

**Master City of San José Consultant Agreement
Amendment to Approved Service Order – RWF Capital Projects
Cover Page**

1a. CPMS Contract No.: 7995 1b. Master Agreement AC No.: 27587

2. First Second Third Fourth Amendment to Approved Service Order No. 3

3. Consultant's Name: Black & Veatch Corporation ("Consultant")

Project Name: Energy Management Strategic Plan Update ("Project")

Amendment Description: This fourth amendment to Service Order No. 3 extends the completion date for Tasks 1 and 8.

4. The above-referenced Approved Service Order is amended as follows:

a. **Budget/Fiscal:** The original Budget/Fiscal information in Section 7 of the Approved Service Order First Revised Budget/Fiscal Attachment Second Revised Budget/Fiscal Attachment is amended to read as set forth in the attached First Second Third Revised Budget/Fiscal Attachment.

b. **Tasks – Attachment A:** The original First Revised Second Third Revised Attachment A is amended to read as set forth in the attached First Second Third Fourth Revised Attachment A.

c. **Terms and Conditions – Attachment B:** The original First Revised Second Revised Attachment B is amended to read as set forth in the attached First Second Third Revised Attachment B.

d. **Compensation Table – Attachment C:** The original First Revised Second Revised Attachment C is amended to read as set forth in the attached First Second Third Revised Attachment C.

5. Each of the attachments to this amendment is incorporated herein by reference and supersedes in its entirety any corresponding attachment to the original Approved Service Order and any amendments thereto.

6. Consultant Approval: *Craig W. Lichty* Date: Apr 27, 2022

7. Approval as to Form (City Attorney):

Approved Service Order Amendment Form Approved by the Office of the City Attorney

(There are no material changes to the provisions of the Approved Service Order Amendment Form.)

Approved as to Form:

(Sr.) Dept. City Attorney: _____ Date: _____

8. City Director Approval: *Napp Fukuda* Date: Apr 28, 2022
Napp Fukuda (Apr 28, 2022 12:28 PDT)

First Second Third **Fourth Revised Attachment A: Tasks**

This Revised Attachment A is attached to the First Second Third Fourth amendment to Approved Service Order No. 3 issued pursuant to the Master Agreement having the above-referenced CPMS Contract No..

The original Attachment A, including any exhibits thereto, is deleted in its entirety and replaced by the following:

The Consultant shall provide all services and deliverables required by this **Attachment A** to the satisfaction of the City's Contract Manager.

General Description of Project for which Consultant will Provide Services:

As part of the preparation of the Plant Master Plan ("PMP"), in 2009, the City of San José ("City") retained the Consultant to perform a heat balance study for the San José-Santa Clara Regional Wastewater Facility ("RWF"). The scope of the study included developing an interactive energy model. Subsequently, in 2012, the Consultant was tasked to prepare an Energy Management Strategic Plan ("EMSP"). The EMSP was developed to further assess the energy system of the RWF. The report provided a detailed analysis of the existing energy system, evaluated ongoing and future plans that could impact the energy system, and developed an energy management plan to meet short-term and long-term objectives of the RWF.

Since 2012, a number of conditions have changed that impact the generation and consumption of energy at the RWF. These changes include:

- the installation of internal combustion engines instead of gas turbines for the new Cogeneration Facility;
- the availability and cost of landfill gas;
- the discontinued operation of a fuel cell;
- the rate of growth of RWF electricity demand;
- consideration of cap and trade regulations;
- the deferral of implementing a Fats, Oils and Grease ("FOG") program and its associated capital improvements at the RWF;
- the conversion of engine driven blowers to electric motor driven blowers, and
- the rate of production of digester gas.

Given these and other changes, it is now appropriate for the energy system to be reassessed and EMSP updated to reflect current and expected future conditions.

The objective of this service order ("SO") is to update the EMSP. Specific goals of the SO are to:

1. Summarize existing energy and heating requirements of the current Regional Wastewater Facility.
2. Identify energy demands for current and planned future Capital Improvement Program ("CIP") projects.
3. Provide preliminary estimates of the future energy demands.
4. Develop Energy and Digester Management models.
5. Identify and screen alternative energy management strategies.
6. Provide recommendations for future projects, both short- and long-term.

This SO consists of the following tasks.

