

RAILROAD COMMISSION OF TEXAS

CONTRACT MANAGMENT

ADDENDUM #1

DATE: 08/21/2020

RFO#: 455-20-1001

TITLE: DATAWAREHOUSE/BUSINESS INTELLIGENCE (DW/BI)

PROPOSAL DEADLINE: Wednesday September 9, 2020 at 2:00 PM Central Time

Addendum Item #1:

Purpose of this Addendum is to publicize revised Table 2. Schedule of Events:

Event	Date
Issuance of RFO	Tuesday, July 21, 2020
Submission of HSP for RRC Courtesy Review	Tuesday, July 28, 2020
Deadline for Submission of Written Inquiries (no later than 3:00PM CT)	Monday, August 10, 2020
Deadline for Submission of HSP for Courtesy Review	Tuesday, August 11, 2020
Response to Written Inquiries, if any (Addenda posted to ESBD)	Friday, August 21, 2020
Offer Due Date (no later than 2:00PM CT)	Wednesday, September 9, 2020
Award Date (estimated only)	Thursday, December 3, 2020

Addendum Item #2:

Purpose of this Addendum is to publicize submitted questions with answers:

No.	QUESTIONS	ANSWERS
1	<p>1. I would like to know if a foreign company is eligible for this opportunity?</p> <p>2. We plan to implement cloud solutions where the data resides in the United States, can resources at offshore locations remotely access the data and assist in platform development via VPN or Remote Desktops?</p>	<p>1). Per Section 2.1.5 Assumptions, item #12 - Non-critical project activities may be performed from remote locations within the United States. No remote work shall be conducted or performed outside of the United States, and all data must remain in the United States.</p>

		<p>2). Section 2.1.5 Assumptions, item #12 excerpt – No remote work shall be conducted or performed outside of the United States.</p>
2	<p>1. RFO page 34 section 2.1.5, item 4. Can the RRC attest that the DIR artifacts are already called out in the RFO, or can all related links be provided to ensure the artifacts are accommodated?</p> <p>2. RFO page 34 section 2.1.5, items 7 and 8. Can the RRC identify the security requirements during procurement to ensure they are accommodated in the approach?</p>	<p>1). The link to the DIR artifacts is: https://dir.texas.gov/View-Resources/Pages/Content.aspx?id=16</p> <p>Section 2.1.3.1.1 also describes the deliverable artifacts for the Project Initiation phase. Other artifacts which are discussed in the DIR Project Deliverable Framework are part of the ongoing project.</p> <p>2). The Security requirements mentioned in this section refer to the vendor being aware of and following all RRC Security Policies and Procedures. This includes signing a Vendor Information Security Agreement form, and taking applicable security trainings. These will be discussed and provided at the outset of the project. This includes the following items as referenced in the RFO page 34 section 2.1.5:</p> <p>5 - Prior to start of work on the project all Vendor staff (including but not limited to employees, contract employees, and subcontractors) assigned to or otherwise working on RRC’s project must sign a “Vendor Information Security Agreement (VISA)” (see RFO Attachment 2 Vendor Information Security Agreement).</p> <p>7 - Vendor staff Must adhere to the security requirements implemented by the Texas Department of Information Resources (DIR) to include Security Awareness Training on an annual basis.</p> <p>8 - Vendor staff Must adhere to RRC security requirements and configurations/change management processes (deploy in coordination with other deployments, at night or weekends to avoid conflicts) and based on schedules confirmed with DCS (Firewall changes, etc.).</p>
3	<p>Query 1: Vendor A has never participated in any Texas State government project as Vendor A has many public sector and private sector DW / BI implementations in California and track record is 100% and clean.</p> <p>As per RFP section 1.6.3.5. PAST PERFORMANCE – Vendor A will not have any record. Does that mean that Vendor A is eligible or NOT eligible to participate in RFP?</p> <p>An Offeror’s past performance will be measured in compliance with applicable provisions of Texas Government Code Chapters 2155 and 2156. Offerors may fail this selection criterion should one or more of the following conditions apply to Offeror:</p> <ul style="list-style-type: none"> • A score of less than C or Legacy Unsatisfactory in the Texas Comptroller’s Vendor Performance Tracking System at https://comptroller.texas.gov/purchasing/programs/vendor-performance-tracking/ 	<p>Vendor A is eligible to participate.</p>

4	<p>1. Would the client consider waiving the liquidated damages and replace with injunctive relief?</p> <p>2. Would the client consider lowering the Cyber policy down to \$5 million?</p>	<p>1). No.</p> <p>2). No.</p>
5	<p>We are a local HUB certified company, and we have extensive experience in this technology.</p> <p>1). Is there a HUB credit for this RFO?</p> <p>2). I am not able to access the portal. Can you please provide the RFP document?</p>	<p>1). There is no HUB Credit given for any solicitation.</p> <p>2). RRC is not allowed to provide the solicitation document.</p>
6	<p>1). The RFO specifies that a logical data warehouse (aka data virtualization) is desired, but also mentions copying data to the data warehouse via ETL, ELT, and/or Replication, which may imply that some traditional or hybrid characteristics are expected. Would it be fair to say that this RFO foresees that the exact structure of the data warehouse would be determined as soon as possible in phase 1 after the initial phase 1 requirements gathering is completed?</p> <p>2). Can the decision about vendor hosted versus self-hosted (Texas Data Center Services) cloud be made as a result of the phase 1 requirements gathering? (</p> <p>3). Can the selection of a commercial product be made in conjunction with RRC managers after requirements gathering in regard to data access, data locations, connectivity, etc. has been completed? If not, would it be acceptable to name a potential commercial product as part of the RFO, but be prepared to change to a more appropriate product if the requirements indicate a better fit elsewhere? (ITS)</p> <p>4). Is there an incumbent for this work?</p> <p>5). Who did the initial analysis and requirements gathering for this RFO?</p>	<p>1). In Phase 1, the selected vendor will recommend the architecture and structure best suited for RRC to achieve its short term and long term goals.</p> <p>2). The recommendation will be made in Phase I (e.g. Milestone 6 – Hosting Solution) for a vendor hosted vs a self-hosted solution.</p> <p>3). The RFO respondent may recommend a commercial product in the RFO response during Phase I. If a different product is deemed more appropriate for RRC based on gathered requirements, then RRC will take the recommendation into consideration.</p> <p>4). There is no incumbent.</p> <p>5). Internal RRC staff did the initial analysis and requirements gathering for this RFO.</p>
7	<p>Vendor A is planning to submit a response to your RFO No. 455-20-1001 but I had a couple questions regarding the HSP. Namely, are we required to subcontract any of the work? If not, would you say it boosts our chances of being awarded the contract if we do subcontract?</p>	<p>You are not required to subcontract any part of the work for this solicitation, this is based on a “good faith effort”, nor does it increase your changes for award. However you are required to complete the HSP and submit with your response.</p> <p>In Section 2 of the HSP - Respondents Subcontracting Intentions asks if you are going to subcontract, If you answer NO, go to</p> <p>Section 3 of the HSP - Self Performing Justification and complete that box.</p> <p>Note: Per The Texas Administrative Code:</p> <p>Title34, Part 1, Chapter 20 Subchapter D Division 1 Rule 20.85</p>

		Any person submitting a bid proposal, offer or other applicable expression of interest in obtaining a contract with the state shall submit a completed HUB subcontracting plan demonstrating evidence of “good faith effort” in developing that plan.
8	Is the payment bond a requirement for award on this particular RFO?	See section 5.1 for bonding requirements. Please also note section 4.22.1. COMPLIANCE WITH TEXAS GOVERNMENT CODE CHAPTER 2251 REQUIRED.
9	<p>1). Due to COVID mandates and many vendor employees working from home, would it be possible to submit the proposal via email, rather than shipping 11 printed, bound versions plus a thumb drive? Or would it be possible to submit fewer printed copies?</p> <p>2). Does RRC have an existing public or private cloud environment or is implementing a cloud part of the future scope of work?</p> <p>2-a). If you do have a cloud environment, what is it?</p> <p>3). The direction of our proposal relies heavily on the answers provided on August 17th. Will RRC please extend the due date to allow us adequate time to develop an approach that will best fit your needs?</p>	<p>1). No.</p> <p>2). The selected vendor during Phase I will recommend the best hosting solution for RRC. RRC has transactional systems in the State’s Data Center Services and a future transaction system in the cloud.</p> <p>2-a). DIR provides state agencies with access to various cloud environments, including Google Cloud, MS Azure, and AWS along with the state datacenters. RRC will be using a Microsoft Azure hosted suite of applications for a future transactional system hosted in the cloud and is currently using a Salesforce Cloud based transactional application.</p> <p>3). RRC has extended the submission due date. See Table 2. Schedule of Events on Page 1 of Addenda No. 1</p>
10	<p>1). We noticed Oracle Analytics server, WebLogic servers, Power BI, and data replication using oracle tools in RRC applications. Our solution approach is vendor agnostic. Does RRC has Enterprise License agreement with Microsoft and Unlimited license agreement with Oracle?</p> <p>2). Cloud providers allows existing licenses deployment on their cloud platform at discounted price (up to 60-80%). Does RRC has any unlimited/enterprise license agreement? It will help us to adjust our design and reduce overall cost of the solution.</p>	<p>1). Yes and Yes, but these license agreements are based on our current usage/needs. RRC expects the vendor to recommend the best solution and is not stating the vendor must use one or any of these tools.</p> <p>2). RRC expects the vendor to include any software licensing costs as part of the vendor’s response.</p>
11	<p>1). Part 1 – 1.2 Do you have any ETL & Reporting tools in house? If not, do you have any preferences on the same?</p> <p>2). Part 1 – 1.2 Could you please let us know what type of data sources need to be handled like flat files or specific Relational/non-relational DBMS?</p> <p>3). Part 1 – 1.2 Do you have any in house database system which is currently being used? Whether we need to maintain the same or that can be migrated?</p> <p>4). 3.2.18 - What would be the frequency of ETL process and how many data sets need to be handled?</p> <p>5). Appendix 3 - What will be the overall data volume to be processed and volume which is expected to be stored?</p> <p>6). Part 1 – 1.2 Please confirm, whether we need to do any historical data processing?</p> <p>7). Part 1 – 1.2 Can you please let us know whether we need to setup data warehouse from the scratch?</p>	<p>1). RRC has mentioned the tools in Section 3.2.8 and Appendix 2 under Tools. The vendor should recommend the best tool to meet the agency goals. RRC does not have a preference at this time.</p> <p>2). RRC anticipates there could be multiple data source types, relational databases, non-relational databases, flat files, spreadsheets, Salesforce, etc.</p> <p>3). RRC has multiple data systems that need data transformed to the new data warehouse. RRC does not expect the vendor to maintain any transactional systems.</p> <p>4). RRC expects the vendor to recommend the frequency of the ETL process based on the requirements and needs during Phase I. The vendor will also determine the priority and number of data sets during Phase I. Phase II will contain the Work Orders to build and schedule the ETL process and data sets.</p> <p>5). The overall data volume will be assessed during Phase I (Initial Analysis and Proof of Concept).</p>

