

Proposal To Provide:

Coalinga Natural Gas System Model and Analysis

For:

Interstate Gas Services, Inc

September 01, 2021

Prepared By:



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This document is formatted to accommodate double sided printing.

PROPOSAL INTRODUCTION

Please find the following proposal in response to a request by Interstate Gas Services, Inc (the Client) to provide various technical services associated with developing a computer model of the existing City of Coalinga (the Owner) gas system (the System), calibrating the resulting model, and reviewing the impact of several proposed new developments on the System's performance. This proposal is submitted by B3PE LLC (B3PE). The proposal describes the various tasks associated with the offered services.

The cost values listed in this proposal are valid for a period of one hundred twenty (120) days from the submission date.

COMPANY BACKGROUND

B3PE (formerly Bradley B Bean PE) is a limited liability company based in Colorado. The company has been supplying exceptional services and software solutions to the natural gas industry since its establishment in 1992. Brad Bean (a partner) will serve as the principal in charge of the activities associated with this proposal. Mr. Bean has an extensive background in the analysis and design of natural gas distribution systems. Bradley B Bean PE is primarily staffed by its partners and a small support staff. Contract labor and professional sub-contractors are used to complete projects requiring additional resources. No additional staff should be required for this project.



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PROPOSAL





1.0 Project Scope...

The scope of the project described by this proposal includes all work necessary to complete the various tasks associated with the project, as understood at the writing of the proposal, including:

- Development of a computer model of the System;
- Calibration or verification of the resulting model;
- Review the impact of various planned development projects;
- Preparation of the documentation describing the model development, calibration process, and planning review.

2.0 Task Descriptions...

Each of the tasks required to complete the Project are described in the following tables. Unless otherwise noted, B3PE shall be responsible for completing all items shown in the task descriptions. All liaison with the Owner will be performed by Client.

Task 1	Model Development
Scope	<p>A piping hydraulic model will be developed for the System. The piping portion of the model will generally be developed by importing GIS data provided by the Owner, by way of the Client.</p> <p>The assumptions and details associated with the performance of this task are outlined below...</p>
Assumptions & Requirements	<p>1. It is assumed that data for the following will be provided in an acceptable electronic format:</p> <ul style="list-style-type: none">a. Main line locations with attributed pipe sizes and materials;b. District regulator station locations (if any);c. Gate station location(s). <p>2. It is assumed that all data will be in an acceptable coordinate system and that the data will accurately reflect the topology, configuration, connectivity, and nominal pipe sizes and material of the associated piping.</p> <p>3. It is assumed that the Owner and Client will be available to reconcile conflicting or missing data which may be discovered while developing the piping model.</p> <p>4. It is assumed that only main line segments will be included in the hydraulic portion</p>



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	<p>of the model and that certain short or trivial main segments may be combined or ignored during the model creation.</p> <p>5. It is assumed that all regulator stations and some piping connections will be generalized in the model.</p> <p>6. It is assumed that no site visit will be required and that all data transfer will be by electronic means.</p> <p>7. For this task, in order to test the model for solvability, an arbitrary load value will be assigned to each node.</p> <p>8. It is assumed that a list of operating pressures and, where required, detail drawings of each regulator station will be provided.</p>
Deliverables	At the completion of this task, a basic working computer model of the hydraulic piping portion of the System, as it is depicted in the provided data, will be created and optionally provided for review.

Task 2	Customer Assignment
Scope	<p>Upon completion of Task 1, individual customer locations will be assigned to the hydraulic piping model. The customer portion of the model will be created by importing and geocoding customer (meter) addresses from the Owner's customer billing file.</p> <p>The assumptions and details associated with the performance of this task are outlined below...</p>
Assumptions & Requirements	<p>1. It is assumed that LAC will provide an electronic list, in an acceptable format, of service addresses, unique identifying number, and consumption values for each customer supplied by the System. And that the consumption values will be from at least three recent consecutive cold month periods. The customer locations will be assigned by geocoding the addresses contained in this list.</p> <p>2. Each customer will be assigned to its supply main based on proximity - for example, assigned to the closest main. Services will be depicted in a generalized form.</p> <p>3. It is assumed that the Owner and Client will be available to reconcile conflicting or missing data which may be discovered while performing the customer assignments.</p> <p>4. It is assumed that no site visit will be required and that all data transfer will be by</p>



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	<p>electronic means.</p> <p>5. Individual customer demands will be assigned via an automated routine which matches the unique identifying number values in the customer information list.</p> <p>6. For this task, the previously assigned arbitrary node loads will be removed and the assigned customer loads will be applied to the model.</p>
Deliverables	At the completion of this task, a basic working computer model (the “Base Model”) of the overall System as it is depicted in the provided data documents will be created and optionally provided for review.