Task No. 1: Project Management and Quality Assurance / Quality Control (“QA/QC”)

Task No. 2: Collection and Review of Operating Data and Energy Usage

Task No. 3: Estimate of Future Energy Systems Demand

Task No. 4: Identify Issues Impacting Energy Systems Supply

Task No. 5: Identify and Review Energy Management Alternatives

Task No. 6: Conducting Alternatives Analysis of Energy Strategies

Task No. 7: Development of Energy Models

Task No. 8: Prepare Energy Management Strategic Plan Update

Task No. 9: Landfill Gas Utilization System Evaluation

Task No. 10: Additional Collection and Review of Operating Data and Energy Use

Throughout this SO, the term “energy” refers to all forms of energy (electricity, heat).

Task No. 1: Project Management and Quality Assurance / Quality Control (“QA/QC”)

- A. Services:** The Consultant’s Project Manager (“PM”) shall make staffing assignments, review work progress, and coordinate quality management and review procedures, monitor budget and schedule, submit invoices and communicate progress through monthly reports to the City.

The Consultant’s PM shall actively manage the activities, communication, and deliverables of the Consultant’s team members and sub-consultants to achieve completion of the scope of work within the established budget, schedule, and recognized industry standards.

The City’s Contract Manager for the Project shall direct the Consultant in accordance with this Approved SO. All coordination between the Consultant and the City shall be via the designated City and Consultant PMs or their designees. The Consultant’s scope of work shall be conducted by the Consultant or its sub-consultants unless otherwise approved by the City.

The City shall provide Project templates and guidelines no later than ten (10) business days following Notice to Proceed (“NTP”). The deliverables submitted by the Consultant shall conform to the City’s templates and guidelines. The templates and guidelines to be provided by the City include, but are not limited to, the following:

- Meeting Agenda;
- Meeting Minutes;
- Project Decision Log (“PDL”);
- Project Work Plan (“PWP”);
- Quality Management Plan (“QMP”);
- Quality Management Letter template;
- Quality Review Form;
- Reviewer’s Comment Log;
- Cost Estimating Guidelines;
- Project Delivery Model (“PDM”);
- Business Case Analysis Triple Bottom Line + Matrix, and Net Present Value Calculator;
- Business Case Analysis Triple Bottom Line + Report;
- Technical Memoranda (“TM”);
- Technical Report; and
- CIP Design Guidelines.

Specific Project Management Activities under Task No. 1 include:

1. Project Setup and Closeout: Consultant shall complete all steps necessary to setup and closeout project both internally and externally.
2. Weekly Tracking and Coordination: Consultant shall oversee daily management of scope, deliverables, schedule, and budget.
3. Bi-Weekly Status Teleconferences: Consultant shall participate in bi-weekly (every other week) status teleconferences with the City's PM to discuss overall work progress and status on near-term efforts and requirements. More or less frequent communication may occur if necessary, and as requested by the City's PM.
4. Project Work Plan: Consultant shall prepare and submit a PWP detailing tasks to be performed, schedule, deliverables (including their requirements and resources), and a risk management plan. The PWP shall be a single deliverable with no monthly updates required.
5. Project Decision Log: Consultant shall prepare and maintain a PDL that documents the City's comments and decisions made for work performed under this Project. As applicable, the PDL shall reference other documents such as meeting minutes, technical memoranda and reports for all decisions made. The PDL shall be updated monthly and submitted with the Monthly Progress Report.
6. Project Schedule: Consultant shall prepare a project schedule utilizing Critical Path Method techniques using an electronic scheduling software tool (Microsoft Project). The schedule shall adopt a Work Breakdown Structure that reflects the project scope of work and shall use working days for activity durations, link activities with the appropriate logic (predecessors and successors), and include required schedule constraints, sequences, and milestones. The schedule shall show a baseline, and the Consultant shall update the schedule on a monthly basis to show actual progress to date and anticipated future performance. No changes shall be made to the baseline without approval from the City's Contract Manager. The updated schedule shall be submitted with the monthly progress reports together with a summary of significant changes. The Consultant shall submit proposed corrective actions to the City's Contract Manager to mitigate negative variances (delays) to baseline as soon as they are identified.
7. Monthly Progress Reports: Consultant shall prepare and submit a monthly progress report within ten (10) business days of the last calendar day of the reporting month unless requested otherwise by the City's Contract Manager and the Consultant's PM. The monthly progress report shall be a written summary of progress made on each task, estimate the overall task's percent completion, include the status of each deliverable, and an estimate of the total labor hours and costs incurred during the reporting month. The monthly progress report shall also include any significant issues encountered, risks or concerns that the Consultant might have (e.g., anticipates difficulty meeting deadlines within the next 30 days).
8. Monthly Invoices: Consultant shall prepare and submit invoices on a monthly basis. The invoices shall align with the information presented in the monthly progress report described above for that billing period. The invoices shall be accompanied by the monthly progress report described above for that billing period.
9. Client Kickoff Meeting: Consultant shall organize and facilitate a two (2) hour Kickoff Meeting and Project Quality Management Workshop with City staff using online meeting application (e.g. MS Teams). Consultant's Client Director, PM, QA manager, and two (2) subject matter experts shall attend the Kickoff Meeting and Project Quality Management Workshop. Topics to be discussed at the meeting/workshop shall include the following:
 - a. Introduction of key Consultant and City Project team members;
 - b. Review of Consultant's understanding of the Project scope, needs and objectives;