	<p>8). Part 1 – 1.2 Can you please let us know how many total numbers of users and concurrent users will be using our BI reports?</p> <p>9). General - Are you looking for a ready-made software /tool or custom solution to be built?</p> <p>10). General - Could you please let us know the tentative schedule for publishing the shortlisted vendor?</p> <p>11). General - We have registered office in US & have offshore development center in India. The project will be signed with our US entity and the development will be done out of ODC, India. We have sales and account managers in the US to manage the offshore team & deliver the project. Please confirm can we bid for this RFP.</p> <p>12). General - There is no budget provided in the RFP document. Is there any budget allocated for this RFP? Please provide an approximate budget cap for the project.</p>	<p>6). RRC expects the implemented solution to include available historical data. The extent will be determined during phase 1.</p> <p>7). RRC expects the vendor to recommend a solution that meets the agency needs and through the process of Work Orders set up the environment(s).</p> <p>8). Reporting, data exports and queries will be available to the public. Internally, RRC has approximately 800 internal employees who may use the system.</p> <p>9). RRC does not have a preference for a ready-made software/tool versus a custom solution.</p> <p>10). RRC will not publish a shortlist of vendor or vendors.</p> <p>11). Section 2.1.5 states “Non-critical project activities may be performed from remote locations within the United States. No remote work shall be conducted or performed outside of the United States, and all data must remain in the United States.”</p> <p>12). RRC cannot provide this information</p>
12	<p>It appears that RFO No. 455-20-1001 requests information for a new Data Warehousing / BI system implementation. TxRRC apparently already owns Oracle Business Intelligence Enterprise Edition (OBIEE). OBIEE has been renamed to Oracle Analytics Server (OAS) in January 2020 and greatly enhanced. All customers that are current with their maintenance of OBIEE are entitled to a free upgrade of OBIEE to OAS. This would entail no software cost whatsoever. It could be upgraded by TxRRC or by a third-party consulting company with knowledge of OBIEE and OAS. Existing metadata could be retained from the OBIEE implementation the metadata could be redefined. The main added features are the data visualization module and the new machine learning capabilities of OAS, but there are also numerous enhancements to the OBIEE product line. The use of this strategy may be so inexpensive that it would not warrant a full RFO response.</p> <p>1). Has TxRRC considered simply upgrading some of its Oracle Business Intelligence Enterprise Edition (OBIEE) to Oracle Analytics Serve (OAS) instead of starting a brand new implementation? This could at least be used for a very low cost for the initial pilot project. If not, is this a strategy that TxRRC would entertain?</p>	<p>RRC expects the vendor to provide the best long term solution based on the agency goals. If the vendor believes this solution is best for RRC both in the long term and short term goals, then the vendor may recommend this solution.</p>

<p>13</p>	<p>1) 2.1.5 #9 – Critical Vendor staff must be on site at RRC headquarters during specific times required by RRC. Requests for onsite presence must be done in accordance with agency policies related to COVID-19 or other similar events to protect the health and safety of RRC and Vendor staff.</p> <p>--Who is considered Critical Vendor staff?</p> <p>2) 2.1.5 # 14 – Vendor must provide all equipment required for Vendor staff to perform and complete work required under the Contract.</p> <p>--What equipment is being referenced here? (e.g. 2.1.4.4.5.1 states that "The Vendor must plan, design, and implement a test environment that replicates the production environment and network connectivity.)</p> <p>2a) --Will this equipment be Vendor supplied equipment?</p>	<p>1). RRC considers critical staff to be staff who must interact with RRC agency employees or management on a regular basis. These staff may include Project Managers, Business Analysts or Data Architects.</p> <p>2). RRC does not have a current environment for the data warehouse. RRC expects the vendor to create a Proof of Concept (POC) which is similar to the production environment in Phase I. RRC does not expect the vendor to have a fully functional production environment for the POC. If there are specific equipment, Software licenses, etc. the vendor expects RRC to supply, this needs to be disclosed in their bid.</p> <p>2a). RRC expects the vendor to supply the equipment. If there are specific equipment, Software licenses, etc. the vendor expects RRC to supply, this needs to be disclosed in their bid.</p>
<p>14</p>	<p>1). 2.1.4.1 Solution Capabilities – (pg 27) Need clarification on the data being ingested - is there real time message ingestion required? If so, what data source type is involved in it and how long are the intervals required to update the ingested data.</p> <p>2). 2.1.4.1 Solution Capabilities – (pg 27) Real time data is usually unstructured or semi-structured data such as JSON. Are there requirements to provide analytics on the streaming data?</p> <p>3). PART 5: SPECIAL TERMS AND CONDITIONS APPLICABLE TO RFO No. 455-20-1001 5.1 <u>PERFORMANCE BONDS – (Pg 75)</u></p> <p>In the first paragraph it is stated "...If the total awarded Contract price exceeds \$100,000, Offeror shall execute a "Performance Bond" (see Attachment 7 Performance Bond) to RRC in the amount of the total contract price. ..."</p> <p>We typically see for the State of Texas that bonds are required only for "public works" – which has been interpreted as building contracts where equipment is installed as "fixtures" within the building. We request the removal of the Performance Bond requirement.</p>	<p>1). RRC believes there is not a need for real time message ingestion, however this will be determined in Phase 1.</p> <p>2). Refer to question 1 above.</p> <p>3). The Performance Bond is to protect the State of Texas and is conditioned on the faithful performance of the Contract in accordance with the Contract Documents. Request denied.</p>
<p>15</p>	<p>1). While we understand the response needs to be in writing, can we supply our list of questions and HSP plan to you via email?</p> <p>2). Is it a requirement for us to subcontract any work on the RFP to others? We are fully qualified to run this opportunity independently.</p> <p>3). Can you confirm the schedule for this RFP remains the same as we haven't seen any amendments or addenda's stating otherwise? Just want to double check.</p>	<p>1). Respondent may submit questions in writing, HSP plan must be submitted with vendor offer.</p> <p>2). You are not required to subcontract any part of the work for this solicitation, this is based on a "good faith effort", nor does it increase your changes for award. However you are required to complete the HSP and submit with your response.</p> <p>In Section 2 of the HSP - Respondents Subcontracting Intentions asks if you are going to subcontract, If you answer NO, go to</p> <p>Section 3 of the HSP - Self Performing Justification and complete that box.</p>

