<b>Product</b>	<b>Initial Cost</b>	<b>Annual Subscription Fee</b>
Capital Predictor	\$15,000	\$7,495 +10-15% escalation
Cartegraph	\$21,000-\$24,000	\$6,500+
Custom product by HDR	\$42,623	none

**Conclusion:** The differences in annual subscription fees, over time, are a key, primary differentiator between the products. For example, while Capital Predictor’s initial cost is \$27,623 less than the HDR’s customized product that difference gets eaten up by Capital Predictor’s annual subscription fee in 4 years and every year thereafter. A customized solution guarantees that we get the functionality we need, which is suited to our particular purposes, and saves money in subscription fees over the long term. With this in mind, the lowest responsive, responsible solution for Capital Planning software, considering both functionality and cost over the long term, is the customized option, provided by HDR.

**Recommendation:** That the City Council do the following:

- (1) Award a Task Order to HDR Engineering, Inc. to produce customized Capital Planning software for the Public Works Department for the Not-to-Exceed cost of \$42,623.
- (2) Dedicate a portion of the ADEC Principal Forgiveness Subsidy to this project.