- c. Summary of Project scope, work plan, schedule and deliverables;
- d. Recap of previously completed analyses, studies, and reports associated with the Project;
- e. Discussion of other CIP or maintenance projects currently underway and/or planned to be initiated that may be dependent on and/or have implications for the Project;
- f. Additional information Consultant has deemed relevant to Project which shall be provided by the City, if available; and
- g. Presentation of Quality Management Plan and discussion of Project approach.

10. Quality Management Plan

- a. Consultant shall develop and implement a Project-specific QMP to support execution of the work required by this Approved Service Order. The QMP shall describe the Consultant's overall quality management process, identify the quality reviewers and the review levels associated with each Project milestone and deliverable. The QMP shall be a single deliverable with no monthly updates required.
- b. Consultant's quality reviewers and their respective qualifications shall be identified in the QMP. Quality reviewers shall be independent (i.e., not be part of the Consultant's core team for the Project) and shall be qualified reviewers to provide technical and readability reviews prior to submittal of Project deliverables to the City.
- c. Consultant's review of deliverables, including draft and final versions, shall be recorded by submission of a Quality Review Form. The completed Quality Review Form shall document the quality review process applied for that deliverable and summarize the comments addressed during the review.
- d. Consultant quality management efforts that should be addressed in the QMP include:
 - 1) Coordinating work products, milestones, staff assigned for review activities;
 - 2) Conducting milestone technical and readability reviews for Project deliverables;
 - 3) Documenting comments and work product modifications in the PDL; and
 - 4) Completing and submitting a Quality Review Form with each deliverable, including draft and final versions.

B. Deliverables: Requirements associated with the deliverables described below shall be applied to the other tasks for deliverables of the same nature. Unless otherwise specified, the Consultant shall allow the City fifteen (15) business days to review, compile, and provide comments on any major deliverables. All documents shall be submitted to the City's Contract Manager electronically in MS Word and Acrobat Adobe PDF format unless stated otherwise. Consultant shall provide the following documents to the City Contract Manager:

- 1. Meetings and Workshops:
 - a. Agenda and Materials
 - 1) Agenda, meeting materials, and workshop presentation provided in electronic editable format no later than two (2) business days before the meeting. Consultant shall also provide sufficient printed copies (for in-person meetings) and PDF files (for online meetings) of the final agenda and any handouts for meeting attendees.
 - b. Minutes
 - 1) Draft minutes in an electronic editable Microsoft Word file format submitted within five (5) business days after the meeting. Consultant shall allow City a minimum of five (5) business days to review, compile, and provide comments to draft minutes.

- 2) Final meeting and workshop minutes addressing City comments provided in electronic PDF file format submitted to the City's Contract Manager within five (5) business days after receipt of City comments.
 2. Technical Memoranda (as applicable for all tasks under this SO):
 - a. Draft Version
 - 1) Draft memorandum provided as one electronic editable WORD file format and one (1) electronic PDF file. Consultant shall allow City a minimum of five (5) business days to review, compile, and provide comments to draft technical memoranda.
 - b. Final Version
 - 1) Final memorandum addressing City comments provided as one (1) electronic PDF file and submitted with the EMSP Executive Summary as an attachment, described in Task 8, unless otherwise noted or agreed upon by City's Contract Manager and Consultant's PMs.
 3. Project Schedule:
 - a. Consultant shall provide the project schedule in a PDF and an electronic editable file format. The Consultant's schedule shall, at a minimum, contain the following columns: Activity IDs, activity description/name, milestones, original duration, actual start and finish dates, baseline start and finish dates.
 - b. Consultant shall provide initial schedule at Kickoff Meeting and monthly updates with monthly progress reports.
 4. PDL: Consultant shall provide PDL monthly, in an electronic editable Microsoft Excel format, with monthly progress reports.
 5. PWP:
 - a. Draft PWP shall be provided in an electronic editable Microsoft Word file format within fifteen (15) business days from the issuance of the NTP for this Approved Service Order. Consultant shall allow City a minimum of ten (10) business days to review, compile, and provide comments.
 - b. Final plan addressing City comments provided in electronic PDF file format within five (5) business days after receipt of City comments.
 6. QMP:
 - a. Draft QMP provided in an electronic editable file format to the City five (5) days after the draft PWP is provided to City (can be included in the PWP). Consultant shall allow City a minimum ten (10) business days to review, compile, and provide comments.
 - b. Final QMP addressing City comments shall be provided in electronic PDF file format within five (5) business days after receipt of City comments.
 7. Monthly progress reports provided in electronic PDF file format via email.
 8. Monthly invoices provided in electronic PDF file format via email with monthly progress reports.
- C. Completion Time:** Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