		<p>Note: Per The Texas Administrative Code: Title34, Part 1, Chapter 20 Subchapter D Division 1 Rule 20.85</p> <p>Any person submitting a bid proposal, offer or other applicable expression of interest in obtaining a contract with the state shall submit a completed HUB subcontracting plan demonstrating evidence of “good faith effort” in developing that plan.</p> <p>3). RRC has extended the submission due date. See Table 2. Schedule of Events on Page 1 of Addenda No. 1</p>
16	<p>1). 3.2.26 & 3.2.27 - Should pricing information be provided in Pricing (Tab K) or Required RRC RFO Attachments (Tab L) or both? The RFP requests Attachment 6 Pricing Workbook in both of the referenced tabs.</p> <p>2). 3.2.6 & 3.2.27 - Should Attachment 3, Offeror's Qualification Statement be submitted in "Company Experience and Qualifications "(Tab D) or "Required RRC RFO Attachments" (Tab L) or both? The RFP requests Attachment 3 to be provided in both of the referenced tabs.</p> <p>2a). Additionally, RRC requests separate pages following Attachment 3 to discuss significant issues encountered on one or more projects and to explain variances of 5% or greater. Where do the additional pages reside, Tab D or Tab L?</p> <p>3). General - How many estimated analytics/reporting users does RRC estimate for the following defined roles:</p> <ul style="list-style-type: none"> ▪ Administrator ▪ Power User ▪ Standard User ▪ Internal Read-Only User <p>4). General - Does RRC expect that external users will require authenticated access to reports/dashboard information or are all external users unauthenticated/anonymous?</p> <p>5). General - If there are external authenticated users, approximately how many does RRC estimate will need access to the BI/DW solution?</p> <p>6). 2.1.3.1.6; 2.1.3.1.6.1; Attachment 5, P 1 of 7 - Please clarify if RRC is requesting an evaluation of hosting options (Vendor hosted SaaS vs DCS hosted) in our RFP response OR as a formal deliverable submitted during the Phase 1/POC?</p> <p>Specifically, the first bullet in Section 2.1.3.1.6.1 states that the "offeror must provide a response in the offer to use</p>	<p>1). Please provide pricing on Tab K</p> <p>2). Please provide information on Tab D.</p> <p>2a). Separate pages following Attachment 3 to discuss significant issues encountered on one or more projects and to explain variances of 5% or greater should be reflected in Tab D</p> <p>3). The number of users per role will be determined in Phase 1. See answers for question no. 11-8) for total internal users.</p> <p>4). RRC expects there could be external users who will require access to only their data. Most external data will be available to the public and authentication will not be required.</p> <p>5). RRC expects the vendor to gather the requirements as part of Phase 1</p> <p>6). As part of the deliverable in Phase 1, the vendor will recommend a hosting option that best fits the requirements of RRC. The vendor is still expected to provide an estimated hosting cost (Pricing Workbook) and can use a vendor hosted solution for costing purposes. The vendor can recommend an option for hosting in the RFO, but the determination will be made during Phase 1 requirements gathering.</p> <p>7). See 6).</p> <p>8). Licensed costs should be reflected in the Production Support & Hosting tab in the Pricing Workbook. One-time license fees will be in the year procured and the subscription fees should be in each year the subscription is due for payment. The Production Support & Hosting tab costs will roll up to the Total Price tab.</p> <p>9). Yes.</p> <p>10). RRC does not expect the POC to be the Productional environment. RRC expects to have a POC</p>

a vendor hosted option and State of Texas DCS hosted option yet recommend one option".

However, the requirements stated in 2.1.3.1.6.2, "Vendor Hosting Options Deliverable" appear to require the evaluation and recommendation of hosting options to be provided as one of the POC deliverables. In addition, Attachment 5: Cost Workbook, page 1 of 7, Instructions, include the following statement: "The hosting component using a SaaS solution or a DCS solution will be determined in a Phase 1 Deliverable"

Please clarify RRC's expectations for presentation/evaluation of hosting options within each of the following:

1. Vendors proposal/response to RRC BI/DW RFP
2. Phase 1, POC, Milestone 6, Vendor Hosting Options Deliverable
3. Pricing

7). 2.1.3.1.6.1, 2.1.3.1.6.2 - If there are no options available to host a proposed SaaS in the DIR DCS, should we just explain and justify the reasons in our response and/or as part of the Vendor Hosting Options Deliverable?

8). Attachment 5 Cost Workbook - Can RRC please clarify if the licensing costs for a proposed vendor hosted SaaS solution should be

- 1) Combined and included in our total proposed priced for Phase 1, POC Services? Or should the Phase 1 services only include the costs of designing, configuring, and installing the SaaS solution?
- 2) Combined and included in our total proposed price for Phase 2 services? Or should the Phase 2 services only include the costs of designing, configuring, and installing the SaaS solution
- 3) Should the SaaS licensing costs (which are inclusive of some maintenance and support costs) be provided in the Production Support row of the Cost Workbook?

9). Attachment 5 Cost Workbook - If our proposed solution includes multiple SaaS components, does RRC want the licensing costs for each of the components priced separately?

10). 2.1.3 - Can RRC please validate that the expected outcome of the Phase 1 - Initial Analysis and Proof of Concept(POC) is to deploy a close to fully functional BI/DW solution to production for a defined set of RRC user/functions (in accordance with all of the associated Deliverable requirements stated in the RFP)?

If RRC decides to move forward with Phase 2 based on the Phase 1 results, does RRC expect the POC solution to

that will replicate the production environment except in a smaller capacity. RRC expects the vendor to prove the proposed environment and processes will work during the POC.

11). See 13) below. The vendor may use a base of 80 thousand users and less than <100 concurrent users as a start. But the solution needs to scale.

12). RRC is currently undergoing a data cleansing effort to clean up data at the source. However, there may be cases where further cleansing is required. If the vendor is recommending a tool to be used for data cleansing as part of the overall process, RRC will want the tool included as part of the POC to more accurately replicate the production environment.

13). This will be determined in Phase 1. The vendor may use an estimate of 4 TB for response purposes.

14). The vendor may use 5% for proposal purposes but the estimated growth will be determined in Phase 1.

	<p>remain in production and serve as the foundation for the Phase 2 services?</p> <p>11). 3.2.26; Attachment 5 Cost Workbook - Due to variety of pricing models available in SaaS solutions, will RRC consider providing a set of assumptions around internal/external users, reports, data volumes and consumption, etc. to provide a basis for an "apples to apples" pricing comparison between vendor proposed solutions?</p> <p>12). 2.1.3.1.4.2 - Can RRC please clarify requirements related to the "data cleaning" tools referenced in this section?</p> <p>13). General -What is the total estimated volume of data to be stored?</p> <p>14). General -Is there an estimated data growth, year over year? (i.e. 5%)</p>	
17	<ol style="list-style-type: none"> 1. 1.7.2. PHASED DEPLOYMENT OVERVIEW - pg. 16 of 92 - What is the anticipated length of time RRC will take in the Stage Gate to determine if they will execute Phase 2 after Phase 1 is complete? 2. 1.6.1. SCHEDULE OF EVENTS – pg. 10 of 92 - How soon after the anticipated award date of November 16 does RRC anticipate Phase 1 to begin? 3. Figure 3. High-level Solution Reference Model – pg. 27 of 92 - What data sources (file, database, Application, etc.) are envisioned for Phase 1. Interested in types of files, databases (Oracle, SQL Server, Postgres etc.) 4. 2.1. PROJECT SCOPE – pg. 18 of 92 - A Mainframe is mentioned. What type of Mainframe? DB2 Z/OS, DB2 i/Series, something else? The specific mainframe type and Database type(s) (with mainframe OS and Database(s) (should there be more than one Database on the Mainframe) version and release details. 5. 2.1.4.1. SOLUTION CAPABILITIES – pg. 26 of 92 How many reporting/analytics solutions are there in today's 'as is' solution rely on data on 'the Mainframe'? Please specify (for example, 'home-grown', PowerBI, Tableau, Qlik, etc.) 6. 2.1.4.1. SOLUTION CAPABILITIES - pg. 26 of 92 - What is the 'as is' solution for data movement out of the Mainframe to one or more targets? 7. 2.1.4.1. SOLUTION CAPABILITIES - pg. 26 of 92 - What is the 'as is' solution for data re-shaping /aggregation? 8. 2.1.4.1. SOLUTION CAPABILITIES - pg. 26 of 92 - Are there any other sources than the 'Mainframe' participating as a source in Phase 1? If yes, please specify the Target technology type / vendor/version-release/location? 9. 2.1.4.1. SOLUTION CAPABILITIES - pg. 26 of 92 - For all phases, do candidate sources exist in 	<ol style="list-style-type: none"> 1). After assessment and validation of Phase 1 work products, RRC anticipates no more than a few days to transition from one phase to the other. 2). RRC expects to begin as soon as possible following contract negotiations and procurement setup activities. 3). Data sources include (but are not limited to): IBM Mainframe applications, Open systems (Oracle), Salesforce, SQL, as well as manual sources to include Excel, Word, Access, etc. 4). IBM Mainframe running the Z/OS operating system and residing in the Texas Central Data Center. 5). RRC currently exports mainframe data to Oracle OBIEE for reporting and queries purposes as well as a few home grown. 6). RRC is currently exporting data via flat files and importing into Oracle. RRC will also be using Informatica to migrate data off the mainframe. 7). See answer 6). 8). See answer 3). 9). Data sources currently exist in the Texas Data Services Center. RRC also has data in local Access databases and Excel spreadsheet. 10a). Refer to Question No 16 – 13). 10b) RRC currently is not using any tools for Data Profiling and Data Quality. 10c) RRC has recently procured Informatica for ETL processes. 10d) This will be determined in Phase 1.

	<p>the same data center today or are they geographically dispersed? If dispersed, what are the list of cities where candidate sources reside? Do any existing candidate sources (any phase) reside outside the State of Texas today?</p> <p>10. 2.1.3.1.2.1. Vendor’s Analysis Reports Required Activities - 21 of 92 - For Phase 1.</p> <ol style="list-style-type: none"> a. What is the anticipated source data size (ranges are fine) measured in MB / GB for phase 1 (POC)? b. What is the ‘as is’ solution (if any) for satisfying Data Profiling and Data Quality requirements? c. What is the ‘as is’ solution (if any) for ETL? d. How long would be considered ‘too long’ for the POC execution timeline? 	
18	<ol style="list-style-type: none"> 1). Are there any data quality metrics for the source systems in scope specifically mainframe. 2). Do we plan to build solution to be cloud ready or deploy on cloud as well 3). For the immediate scope what is the volume of structured data that we are to migrate ; also how much of historical migration in scope? 4). Do we need to consider any on-premise infra setup in scope 5). Does Texas RRC have Cloud subscription and environments. Do we need to consider any cloud foundation set up activities as part of the project scope? 6). How long do we anticipate to continue ongoing [sic] support and maintenance. 7). What are the different report consumption patterns expected as part of the project execution 8). Are there any down stream [sic] systems which will consume the data via APIs 9). How much of mainframe data do we anticipate in scope given the data quality concern 10). Are there any specific use case under consideration for reporting and advanced analytics 11). Are there any ETL tools in the current landscape which needs to be leveraged as part of the project execution 12). Would like to understand the details on the total data volume and the year on year growth for the data volume 	<ol style="list-style-type: none"> 1). RRC does not have quality metrics for source systems in scope. Also refer to question no. 25-9). 2). Vendor will be responsible for building and deploying the solution to its final production destination. 3). The immediate scope for Phase I is a POC which will require a small amount of data migration. During Phase I, the vendor and RRC will determine if any historical data will be converted. 4). This will be dependent on the vendor’s proposal and recommended tools. 5). Vendor will not be using any existing services RRC may have and should consider proposing for a new environment. 6). See Section 3.1.8 for Performance Period. 7). RRC would expect the vendor to identify the consumption patterns as part of Phase 1. 8). This will be determined in Phase 1 but there may be cases. 9). RRC expects a small amount of mainframe data to be migrated on a routine basis. However, there may be a one-time load of historical data through extracts. The need for historical mainframe data will be defined in Phase 1 10). Use cases will be determined in Phase 1. 11). See answers for question no 17-10c). 12). See answers for questions no 16-13) and no. 16-14).