Task 3	Verify & Calibrate The Computer Model of Existing Gas System
Scope	<p>Verify the results of the Base Model by comparing the model results with measured and observed field operating values.</p> <p>The operating values will be compared to the overall System model results. If sufficient data is provided, the model will be adjusted (calibrated or tuned) so that the model results generally reflect the values collected from the field. If sufficient operating data is not provided to allow calibration of the model, the model results will be compared with available field data and Owner experience to verify that the model generally reflects the conditions collected from the field.</p> <p>The assumptions and details associated with the performance of this task are listed below...</p>
Assumptions & Requirements	<p>1. It is assumed that various field performance values will be provided, including supply pressure values, system operating pressure, gate station flow rates, large customer meter flow rates (if applicable), and a gas composition analysis for a recent agreed to peak period.</p> <p>2. It is assumed that if sufficient data is not provided to calibrate the model, that enough data will be provided to verify that the model results are generally reflective of the System’s actual performance.</p> <p>3. In the event that the model is verified but not calibrated, it is assumed that the Owner and Client will be available to help assess the appropriateness of the model results.</p> <p>4. It is assumed that no additional site visit will be required, that no testing or monitoring by B3PE will be required, and that all data transfer will be by electronic means.</p>



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Deliverables	At the completion of this task, a calibrated or verified computer model of the System as it existed at/during the calibration/verification period (the “Existing System Model”) will be created and optionally provided for review.

Task 4	Planning Study
Scope	<p>Using the Existing System Model, the impact of various planned developments on the System’s performance will be reviewed.</p> <p>The assumptions and details associated with the performance of this task are listed below...</p>
Assumptions & Requirements	<ol style="list-style-type: none">1. Before including the new projects in the model, the results of the Existing System Model will be reviewed, any weaknesses identified, and recommended system changes presented.2. It is assumed that the location, general layout, phasing/timing, and proposed density or land usage for each planned project will be provided.3. It is assumed that various operating limits and parameters for use as design guidelines for evaluating the impact, and any system changes required to adequately supply the planned developments, will be provided.
Deliverables	At the completion of this task, the general results and conclusions of the various scenarios will be documented and provided for review prior to completing the final project documentation.



Task 5	Prepare Study Documentation
Scope	<p>Prepare a summary report of the overall model development process, model and calibration results, and planning study results and recommendation</p> <p>The assumptions and details associated with the performance of this task are listed below...</p>
Assumptions & Requirements	<ol style="list-style-type: none">1. It is assumed that the “final” report will be provided in a Portable Document Format (PDF) electronic file. Hard copies of the document will be provided as required.2. It is assumed that no site visit will be required to review or present the final report.
Deliverables	<p>At the completion of this task, documentation of the model development process, model and calibration results, and planning study results and recommendations will be provided in the required formats.</p>



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3.0 Cost Summary...

The costs associated with performing each of the described tasks are summarized in the following table...

Task	Description	Cost
1-5	Model Development, Calibration, Planning Study & Report	\$12,000
	Total	\$12,000

The above costs do not include the cost of any item that is required to be provided by the Owner, the Client, or by others.

Additional services may be provided, on a negotiated basis, at the rates shown in the Attachments.

Respectfully submitted:

Brad Bean
Managing Member
B3PE LLC



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ATTACHMENTS







B3PE

Engineering & Software Services

Effective January 2021

BILLING RATES

<u>Category</u>	<u>Rate(\$/hour)</u>
Senior Engineer / Subject Matter Expert	\$240.00
Project Engineer	\$120.00
Engineering Technician	\$80.00
Administrative/Clerical	\$40.00
Direct Costs	Cost + 10%
Mileage	(TBA = FY IRS Allowance)
Travel Expenses	Actual Cost
Travel Rate	1/4 Listed Hourly Rate
Training (Plus travel and direct expenses)	\$240.00