On or before the following date: May 31, 2022.

On or before _____ business days from _____.

Task No. 2: Collection and Review of Current Operating Data and Energy Usage

A. Services:

1. Consultant shall collect and analyze existing documents, reports, studies and on-going and/or completed CIP projects related to the energy and heat generating and waste energy/heat utilization facilities and equipment with consideration of the Project particulars.
2. Consultant will review and consider process and equipment data available in City documents and maintenance work orders related to the performance of the various energy generating systems. The purpose of this background review is for Consultant to gain an understanding of the existing conditions of the major energy generating and consuming systems throughout the RWF.
3. Consultant will develop a data request and provide it to the City's Project Manager and will work in close collaboration responding to clarifying questions from the City PM to obtain the required information. It is anticipated that the information will be made available 10 business days after receipt of request.
4. After compiling and reviewing the existing background information, Consultant shall conduct a up to two (2) online meetings to interview RWF Operations and Maintenance ("O&M") Staff to confirm major changes or modifications, if any, in the existing energy systems and to discuss the performance characteristics with the staff. The City PM will take the lead in scheduling the online meetings with the required City staff. Consultant shall record interviews and its findings and document current energy use for each major treatment process and support facility at the RWF. City staff will provide/clarify any significant changes in the existing documents, report studies and record drawings for Consultant use.

B. Deliverables: Consultant shall provide the following documents to the City's Contract Manager:

1. Consultant shall prepare a Data Collection Summary Report describing the conclusions reached following the review of the existing reports, data, programs, sources, and uses of energy that will serve as a basis for further energy evaluations. This Report shall quantify current energy use, variations, trends and City field staff interview record.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 3: Estimate of Future Energy Systems Demand

A. Services:

1. Consultant will establish basis of evaluation and demand calculations based on mutually agreed upon findings of Task No.2. These could include, but not be limited to unit generation rates, equipment efficiencies, performance and efficiencies of unit processes and facilities, assumptions for alternatives evaluation basis including any unit cost items to be used for the comparative evaluation of alternatives.
2. Consultant shall make estimates of 2050 energy demands after evaluating the existing energy demands developed under Task No. 2.
3. The Consultant shall review the current CIP Master Project list and identify all CIP projects that are currently in design and/or are scheduled to begin within the next five years that will have major energy requirements. Projects to be considered in this analysis include, but are not limited to the following: 1) Digester and Thickener Facilities Upgrade, 2) Cogeneration

Facility, 3) New Headworks, 4) Digested Sludge Dewatering Facility, 5) Blower Improvements, and 6) Aeration Tanks Rehabilitation. The Consultant shall also engage in the Process Optimization Study, being performed by others, and incorporate the findings of that study into the estimate of future energy demand. This Process Optimization Study is evaluating the existing conditions at RWF and various process alternatives to achieve optimal operations for the RWF. The Consultant shall perform energy analysis for alternative(s) that are reviewed and agreed upon by the City.