<p>19</p>	<p>1). 1.2 - How many people are currently part of the existing RRC BI/DW team and supporting existing system(s)? What is the make up of that team in skillsets/job titles?</p> <p>2). 1.2 - "Cumbersome and time consuming" are there any examples related to this?</p> <p>3). 1.2 - Unstructured is mentioned throughout. What does there non-relational, unstructured data does this currently include? What near future plans exist to include it?</p> <p>4). 1.2 - Our assumption is that the "consumption" layer between data users and data sources is the reporting and analytics layer. Is that correct?</p> <p>5). 1.2 - What does public mean, in the scope of this RFO? Public entities, specific external customers, or a much broader term?</p> <p>6). 1.4 - What is time sensitive to RRC? Minutes, hours, days?</p> <p>7). 1.4 - If it varies by data source, is there information on that time sensitivity by source?</p> <p>8). 1.4 - Is there a need for "near real-time" reporting?</p> <p>9). 1.4 – Do you have examples of what gaps exist in data today?</p> <p>10). 1.4 - Data Quality issue examples?</p> <p>11). 1.4 – What are the manual steps that lead to the biggest delays?</p> <p>12). 1.4 - There are conflicting statements throughout as to whether or not mainframe/IMS is part of the solution. Has that been decided? Should we consider that in the bid?</p> <p>13). 1.7.3 - What are the current networking bandwidth capacities in and out of RRC (Texas Data Center)?</p> <p>14). 2.1 - Does the solution have a requirement for near real-time data solutions or just incremental data loads from sources? Is there information available on the expected data latency per data source?</p> <p>15). 2.1.3.1.1.2 - Has RRC decided on an initial targeted data source(s) for proof of concept?</p> <p>16). 2.1.3.1.2.1 - What is the current maturity level of RRCs business intelligence? Is there a well documented set of the organization's analytic measures, key performance indicators, and thresholds?</p> <p>17). 2.1.3.1.2.2 - 2-3 years, is the timeline expected for full implementation? Some other dates given suggest a much shorter 22 month timeline (to Aug 2022).</p> <p>18). 2.1.3.1.4.1 - Section is repeated word for word. Is this a copy and paste error or was something omitted from the doc?</p>	<p>1). Around 12 resources are part of the DW/BI team. They range from project managers, ETL developers, business analyst, mainframe developers, and system admin.</p> <p>2). One example is not having a central repository to use for reporting or query purposes. It can be time consuming to pull data from multiple repositories to answer a question or produce a report.</p> <p>3). The RFO only mentions Unstructured in 2.1.4.1. The unstructured data could be GIS data that is captured in some of RRC's transactional systems.</p> <p>4). Yes</p> <p>5). Public includes any individual that is not an RRC employee.</p> <p>6). Most are in days or less frequent, but Phase 1 may uncover data entities that are required real-time.</p> <p>7). See answer 6)</p> <p>8). See answer 6)</p> <p>9). Not all data is readily available for reporting and query purposes.</p> <p>10). See answer to question no. 25-9).</p> <p>11). Having to manually extract, compile, and consolidate data for ad-hoc reports.</p> <p>12). See answer for question no. 25-2).</p> <p>13). Current capacity for district offices is 100M through backup and 400M primary routing via WBT. WBT is 400M as mentioned.</p> <p>14). See answer for question no. 14-1)</p> <p>15). No.</p> <p>16). The agency has documented performance measures that are reported on. RRC has a mix of knowledge with business intelligence.</p> <p>17). See Section 3.1.8 for Performance Period.</p> <p>18). The second bullet point was mistakenly repeated.</p> <p>19). No, except for approvals to proceed with future Work Order.</p> <p>20). RRC will provide a retention policy to the vendor during Phase 1.</p> <p>21). See 20).</p> <p>22). No.</p>
-----------	--	--

<p>19). 2.1.4 - Is RRC expecting any time gap between POC and phase 2 rollout, based on internal review and decisions about Phase 1 deliverables?</p> <p>20). 2.1.4.1 - What are the retention requirements to store unstructured data? Specifically, how many days or months would the data need to be available for active searches.</p> <p>21). 2.1.4.1 - Are there any compliance mandates that would require the data to be kept for a longer period of time than what's required for active searches?</p> <p>22). 2.1.4.1 - "Databases utilized by new processing platforms;" Are there any technologies that RRC has elevated concern about integration with?</p> <p>23). 2.1.4.2 - Ingest "Streaming" data is mentioned in Figure 4. Does RRC currently have any streaming data sources? If so, could a sample be provided on what they are?</p> <p>24). 2.1.4.2 - Is there any PII (Personally identifiable information) steaming data that would require redaction before being sent to the data lake?</p> <p>25). 2.1.4.2 - Are there any additional destinations for streaming data besides the data lake?</p> <p>26). 3.2.10.1 - We noted this section was not included, but sub-sections 3.2.10.1.1 and 3.2.10.1.2 do. Is this truly missing or is there a section omitted by accident?</p> <p>27). 5.1 - Please confirm that RRC is requiring one (1) bond for the entire cost of the project, or if a percentage of the contract is acceptable.</p> <p>28). Appendix 2 - We've noticed a number of documented and diagramed solutions leveraging the Oracle database, Oracle BIEE server, Power BI, Sharepoint, and Oracle Data Integrator in RRC diagrams and requirements. Our solution approach is vendor agnostic. Some Cloud providers allow existing licenses deployment on their cloud platform at discounted price (up to 60-80%). Does RRC have any enterprise license agreement with Microsoft and/or an unlimited license agreement with Oracle that should be realized in making a best offer to the RFO?</p> <p>29). Appendix 2 – Basic table counts were provided for Oracle. May we obtain the number of columns, total number of rows, and average row sizes (in MB) for each table too? This is important for sizing and pricing the targeted solution.</p> <p>30). Appendix 2 – Volatility is a significant factor in proper solutioning. Is there any information available on the expected daily change rates and sizes?</p> <p>31). Appendix 2 – If IMS is to be included in the solution as a data source, more sizing information is needed. What is the total database storage requirement?</p>	<p>23). Not at this time.</p> <p>24). See answer for question no. 20-2).</p> <p>25). See 23).</p> <p>26). Section 3.2.10.1.1. should be 3.2.10.1.</p> <p>27). Yes, RRC is requiring one Bond for the duration of the project in the amount of the total contract price.</p> <p>28). See answer for question no. 10-1).</p> <p>29). This information will be available in Phase 1.</p> <p>30). This information will be available in Phase 1.</p> <p>31). RRC does not expect IMS data segments to be migrated to the data warehouse from the mainframe. If data is gathered from the mainframe, it will be through extract programs. RRC also uses Informatica to produce exports from the mainframe.</p> <p>32). See question 31.</p> <p>33). See question 31.</p>
--	---