4. Consultant shall coordinate and attend a workshop (e.g. MS Teams) with City staff to discuss the technical aspects of energy use during the life of the proposed CIP projects ("WS1"). The intent of this is to flag potential conflicts, demand/service requirements, or impedances to normal operations of the facility as a result of implementation of the planned projects, and that the Consultant will serve in an advisory role only, not providing quality assurance on ongoing design projects. This task shall include separate meetings with CIP package managers responsible for upcoming projects in the areas of Liquids 1, Liquids 2, Solids, FOG, and Electrical that interface with the energy system throughout the RWF and three (3) meetings with the personnel and the consultants in the Process Optimization Study for process alternatives review. The meetings shall be either online meetings or in-person and last up to three (3) hours each. Consultant shall also attend up to three (3) additional workshops conducted by the Process Optimization team.
5. Consultant shall estimate future energy demands based on original estimates in existing studies and as updated as those projects have developed, or any new information provided by the City Capital Improvement Program and Operation and Maintenance Team over the course of this SO. If no estimates exist, Consultant shall prepare estimates based on experience and kW/gallon, kW per system, or similar industry practices. Costs from other projects may be used as a basis, where appropriate. This base scope of work does not include development of new process models by the Consultant, unless separately requested/added by City. Consultant shall prepare a timeline for the addition of new and increased energy demands based on the CIP plan.
6. Consultant shall update the energy demand estimates included in the draft version of Technical Memorandum ("TM1") to incorporate additional data received after submission, including information from Process Optimization Study. This includes conducting meetings with the City O&M staff and revising existing graphics, charts, and tables to convey analysis of the additional data, as well as projected demands through 2050 to consider a phased implementation of Process Optimization Study Alternative 3.

B. Deliverables: Consultant shall provide the following documents to the City's Contract Manager:

1. Consultant shall prepare a TM1 describing the future energy demands. The draft version shall be submitted to the City for review prior to the workshop. Refer to Deliverables section of Task No. 1 for Technical Memoranda requirement. The final TM1 shall be submitted with the EMSP Executive Summary described in Task 8.
2. WS1 shall be held with the City to consider the conclusions arrived at in this task once the draft TM1 is prepared and delivered to the CIP PM. Refer to Deliverables section of Task No. 1 for workshop agenda and presentation requirement.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 4: Identify Issues Impacting Energy Systems Supply

A. Services:

1. Consultant shall prepare for and conduct a three-hour workshop (“WS2”) to identify the different energy sources currently available and potentially available in the future for possible implementation at the RWF. Together with the City staff, the Consultant shall also identify the issues which may impact the delivery and or use of these sources based on experiences elsewhere or at the City facilities. These issues will include:
 - a. Existing Departmental and City policies and programs;
 - b. Availability and reliability of fuel sources;
 - c. Preferred use of existing and new equipment;
 - d. Air Quality Compliance/Permitting requirements:
 - 1) State of California/California Air Resource Board, examples: Cap and Trade, AB32 and SB 32 implications based on known conditions; this may also include SB 1383 as it relates to Publicly Owned Treatment Works; and
 - 2) Bay Area Air Quality Management District, examples: proposed regulation 13, rule 4, to reduce methane emissions from municipal sewage treatment and anaerobic digester operations; potential impact of planned public safety power shut-offs (e.g., use of stand-by power); possible new non-refinery flare rule to reduce emissions.
 - e. Additional Capital facilities required;
 - f. Coordination with CASA and Bay Area Clean Water Agency efforts;
 - g. Funding sources and cash flow demands based on City’s existing financial plan; and
 - h. Technology constraints.

B. Deliverables: Consultant shall provide the following documents to the City’s Contract Manager:

1. Consultant shall prepare draft Technical Memorandum (“TM2”) summarizing the energy sources currently available and potentially available through 2050 and submit the draft TM2 to the City prior to WS2. Refer to Deliverables section of Task No. 1 for Technical Memoranda requirement. The final TM2 shall be submitted with the EMSP Executive Summary described in Task 8.
2. WS2 shall be held with the City to consider the conclusions arrived at in this task once the draft TM2 is prepared and delivered to the CIP PM. Refer to Deliverables section of Task No. 1 for workshop agenda and presentation requirement.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following times is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 5: Identify and Review Energy Management Alternatives

A. Services:

1. Consultant shall prepare a preliminary list of future energy management alternatives (including demand reduction/management and onsite generation) which meet the projected energy demands and which use a variety of the fuel sources currently available and possible

to implement near future. This list of alternatives shall include improvements or alterations to existing RWF facilities as well as construction of new facilities as needed. Consultant shall prepare a preliminary list of nonmonetary criteria by which the energy management alternatives will be screened to shortlist six (6). Shortlisted alternatives will be formed of combination of demand management and power generation options.

2. This list of energy management alternatives and the list of evaluation criteria shall be based on the investigations conducted in Tasks No. 2, 3 and 4 as well on the experience of the Consultant. The lists shall be presented to the City in a draft presentation slides in advance of a three-hour workshop ("WS3") to be conducted by the Consultant. The workshop shall consist of the Consultant explaining how each alternative addresses the future energy demand and energy supply needs. For each alternative, the advantages and disadvantages shall be explained. In order for the project team to focus on viable alternatives at the workshop, input of the City staff will be gathered and communicated to the Consultant ten (10) days before WS3 to ensure the staff input on new or modified energy management alternatives be considered. The evaluation criteria will be established early with inputs from City staff; reviewed and modified criteria based on the City comments received will be used by Consultant.
3. The Consultant shall prepare workshop minutes that include a final list of up to the four (4) of the most preferred combined energy management alternatives to be analyzed using the CIP Triple Bottom Line Plus ("TBL+") methodology.

B. Deliverables: Consultant shall provide the following documents to the City's Contract Manager:

1. Prior to WS3, the Consultant shall summarize the energy management alternatives, and evaluations performed in draft presentation slides. Following review by the City, the Consultant shall prepare final presentation slides with updated energy demands from TM1 prior to the workshop and then provide minutes after the workshop.
2. WS3 shall be held with the City to consider the conclusions arrived at in this task. Refer to Deliverables section of Task No. 1 for workshop agenda and presentation requirement.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 6: Conducting Alternatives Analysis of Energy Strategies

A. Services:

1. Consultant shall develop high level relative costs based on current market conditions, recent projects, and preliminary vendor quotes for comparison, not to be used for CIP planning. Consultant shall create a spreadsheet model to calculate based on major facilities and cost quotes, markups, contingencies, etc. aligned with the TBL+ method. It is assumed that preliminary comparative costs will include appropriate estimating contingency and markups to account for below ground conflicts, unknown site issues, and potential construction market changes.
2. As part of the alternative evaluation analysis, Consultant shall utilize the CIP's TBL+ methodology and shall organize and facilitate one workshop ("WS4") with the City to coordinate the CIP's evaluation criteria applicable to this study, establish sub-criteria and determine the weighting of the evaluation categories (i.e., social, economic, environmental, and operations, maintenance, safety and implementation). Consultant will suggest revisions to the criteria and weightings, if deemed necessary and after consulting with the City.

3. Consultant shall organize and facilitate one workshop (“WS5”) with the City to coordinate the CIP’s criteria scoring and present the net present value (“NPV”) costs for each alternative (up to four). NPV costs (construction costs and annual operating and maintenance costs) shall be provided before WS5.
4. The City will organize and facilitate the Alternative Selection Workshop (“WS6”) to review the results of the TBL+ scoring results, conduct the sensitivity analysis, and identify recommended alternative. One professional from the Consultant shall attend the workshop.
5. The City will create a final TBL+ analysis report summarizing the results and deliver the report to the consultant as a reference.
6. Consultant shall prepare a draft and final EMSP Alternatives Analysis Technical Memorandum (“TM3”), using the CIP’s TBL+ report template. TM3 shall include the process of developing the alternatives and a description, including energy supply and demand parameters of the six alternatives identified in Task 5, the process of screening the number of alternatives to four, and a summary of the TBL+ weighting, scoring and the final TBL+ analysis in selection of the preferred alternative. TM3 shall also include Class 5 Opinion of Probable Construction Costs (“OPCCs”) and annual operating and maintenance cost estimates. The OPCCs shall be prepared to a level of accuracy consistent with the standards of AACE International, formerly known as the American Association for the Advancement of Cost Engineering, and the Program’s cost estimating guidelines. Consultant shall develop high level relative costs. TM3 shall also include an implementation plan for the selected alternative, in the short term and in the long term. The TM will be submitted after WS4, WS5, and WS6.

B. Deliverables: Consultant shall provide the following documents to the City’s Contract Manager:

1. Refer to Deliverables section of Task No. 1 for WS4 workshop agenda and presentation requirement.
2. Refer to Deliverables section of Task No. 1 for WS5 workshop agenda and presentation requirement.
3. After WS6, the Consultant shall provide the conclusions in EMSP Alternatives Analysis draft TM3. Following review by the City, the Consultant shall finalize TM3. Refer to Deliverables section of Task No. 1 for Technical Memoranda requirement. The final TM3 shall be submitted with the EMSP Executive Summary described in Task No. 8.