	<p>32). Appendix 2 - What version of IMS is RRC running? If you are running IMS V12+ is IMS Open Database with the IMS Catalog enabled?</p> <p>33). Appendix 2 - Is IMS running IMS Connect and IMS Open Database Manager?</p>	
20	<p>Security, Single Sign-On/Identity Management:</p> <p>1). Will security need to be architected or leverage LDAP</p> <p>2). Should the proposal cover the need to host PII data, or are you looking for a solution to mask all PII data in the warehouse to avoid PII security concerns?</p> <p>Report Distribution:</p> <p>3). Will the Report user be external, internal or both</p> <p>4). Will the Reports need to be delivered via email? How many per week?</p> <p>5). Has there been a report reconciliation or other effort to determine if additional data is required? Have additional data elements been identified outside of the scopes provided?</p> <p>6). Is there a need for adhoc reporting and publishing?</p> <p>Report Participation:</p> <p>7). Does RRC prefer formal training, or train the trainer approach?</p> <p>8). What is the current expectation of TX RRC employees/resources to be involved in this project, resource plans and allocated time, to work with the implementation partner? 10 RRC personnel are mentioned in Phase 1, would that continue into Phase 2?</p> <p>Environment:</p> <p>9). How many environments will need to be stood up to support this effort, and will the vendor be asked to manage and support them?</p> <p>10). Please describe network connections (latency and bandwidth) between source and target systems. On Premise and/or cloud sources.</p> <p>11). How many source systems are expected, are all integrations to LoneStar or will direct connections to other sources be required?</p> <p>12). Is this a re-write of existing data feeds, or net new?</p> <p>13). How much data is stored in the DW today?</p> <p>14). Please confirm only mainframe related data is to be replaced in the data warehouse?</p>	<p>Security, Single Sign-On/Identity Management:</p> <p>1). RRC uses AD for internal staff Identity and is in the process of building out IDaaS for the regulated community and the public.</p> <p>2). RRC expect the vendor to meet business requirements while PII data is to be protected and accessible only to authorized personnel</p> <p>Report Distribution:</p> <p>3). RRC expects to have both internal and external users access reports.</p> <p>4). Although at this time the reports are not expected to be delivered through email, this will be determined in Phase 1.</p> <p>5). RRC expects the vendor during Phase I to determine the data required for reporting purposes. RRC does not expect any current reporting data to be outside of what RRC is collecting through its transactional systems. As the data warehouse evolves over time, RRC believes additional data outside its transactional systems may be used for future predictive analysis.</p> <p>6). Yes</p> <p>Report Participation:</p> <p>7). Formal Training preferred, but it is not an exclusive requirement. Other proposals will be considered.</p> <p>8). RRC will allocate the necessary resources to ensure a successful implementation of this effort. The actual number will be based on the selected vendor's proposed implementation plan</p> <p>Environment:</p> <p>9). RRC expects the vendor to make a recommendation for the number of environments. RRC also expects the vendor to manage and maintain these environments on an ongoing basis.</p> <p>10). This information will be available after the contract is awarded.</p> <p>11). Multiple data source systems types exist and will need to be considered during the life of the solution. The source systems include Mainframe, (IMS), Oracle, Salesforce, MS SQL, and others.</p>

<p>15). Is this DW expected to be a manual load or automated? A full load vs a delta load</p> <p>16). What interval is expected? How current does the DW need to be?</p> <p>17). How is data being loaded (method/tools) into existing environments today? Should our proposal leverage similar tools?</p> <p>18). Will any of this data be archived to avoid costs/performance concerns, or is all the data required to be online?</p> <p>19). How many subject areas are anticipated? How much data needs to be transformed?</p> <p>20). On one section (2.1.3.1.6) the preference is Cloud Based, However in 2.1.3.1.6.1 it appears that RRC Texas prefers an On-Premise solution. What are the primary drivers in play and what is the preference?</p> <p>21). Is the intention to expand this DW to cover more than mainframe data, or will the data scope be limited?</p> <p>22). What integration, database and visualization tools are in use today and is there a preference to use these?</p> <p>23). Informatica and Power BI were mentioned, are these the preferred choices?</p> <p>Performance: 24). How timely do these reports need to respond? Virtual warehousing, although simpler to set up, can lead to performance issues due to distributed data</p> <p>Data Standards: 25). How is RRC managing meta-data, ensuring that different data sources are using the same hierarchies for data comparison and cleansing?</p> <p>26). How is the meta data being managed, governed, and getting approval to change data?</p> <p>Budget: 27). Does RRC have a current budget allocated for this project for professional services/implementation?</p> <p>28). Will RRC accept a Phase 2 budget as a deliverable from Phase 1, or should we provide a proposed Phase 2 budget, subject to revision after Phase 1?</p> <p>Scoring & Award: 29). Is there a scoring matrix outlining the weighting of criteria? Are there other factors beyond cost competitiveness, service and support standards, Bidder quality, new Bidder transition costs, required cost details, and compliance to specifications that were mentioned?</p>	<p>12). RRC expects the vendor to create new data feeds.</p> <p>13). RRC does not have an existing DW. RRC contains an Oracle environment that has both transaction and OBIEE.</p> <p>14). RRC is using a cloud based Sales Force system and in the process of moving all mainframe data into an Azure cloud based system. RRC expects most of the data will be from these two environments. However, this will be determined in Phase I.</p> <p>15). RRC expects the vendor to recommend this approach in Phase I based off its analysis and RRC Goals.</p> <p>16). RRC expects the vendor to recommend this approach in Phase I based off its analysis and RRC Goals.</p> <p>17). RRC has stated in the RFO the tools the agency has used and at its disposal. RRC expects the vendor to recommend the best tools which meets the agency needs even if it does not align with the current tools used today by RRC.</p> <p>18). RRC Data will be maintained as per data retention policies, however, this will be determined in Phase I.</p> <p>19). RRC expects all data to be transformed over time into the data warehouse for reporting and analysis. The vendor will recommend in Phase I the order of subject areas.</p> <p>20). 2.1.3.1.6.1 contains two hosting options both of which are not an On-Premise solution. State agencies are mandated to use the Texas Data Center Services (DCS) unless an accepted justification is provided for a hosting solution outside of DCS. The vendor may propose a solution outside of DCS with proper justification.</p> <p>21). RRC is using a cloud-based Sales Force system and in the process of moving all mainframe data into an Azure cloud based system. RRC expects most of the data will be from these two environments, however this will be determined in Phase 1.</p> <p>22). As stated in 3.2.8, RRC currently uses Microsoft Power BI, but RRC requests that the Offeror propose the best analytics tool(s) to meet RRC requirements as the Offeror sees fit. The RFO also states in Attachment 2 under Tools a similar response for Informatica and Power BI.</p> <p>23). RRC expects the vendor to recommend the best tools to meet the agency goals.</p> <p>Performance: 24). RRC expects the vendor to determine the timeliness of reports in the data warehouse during Phase I.</p>
---	---

		<p>However, RRC at this time does not believe any real time reporting from the data warehouse is warranted, however this will be determined in Phase 1.</p> <p>Data Standards: 25). RRC does not currently have a repository for managing meta-data. RRC expects the vendor to recommend a solution for managing meta data for reporting and query purposes.</p> <p>26). See 25) above.</p> <p>Budget: 27). Yes.</p> <p>28). The vendor must propose a Phase II budget to the best of their abilities. Phase II budget may be adjusted based on the requirements gathered in Phase I and RRC agrees with the Phase II adjustments. If Phase II adjustments are too high, RRC may elect to bid Phase II to the market.</p> <p>Scoring & Award: 29). Scoring is described in Table 4. Evaluation Criteria.</p>
21	<p>1). 2.1.3.1.6.2.- When you buy as a service, does it need to be through the Data Center Services Program?</p> <p>2). 1.6.1 - Will RRC consider an extension to the due date timeline of 9/1?</p> <p>3). 3.1.2 - Will RRC consider a virtual submission of the solicitation response?</p> <p>4). 1.4 - What are the CI Names of the servers hosting the applications currently?</p> <p>5). 2.1.4.1 - What are the current database sizes and what release level are the databases?</p> <p>6). 1.7 - The project scope indicates some Non-mainframe systems. Can you provide the types of Operation systems and the release levels?</p> <p>7). 4.45 - How many Disaster recovery tests will be performed each year?</p> <p>8). 4.45 - What is the expected RTO / RPO for disaster recovery?</p> <p>9). 2.1.4.1 - How many endpoints are there? We know the target is a Data Warehouse. How many operational sources are there that will feed the data warehouse?</p> <p>10). 2.1.4.1 - Are the sources all RDBMS, Web services, and FTPs?</p> <p>11). 2.1.4.1 - Do you have a breakdown of sources by type (Number of unique databases, FTP endpoints, Web Services (Rest or SOAP)?</p>	<p>1). During Phase 1, the vendor will recommend the best hosting option to meet RRC requirements. Option 2 allows for hosting options or services to be purchased outside of Data Center Services.</p> <p>2. RRC has extended the submission due date. See Table 2. Schedule of Events on Page 1 of Addenda No. 1</p> <p>3). No</p> <p>4). RRC will provide that information to the awarded contractor.</p> <p>5). This information will be provided to the vendor during Phase 1.</p> <p>6). See answer for question no. 17-3).</p> <p>7). Typically, this is done annually</p> <p>8). Varies with the application and platform – transformed environments should have the ability to RTO within cloud hosted norms.</p> <p>9). The number of endpoints will be addressed during Phase 1. See also question no 20-11).</p> <p>10). See answers for question no 20-11).</p> <p>11). RRC expects the vendor to gather the requirements as part of Phase 1</p> <p>12). See answers for question no 19-6).</p> <p>13). RRC is not clear on the vendor’s definition of the abbreviation “HA” and cannot respond.</p>