C. Completion Time: Consultant shall complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 7: Development of Energy Models

A. Services:

1. Power Model. Consultant shall develop an interactive spreadsheet model (namely “Power Model”) based on the current evaluation and future expected production of heat and power generation capacities for the Cogeneration Facility. The model will be developed in close conjunction with City so that the model becomes a tool available for future use in projecting future heat and power production along with the associated fuel demands. Input into the model will come from the City’s existing one line and MCC drawings. Items fed from lighting panes will not be individually identified. Information pulled from the one line and MCC drawings will be reviewed by the Consultant and City staff to verify appropriate inclusion in the Power Model and to fully identify duty and standby loads.

The Power Model shall incorporate input sheets which will include motor and electrical load lists and associated supporting documents such as PFDs, P&IDs, and MCC drawings. An input sheet will be supplied for each building or significant process. The model shall also include output sheets that show the energy related major devices and the energy they consume or provide. The expected quantity of energy, energy costs, demands, flows, and other pertinent parameters shall be shown where available. These input and output sheets shall be presented for review by the City. The output sheets shall also contain year-by-year up to 2050 estimates of fuel usage, quantities, and estimated costs not incorporating potential market and regulatory changes that can occur and impact conditions in the future. The Power Model spreadsheet will include a tab with instructions to City staff on how to use the Power Model.

2. **Digester Model.** Consultant shall develop an interactive spreadsheet model (namely "Digester Model") based on the current evaluation and projected future performance of heat demand and biogas production capacities of the digester system. The model will be developed in close conjunction with City so that the model becomes a tool available for future use in projecting future heat demand and gas production depending on the future modes of operation.

The Digester Model shall incorporate input sheets that indicate what its components are, and the type of input needed to drive the model. The model shall also include output sheets that show the heat and gas related devices and the energy they consume or provide. The heat demand, gas production, expected thermal quality of gas based on current feedstock/sludge feed and typical values, energy costs, and other pertinent parameters shall be shown. These input and output sheets shall be presented for review by the City. The output sheets shall also contain year-by-year estimates of heat usage and gas production. The Digester Model spreadsheet will include a tab with instructions to City staff on how to use the Digester Model.

3. Consultant shall prepare for and conduct a three-hour workshop ("WS7") to be held with the City to train City staff on the model components and address City comments on the Power Model and Digester Models.

B. Deliverables: Consultant shall provide the following documents to the City's Contract Manager:

1. Consultant shall submit drafts of the Power Model and Digester Model to the City for review prior to WS7.
2. Following conclusion of WS7 and receipt of written comments from the City, the Consultant shall prepare and submit the final models. Refer to Deliverables section of Task No. 1 for workshop agenda and presentation requirement.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 8: Prepare Energy Management Strategic Plan Update

A. Services:

1. Consultant shall develop a strategic plan update, in the form of an executive summary, summarizing the data collected and analyses performed as part of this Project. The final versions of TMs and other deliverables provided as part of this Project will be attached to the executive summary for reference. The executive summary shall include the following;
 - a. Energy projections developed for current and future facilities;
 - b. Summary of alternatives analysis and conclusions;
 - c. Description of preferred alternative(s);
 - d. Implementation plan to include priorities and schedule for action, in the short term and in the long term;
 - e. Planning level operating and maintenances costs; and
 - f. AACE International Class 5 OPCCs for alternatives developed.

The preparation of the executive summary for the EMSP Update shall be coordinated with City staff based on the CIP guidelines and the executive summary for the Process Optimization. The coordination effort will require review of the Process Optimization Project's executive summary.

2. Consultant shall prepare for and conduct a two-hour workshop ("WS8") to be held with the City to summarize the results of the Energy Management Strategic Plan Update.

B. Deliverables: Consultant shall provide the following documents to the City's Contract Manager:

- a. EMSP Update Executive Summary .
- b. Draft report provided as one (1) electronic editable file and one (1) PDF file. Consultant shall allow City a minimum of fifteen (15) Business Days to review, compile, and provide comments.
- c. Final report addressing City comments provided as twelve (12) bound printed copies, one (1) electronic editable file, and one (1) PDF file within twenty (20) Business Days after WS6.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: May 31, 2022.
- On or before _____ business days from _____.