<p>12). 2.1.4.1 - Do these integrations from the operational source to the target need to be in real-time, near real-time, hourly, daily or monthly?</p> <p>13). 2.1.4.1 - Is HA a requirement for the Integration?</p> <p>14). 2.1.4.1 - Figure 7 on page 87 shows an EDI component. Is Electronic Data Interchange in scope for this project? If so, how many Trading Partners would be included?</p> <p>15). 2.1.4.1 - Since there is a requirement to provide Public APIs, how many API calls per day do you anticipate?</p> <p>16). 2.1.4.1 - How many users would need access to Data Catalog? What are their roles?</p> <p>17). 2.1.4.1 - How many users would need access to Data Preparation? What are their roles?</p> <p>18). 2.1.4.1 - What is the average amount of data in TBs that goes through the ETL/ELT, replications etc., processes?</p> <p>19). 2.1.4.1 - Do you have a need to create a master data of any of your domains to create a golden record and synchronize those with other endpoints before creating the data warehouse? If so, how many golden records do you anticipate?</p> <p>20). Section 1.2 - What are the use cases utilizing real-time data?</p> <p>21). Section 1.4 - Can you provide examples of the manual processes that would be replaced/optimized in a targeted solution for RRC?</p> <p>22). Section 2.1.3 - Please provide initial, anticipated data volume for the Phase 1 testing.</p> <p>23). Section 2.1.3 - How many concurrent user sessions do you anticipate for Phase 1?</p> <p>24). Section 2.1.4 - What is the anticipated data volume for Phase 2? Can you please provide growth projections (e.g. percentage growth) for this data over a three-year period?</p> <p>25). Section 2.1.4 - What is the concurrency requirement for the deployed solution?</p> <p>26). Section 1.2 - “Self-service” can refer to multiple concepts; and there are often several bottlenecks that can prevent self-service access. These can range from experience levels, technologies, processes, etc. For example, the ability to submit unclesanded data into the lake, transform it directly, and then interact to gain insights; as opposed to a process of coordinating ingestion through ETL/ELT before being given access and limited abilities with the data. While the first may provide quicker answers, it may also be less reusable or reliable in terms of flexibility; and while the second may be more cumbersome,</p>	<p>14). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>15). RRC expects the vendor to gather the requirements as part of Phase 1 for API calls. The number of API calls anticipated using the Data Warehouse is expected to be very low if any.</p> <p>16). See answers for question no 25-13).</p> <p>17). See answers for question no 25-13).</p> <p>18). These details will be defined and documented as part of Phase 1.</p> <p>19). RRC does not believe this is needed but this will be determined during Phased 1.</p> <p>20). See answers for question no 20-24).</p> <p>21). These details will be defined and documented as part of Phase 1.</p> <p>22). RRC is unable to provide a volume due to the subject area will be selected during phase 1. However, this will be sample set of data and less than 2 GB in size.</p> <p>23). During Phase 1, RRC and the vendor will agree on a test number of concurrent users for the POC.</p> <p>24). See answers for question no 16-13).</p> <p>25). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>26). Self-Service to RRC means moving the responsibility of reporting and queries out of the hands of IT staff and into the hands of business or users requesting the information. The goal of the agency is to have data available with meaning so the user requiring information can gather the information to answer their questions without the support of IT Staff.</p> <p>27). No.</p> <p>28). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>29). There are no upstream sources from the mainframe. RRC is not clear on the vendor’s question of bypassing the mainframe data.</p> <p>30). See answer for question no. 25-9).</p> <p>31). The vendor may propose a solution they believe best meets the requirements of RRC.</p> <p>32). RRC has not recommended an Agile process but will allow the vendor to work using Agile within the Work Orders assigned. The Work Orders will have a</p>
--	---

it may provide more reliability and reusability. What would be a description of the expected and ideal states and priorities when it comes to “self-service,” and which components are most important to have as “self-service?” Only the BI portion, or other components as well?

27). 2.1.3.1.6.2 - Are there any known restrictions around the Vendor’s back-end SaaS Hosting in Option 1, beyond the NIST standard definition of Cloud Computing? For example, if Vendor chooses to offer advanced technologies that have additional features when using secured public cloud components for metadata enhancement?

28). 2.1.4.1 – We understand that storage of unstructured and structured data is a requirement. Within these categories, there are often subcategories that can affect solution performance and cost; and further, sometimes legacy systems can provide constraints that may not be required for a modern platform. Can you provide further details regarding:

- Expected historical data volumes
- Expected incremental data volumes
- Expected incremental data refresh frequencies
- Expected data update methods:
 - Example: Is it possible that past data ever changes? Or will data only ever be added as a new transaction?
 - Expected process concurrency:
 - Expected number of concurrent BI users
 - Expected number of concurrent “ETL” processes

29). 2.1.4.1 - When attempting to bypass the mainframe data, will we be able to extract data from all sources upstream from the mainframe?

30). 2.1.4.1 -Are the root causes of the potential data quality issues referred to on the mainframe known? Is the nature of these data quality issues technical (ie. data formats) or business-logic (ie. the wrong calculations defined)? Related, are the downstream effects of these data quality issues known? Is the business logic required for correction defined, or is the intent that the new system may help facilitate discovery and solutioning around additional discrepancies?

31). 2.1.4.1 - Figure 3 appears to show a high-level solution reference model. In this model, ETL & ELT are shown upstream from the “Organize” layer. However, our solution may only include the “Extract (E)” portion under “Acquire”; while the “Load & Transform” (L & T) portions may occur downstream or in conjunction with the “Organize” section. In other words, sometimes extracting and landing raw source files to scalable disk or streams to scalable memory; and then subsequently (in no particular order): transforming data, applying structure if needed, optimizing data for downstream applications, etc. Will a

defined set of requirements and the Vendor can choose the methodology they believe will best meet those requirements. The number and scope of the Work Orders will be defined in Phase 1. The vendor will estimate the number and cost of each Work Order that will carry through the end of the contract period of August 2022.

33). See answer for question no. 20-8). The vendor will collaborate with RRC during Phase 1 to address a Data Governance model that best fits the agency.

34). RRC is open to recommendations from the vendor.

35). Appendix 2 provides a high-level overview. During Phase 1, the vendor will define the categories of data and use cases.

36). If the vendor’s proposed method’s warrant this type of training in order to utilize the system, then the vendor should propose all necessary training.

solution that deviates from the example but fulfills the intent be acceptable?

32). 2.1.4.3 - This section references that Phase 1 should be a fixed-price model. But it also references that downstream phases may be delivered in an Agile manner. By nature, it may be best for the foundations of the platform to be fully functional (though perhaps not yet scaled) early on and prior to the first application deployment(s): for example, security models, workload management queues, organizational naming conventions, application onboarding processes, etc.; and then folding and scaling as applications and development increase. However, detailed requirements and specifications for future applications may be unknown as of now and may slow down the Agile process to define in their entirety prior to estimating. Would it be acceptable if our offer followed this general pattern? Should our offer include the entire budget for all subsequent phases and/or fixed number of years, or just fixed-price for the Phase 1, with a fixed budget and estimates for subsequent phases?

33). 2.1.4.4.1.2 - What will the team from RRC look like, in terms of roles, seniority, profiles, and number of individuals? Is there already a governance model in place that Vendor should conform to with counterparts; or would RRC collaborate with Vendor to define a governance and organizational model?

34). 2.1.4.4.2 -Because various types of requirements (such as data access requirements, performance requirements, functional requirements, expected outputs, etc.) will define almost all downstream activities, such as design specifications and test plans, will Vendor be given access to the appropriate RRC counterparts, in order to collaborate to clearly define requirements and success criteria? Would RRC benefit from Vendor providing expertise, such as new technical approaches, advanced statistical or analytical methods, and industry expertise in defining these requirements, or does RRC already have the expected solutions and approaches predefined?

35). 2.1.4.4.2 - Is there any additional information regarding nature or categories of the data or use cases, beyond what can be implied from the table names in Appendix 2? For example: IOT sensor data, transactional data, etc.?

36). 2.1.4.4.6.2 -Beyond application end-user training, and train-the-trainer, should Vendor's proposal include any advanced models beyond "train-the-trainer"? For example, models where one develops and maintains Centers of Excellence, or tailored trainings by function (example: Data Scientists), beyond a specific application or platform?

<p>22</p>	<p>Change Management:</p> <ol style="list-style-type: none"> 1). What visibility will this migration have within the organization? What type of reporting will leadership need? Business users need? 2). What risks and concerns do you associate with a transition to cloud? 3). Describe the current organizational structure used to maintain your on-prem data warehouse. 4). How are changes to business requirements, policies and procedures typically made? 5). What is the program vision and case for change? <p>Cloud/Networking:</p> <ol style="list-style-type: none"> 1). Have the network and security criterion for the cloud (like AWS, Azure, GCP etc.) been established and implemented? 2). Is there a preference to go with a specific cloud provider? (AWS, Google, Azure, others) 3). Are any of the above listed cloud providers are currently used in the organization? 4). Do the selected technologies have to be approved by a C-level team or council, and if yes, how long is the typical selection and approval process? <p>Data Analysis:</p> <ol style="list-style-type: none"> 1). Are there requirements for temporal data and related analytics in the current and future systems? 2). Are there requirements for presentation of data for analytics on maps? Are there GIS requirements? <p>Data Archiving/Retention:</p> <ol style="list-style-type: none"> 1). What is the retention policy for history tables currently? 2). How many history tables will need be migrated and what is their approximate volume? <p>Data Management:</p> <ol style="list-style-type: none"> 1). Will there be requirements for the creation of a data catalog and tracking of data lineage in the future state? 2). Will there be requirements for managing data privacy concerns (PII, CCPA, etc.) the future state? We see "personnel" data on Figure 5, does this include PII data? 3). Will there be requirements for managing master data and hierarchies in the future state? 4). Will there be requirements for implementing data stewardship processes in the future state? 5). Will there be requirements for implementing data quality processes in the future state - for data cleansing, merging/matching, automated data quality statistics and reporting etc.? 	<p>Change Management:</p> <ol style="list-style-type: none"> 1). Agency wide visibility – across all divisions. Summary, Detailed, Ad-hoc reporting, dashboards/visualizations, Performance Measures, etc. Business users will need the same. 2). Security and Disaster Recovery are risks. Costing of services/support would be a concern 3). There is not currently an on-prem Data Warehouse. 4). Business requirement changes are made via a change control board; policies and procedures changes are made by the division leadership teams. 5). See Section 1.2 for Project Background & Objectives; Figure 1: Roadmap for Future State scalability; and Section 1.4 Current State Challenges <p>Cloud/Networking:</p> <ol style="list-style-type: none"> 1). No 2). No preference 3). Yes, Azure cloud is currently being implemented for an Oil & Gas application. 4). Yes. For this effort, the approval process will not take more than a few days. <p>Data/Analysis:</p> <ol style="list-style-type: none"> 1). RRC expects the vendor to gather the requirements as part of Phase 1. 2). Yes. RRC expects the vendor to gather the GIS requirements as part of Phase 1. <p>Data Archiving/Retention:</p> <ol style="list-style-type: none"> 1). See answer for question no. 19-20). 2). See answer for question no. 25-11). <p>Data Management:</p> <ol style="list-style-type: none"> 1). RRC expects the vendor to gather the requirements as part of Phase 1. 2). See answer for question no. 20-2). 3). RRC expects the vendor to gather the requirements as part of Phase 1. 4). RRC expects the vendor to gather the requirements as part of Phase 1. 5). RRC expects the vendor to gather the requirements as part of Phase 1. Also see answer for question no. 16-12). 6). See answer for question no. 25-9). 7). Yes
-----------	---	--

<p>6). What are the current measures on Data Quality based on Completeness, Accuracy, Availability, Timeliness?</p> <p>7). Is disaster recovery and high availability in scope for the target architecture?</p> <p>Data Movement:</p> <p>1). What ETL tool(s) do you use to load data into existing DW?</p> <p>2). How much transformation logic is contained within the ETL tool(s)?</p> <p>3). Is there any hard coded logic written into the ETL tool(s) that would need to be either re-used or re-written?</p> <p>4). How long does the longest existing data pipeline job take to finish running without errors?</p> <p>5). Can you provide the daily volume for data movement, and any other additional volume cadence, like monthly, quarterly etc..?</p> <p>6). Is data ingestion all batch processes? Or is there any streaming data?</p> <p>Data Sources:</p> <p>1). Could you provide a list of data sources, and type. Which data sources are transactional?</p> <p>2). If a data source is comprised of flat files or needs to be staged as flat files, please provide all file formats (ASCII / JSON / XML / ORC / etc.)?</p> <p>3). Could you describe the file cadence per source (Daily / weekly / monthly / quarterly)?</p> <p>4). If possible, provide data volume estimates by data source.</p> <p>5). How many data sources are there currently that are being ingested into the existing DW?</p> <p>6). Can you provide information around full load vs delta load in these sources, and if the sources have CDC capabilities for the delta requirements?</p> <p>7). Can you provide the list of technologies involved in the several data sources we will be interacting with? Is it only the Oracle RDBMS called Lonestar?</p> <p>Database Architecture:</p> <p>1). Could you provide the number of schemas (Staging , DQ, EDW , Information Layer , General Access Layer etc.)?</p> <p>2). Please provide the number of tables & views per schema?</p> <p>DevOps:</p>	<p>Data Movement:</p> <p>1). See answer for question no. 17-6).</p> <p>2). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>3). The vendor will not be using existing logic.</p> <p>4). The ETL bridges are under development.</p> <p>5). RRC does not currently have a data warehouse to provide these metrics.</p> <p>6). See 5). No streaming data.</p> <p>Data Sources:</p> <p>1). See answer to question 17-3).</p> <p>2). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>3). RRC has batch jobs which produce files for consumption in cadences listed. These requirements will be gathered in Phase 1.</p> <p>4). See answer for question no. 16-13).</p> <p>5). RRC does not currently have a data warehouse.</p> <p>6). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>7). LoneSTAR is using Microsoft SQL. Also see answer to question no. 17-3).</p> <p>Database Architecture:</p> <p>1). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>2). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>DevOps:</p> <p>1). No</p> <p>2). No.</p> <p>Documentation & Knowledge:</p> <p>1). RRC has existing documentation and will provide the Vendor access to technical and business SME's to provide insight into the agency current state, business processes, and systems.</p> <p>2). <i>No.</i></p> <p>ETL Architecture:</p> <p>1). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>2). RRC does not have an existing data warehouse. RRC expects the vendor to gather the requirements as part of Phase 1.</p>
---	--

<p>1). Is there a specific DevOps toolset that are being used across the board?</p> <p>2). Is CI/CD expected as part of the Phase1 POC?</p> <p>Documentation & Knowledge:</p> <p>1). Is there current state lineage, technical, design documentation for the processes at play, and access to SMEs, BAs, DAs with insight into the current state; or would many of the systems would involve reverse engineering to start with?</p> <p>2). Is/Are there current any service providers managing the current reporting and analytics platforms? If so, who?</p> <p>ETL Architecture:</p> <p>1). Could you provide the number of Source / Staging specific stored procs (data load into Staging ETL procs / Post load - pre EDW ETL Procs)?</p> <p>2). What is the number of DW stored procs (data load into DW)?</p> <p>3). What is the number of stored procedures that need to be migrated?</p> <p>4). Are there any data transformation business rules contained anywhere outside Stored Procedures? If so, please describe.</p> <p>Migration:</p> <p>1). Is report and associated queries migration in scope for this phase? If yes, is there an approximate count of reports that will lift and shift and be rebuilt?</p> <p>2). What is the total volume of the historical data to be moved and incremental data size per year?</p> <p>3). How do you build and maintain the semantic layer for business users today (if applicable)?</p> <p>4). Is there defined success criteria or SLAs post-migration? Ex: Specific metrics around query times, upload times, etc.</p> <p>Program Governance:</p> <p>1). Is designing compliance and access policies for the chosen cloud provider in scope?</p> <p>2). Is a cost management / chargeback solution in scope?</p> <p>3). Are there any Federal reporting and data standards that needs to be addressed? If so, what are they?</p> <p>4). Is there an existing task force or project team from RRC that is dedicated to this effort?</p> <p>5). Who/what roles from the RRC will participate in oversight of this project?</p> <p>Proposal Scope:</p>	<p>3). RRC does not expect any stored procedures to be migrated.</p> <p>4). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>Migration:</p> <p>1). There is no current data warehouse to migrate from.</p> <p>2). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>3). See 1).</p> <p>4). RRC expects the vendor to gather the requirements as part of Phase 1</p> <p>Program Governance:</p> <p>1). The vendor can recommend the best solution which will meet RRC goals.</p> <p>2). RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>3). Yes, RRC expects the vendor to gather the requirements as part of Phase 1.</p> <p>4). See answer to question no 19-1)</p> <p>5). See answer to question no 20-8)</p> <p>Proposal Scope:</p> <p>1). The proposal is for Phase 1 and Phase 2 with the possibility of a Phase 2 adjustment based on findings in Phase 1.</p> <p>Quality Assurance:</p> <p>1). RRC does not have an existing data warehouse to compare queries to.</p> <p>2). RRC expects the vendor to make the best recommendation for automated vs manual testing based on the tools the vendors propose.</p> <p>Security & Monitoring:</p> <p>1). The vendor may recommend a monitoring solution if the vendor believes RRC requires one.</p> <p>2). This would be addressed in Phase 1.</p> <p>3). Not that RRC is aware of. This will be addressed in Phase 1.</p> <p>Talent & Adoption:</p> <p>1). There are select IT staff and data SME's in the business units that have knowledge of SQL.</p> <p>2). Yes, exporting of data is a desired requirement. RRC currently has some ability to export data but this is dependent on the system being used and its features/functions.</p>
--	---

<p>1). The expected proposal response is limited to Phase 1 of the work. Is that correct?</p> <p>Quality Assurance:</p> <p>1). Do you know if comprehensive data validation testing will be necessary for the migration effort? Ie. Comparing queries in the new platform to the same queries in existing DW in order to gain confidence that the data is 'correct'.</p> <p>2). How much of your data pipeline testing is automated vs. manual?</p> <p>Security & Monitoring:</p> <p>1). Is an DW/BI monitoring solution in scope?</p> <p>2). What are the security protocols for data at rest and in-transit?</p> <p>3). Are there any compliance and auditing requirements that need to be included in the DW solution?</p> <p>Talent & Adoption:</p> <p>1). How many of your business users know how to use SQL?</p> <p>2). Do end-users require a mechanism to export data from EDW in order to do their own analysis? If so, how is this achieved in the current environment?</p> <p>3). How many of your business users actively use existing data viz dashboard tools?</p> <p>4). Which teams will be using this target DW environment?</p> <p>5). How many teams and/or people will be using this target DW environment?</p> <p>6). How is data managed and communicated to business users to best educate and utilize the data within the current DW?</p> <p>7). Who will be the external consumers for this data?</p> <p>8). How will external data consumers interact with DW environment? Such as APIs, interactive dashboards and reports, reports emailed to them etc.</p> <p>9). What tools do your business users use the most to interact data in general within the organization - currently and in the future state?</p> <p>10). What is your preferred training approach?</p> <p>Timelines:</p> <p>1). Are there any required timelines around when this work needs to be completed? Is there an expected start or end date? Or preferred duration?</p> <p>2). Are there hard deadlines (internally or externally driven) that you must comply with?</p>	<p>3). RRC has several divisions (including agency leadership teams) that actively use data visualization tools and dashboards.</p> <p>4). The DW/BI solution is expected to be used agency wide by all divisions and stakeholders – including external users.</p> <p>5). See 4) above.</p> <p>6). RRC does not have a current data warehouse and is expected to collaborate with the vendor during Phase 1 to implement a Data Governance policy that will fit into the vendor’s proposal.</p> <p>7). External users may include (but not limited to) Oil & Gas operators, external stakeholders, government entities, the general public, media, and 3rd parties.</p> <p>8). RRC expects the vendor to gather the requirements as part of Phase 1,</p> <p>9). Vendor will recommend the future state. Currently RRC uses Oracle BI and Power BI.</p> <p>10). See answer for question no. 20-7).</p> <p>Timelines:</p> <p>1). RRC expects the work to commence as soon as the contract is awarded (per the timeline defined in the RFO) and complete within the duration of the contract term (as defined in the RFO). That is the preferred timeline for RRC.</p> <p>2). See 1) above.</p>
--	---