Task No. 9 – Landfill Gas Utilization System Evaluation

A. Services:

1. The Consultant shall investigate the feasibility of using landfill gas to augment the use of digester gas for providing fuel to the new cogeneration system (internal combustion engines and boilers). The study will utilize landfill gas quantity and quality provided by the RWF staff. Consultant shall review the March 2017 Draft Landfill Gas Study prepared by CH2M for background information. The evaluation will include the routing of a new landfill gas pipeline from the edge of the RWF property to the location of the landfill gas treatment system adjacent to the new Cogeneration Facility gas treatment area or the reutilization of existing pipelines for

- conveying the gas to the new landfill gas treatment area. Consultant shall evaluate gas treatment technologies and recommend the optimum design to produce the required gas quality for the new cogeneration engines. The gas treatment system shall deliver the treated landfill gas with the criteria: 1) not poisoning the catalyst in the fuel gas burning unit of the cogeneration system, and 2) meeting all the applicable air emission permits of the exhaust gas from the cogeneration system. The evaluation will include a high-level screening of landfill gas treatment technologies including rough order of magnitude costs for comparison. A planning level cost estimate of the selected technology and pipe routing will be prepared. Figures for the study will be created in PowerPoint.
2. Kick-off meeting. 1 hour long online meeting (e.g. Microsoft Teams) attended by PM, associate engineer, and Subject-Matter-Expert (“SME”), including preparation of agenda and meeting minutes.
 3. Two Technical Meetings. Each one (1) hour long online meeting attended by PM, associate engineer, and SME, including preparation of agenda and minutes.

B. Deliverables: Consultant shall provide the following documents to the City’s Contract Manager:

1. Draft Landfill Gas Utilization System Evaluation Technical Memorandum within eight (8) weeks after NTP, to provide the evaluation and specify the gas treatment system. The final technical memorandum shall be submitted with the EMSP Executive Summary described in Task No. 8. Refer to Deliverables section of Task No. 1 for Technical Memoranda requirement.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

- On or before the following date: April 30, 2022.
- On or before _____ business days from _____.

Task No. 10: Additional Collection and Review of Operating Data and Energy Use

A. Services: The City has determined that additional analysis of energy use data is required during the development of Tasks No. 3 and 5. The Consultant shall perform the following activities.

1. Consultant shall organize, review, and analyze additional data received from the City. This effort includes:
 - a. Organize and review of additional NoVAX data received from the City
 - b. Analysis of planning level peak loads, loads with seasonal/diurnal variation, and average loads and peaking factors of demand to allow for more flexibility in the use of the power model.
 - c. Initial filtering of the data, for example, excluding extremely high or low load data, and establishing baseline demand and future projection with reasonable data recording period.

B. Deliverables: Consultant shall provide the following documents to the City’s Contract Manager:

1. The scope and findings of the work performed shall be part of the deliverables outlined in Task Nos. 3, 5, 6, and 8.

C. Completion Time: Consultant must complete the services and deliverables for this task in accordance with whichever one of the following time is marked:

On or before the following date: April 30, 2022.

On or before _____ business days from _____

City of San José Contract/Agreement Transmittal Form

Route Order

Attached / Completed

Electronically Signed

TO: City Attorney
 City Manager
 City Clerk **OR** Return to
Dept. (circle one)

Insurance Certificates / Waivers Electronically Signed: Yes
 Business Tax Certificate Audit Trail Attached (if applicable)
 Contacted Clerk re: Form 700 Scanned Signature Authorization
 Supplemental Memorandums (if applicable): Select One

Type of Document: Amendment

Type of Contract: Consulting Services

REQUIRED INFORMATION FOR ALL CONTRACTS:

Existing GILES # 661304 -022

Contractor: Black & Veatch Corporation

Address: 2999 Oak Road, Suite 490, Walnut Creek, CA 94597

Phone: (925) 949-5949

Email: lopezdc@bv.com

Contract Description: Fourth Amendment to Service Order 3 - Energy Management Strategic Plan Update

Term Start Date: 06/04/2020 Term End Date: 05/31/2022 Extension: Yes

Method of Procurement: Select one RFB, RFP or RFQ No.: _____ Date Conducted: _____

Agenda Date (if applicable): _____ Agenda Item No.: _____

Resolution No.: _____ Ordinance No.: _____

Original Contract Amount: \$707,700.00 Amount of Increase/Decrease: _____

Option #: ___ of ___ Option Amount: _____ NTE/Updated Contract Amount: _____

Fund/Appropriation: _____

Form 700 Required (Selection mandatory for processing): Yes

Revenue Agreement: No

Tax Certificate No.: 6952151210

Expiration Date: 01/15/2023

Department: ESD (76)

Department Contact: Austin Pao / 635-4084

Customer (Finance Only): ^^^ ^^^^^^^^^^^^^^^^^

Notes:



Department Director Signature: _____ Date

Office of the City Manager Signature: _____ Date