<p>23</p>	<p>In the Proof of Concept phase (Phase 1), a solution will be identified and tested with a subset of data and use cases.</p> <ol style="list-style-type: none"> 1). How many data sources are in scope for Phase 1? 2). What is the total estimated volume of data to be stored during Phase 1? 3). What are the different work streams in scope for Phase 1? Examples include ETL, test/dev, BI/analytics. 4). How many concurrent users will each of these work streams utilize during Phase 1? (Example: How many users will access the BI dashboard simultaneously?) 5). How many queries or processes are each of these work streams processing during Phase 1? (Example: How many ETL jobs are being executed?) 6). When will these work streams be executed throughout a typical work week during Phase 1? (Example: 24/7, 8 hours daily, weekends, sporadic.) 7). How much data is being utilized with each of these work streams in Phase 1? <p>Phase 2: Development & Deployment</p> <ol style="list-style-type: none"> 1). How many data sources are in scope for Phase 2? 2). What is the total estimated volume of data to be stored in the Data Warehouse during the first year of Phase 2? Or, what is the volume of data in scope for the “Build Foundation” stage in Figure 1? 3). What is the volume of data in scope to be loaded into the Data Warehouse for the “Expand” stage (widespread use) in Figure 1? 4). For accurate sizing/pricing, it’s important to understand the different work streams in scope for Phase 2. Examples of work streams include ETL, test/dev, BI/analytics. Per the RFO, Phase 2 requires: <ol style="list-style-type: none"> 4a). Three individual environments: Development, Test and Production. 4b). ETL to migrate data from source systems to the logical data warehouse. 4c). A consumption layer between data users and data sources to enable traditional reporting, intelligent dashboards, and self-service reporting. <p>Aside from these, are there any other work streams in scope for Phase 2?</p> 5). How many concurrent users will each of these work streams utilize during Phase 2? (Example: How many users will access the BI dashboards simultaneously?) 6). How many queries or processes are each of these work streams processing during Phase 2? (Example: How many ETL jobs are being executed?) 	<ol style="list-style-type: none"> 1). This will be determined during Phase 1, However, RRC expects no more than 2 to 3 data sources. 2). See answers to question no. 21-22). 3). All that is needed to carry out the POC in section 2.1.3.1.4. 4). See answer to question no. 21-23). 5). Phase 1 contains a POC that has not been defined therefore RRC cannot provide these numbers. 6). Phase 1 contains is a POC. RRC does not believe your question applies to a POC. 7). See 1). <p>Phase 2: Development & Deployment:</p> <ol style="list-style-type: none"> 1). RRC expects the vendor to gather the requirements as part of Phase 1. 2). Figure 1 is a roadmap over time and not a list of deliverables. See answer to question 16-13) for volumes. 3). See 2) above. 4). RRC sees Phase 2 as the construction phase where the environments, data bases, data marts and tools are set up and configured, loads and transformations, detail designs, maintenance and support, and any other work streams to meet the requirements for a data warehouse. RRC is looking to the vendor to provide the work steams to meet its goals. 5). See answer to question 11-8). 6). RRC expects the vendor to gather the requirements as part of Phase 1. 7). See answers for question no 22 Data Source 3). 8). See answer to question 16-13).
-----------	---	--

	<p>7). When will these work streams be executed throughout a typical work week during Phase 2? (Example: 24/7, 8 hours daily, weekends, sporadic.)</p> <p>8). How much data is being utilized with each of these work streams in Phase 2?</p>	
24	<ol style="list-style-type: none"> 1. Are you open of Public Cloud Platform like Microsoft Azure and Power BI? 2. Given COVID-19, can we agree to remote work until this has passed? Furthermore, can we provide offshore development services in addition to our US based resources? 3. Is there any project methodology RRC follow for your project implementation? 4. Is there any special clearance required for the people working on the project from Vendors? 5. What resources will RRC be contributing throughout the project ex. Internal Project Manager, SME for functional areas and source systems, security and system administrators etc.? 6. Is the infrastructure setup and configuration Vendor's responsibility? 7. Regarding reports listed on page 88, section 3, table 13, can you please define a report in your words? For example, production reports are listed as 2,385,999? Are these individually reports, number of times executed, etc.? 8. Can you share approximate number of large data sets (over 50 million rows)? 9. Have you identified of tables to migrate to the new data warehouse or shall we assume all will be migrated? 10. Can we assume the RRC will manage end user change management? 11. Can you confirm if this project and workstream has been funded? 12. Do you have an approximate start date and desired go live date? 	<ol style="list-style-type: none"> 1). Yes. 2). RRC continues to adopt and monitor public health best practices to respond to COVID-19. However No remote work shall be conducted or performed outside of the United States, and all RRC data must be physically located and all times remain in the United States. 3). RRC expects the vendor to recommend the best methodology for carrying out this project within the guidelines laid out for Work Orders. 4). Vendor shall ensure that any Vendor employee or subcontractor employee who has access to a state computer system or database shall complete a cybersecurity training program certified under Texas Government Code §2054.519. Such training is required to occur during the contract term and any renewal period, if applicable. Vendor shall provide RRC with verification of the completion of the requisite training, prior to Vendor employee or subcontractor employee beginning work on any RRC project. 5). See answer to question no. 20-8). 6). Yes. 7). See Note above Table 13. <i>Note: Reports in this context are forms/applications submitted to RRC and are not considered a report in the context of a Data Warehouse.</i> 8). RRC expects the vendor to gather the requirements as part of Phase 1. 9). RRC expects the vendor to gather the requirements as part of Phase 1. 10). End user change management will be a collaboration with both RRC and the vendor. 11). This project has been funded. 12). RRC expects the vendor will begin work as soon as the contract is awarded. The first desired go-live date will be no later than 8/31/2021 and additional phases determined in Phase 1.

<p>25</p>	<ol style="list-style-type: none"> 1). What sort of mainframe sources systems do we need to integrate data from? (IBM, Digital Equipment, NEC, Fujitsu, etc.,?) 2). Can you please explain mainframe sources file generation process and are there any requirements for extracts from mainframe and other data sources? 3). Do you have a preference for the data lake solution like Cloudera, HDP, etc? 4). Can you please explain the use cases for OLAP on the cloud? 5). Do you have any particular architectural design pattern preference for in-cluster OLAP computing? 6). Do you have any in-memory analytics requirements and if so, are any of them real-time requirements? 7). Can you please explain the diversity of data heterogeneity in your environment? 8). Are there any needs for metadata management solutions? 9). Do you expect any amount of data quality issues in the environment, that need to be taken care of prior to migration to the cloud? 10). Can you please share volumetric estimates on daily batch and the number of files that need to be ingested into the data lake? 11). What is the extent of history that needs to be migrated into the new environment? 12). Are there any analytical needs that include retrieving cold/ historic data from tape or other archival systems? 13). Can you please share the number of analytics users by type – descriptive vs predictive vs prescriptive? 14). Can you please share the number of files along with file size for performance considerations? 15). Are there any existing analytical models (regulatory, etc.,) that are mission-critical that need to be migrated to the new environment? If so, how many and please describe complexity and execution time please. 	<ol style="list-style-type: none"> 1) RRC currently uses an IBM Mainframe (IMS Hierarchical). RRC currently has an initiative to move all applications off the IBM Mainframe. RRC is expecting small amounts of data will be integrated from the mainframe. 2) RRC is expecting small amounts of data will be integrated from the mainframe. Currently the mainframe user interface is turned off during a normal scheduled interval nightly. During that time, data required from open systems is loaded into the mainframe. Batch processes are run to update the databases. After those batches are completed, extracts are run and SFTP'd back to the appropriate Oracle databases for use in the open systems applications. 3) RRC has no preference 4) RRC does not have a set of defined OLAP use cases for the cloud. The vendor working with RRC will help to define the specific use cases in Phase I. 5) RRC does not have a design pattern preference. 6) RRC expects the vendor to make the recommendations for in-memory and real-time requirements during Phase I. 7) RRC has not performed any analysis around data heterogeneity to provide an answer for this. 8) Yes 9) As with any project like this, some amount is expected, however, to mitigate data quality issues, RRC has an active internal Data Cleanse project to review and correct anomalies at the source. 10) RRC expects the vendor to gather this information during Phase I. 11) RRC expects the vendor to gather this information during Phase I. 12) <i>No</i> 13) RRC expects the vendor to gather this information during Phase I. RRC employs around 800 personal who may use the system in addition to the public. At this time, a majority of the user types are descriptive. 14) RRC expects the vendor to gather this information during Phase I 15) RRC expects the vendor to gather this information during Phase I.
-----------	---	---

All other aspects of the **RFO# 455-20-1001** remain as is.

Jesse Herrera, CPPB, CTCM, CTCD

Contract Manager

Contract Management

Phone: 512-463-6736

Email: jesse.herrera@rrc.texas.gov

RECEIPT OF ADDENDUM #1 OF RFO #455-20-1001

IN YOUR SUBMITTAL THE RESPONDENT SHALL ACKNOWLEDGE RECEIPT OF THIS
ADDENDUM.

Respondent Signature

Date

Printed Name

Company Name