

# State of Colorado

## Documented Quote

---

DQ 2017-0xxx

**BIDS DUE: Wednesday, May 24th, 2017 at 3:00 pm MT.**  
**Public bid opening will be at 3:30pm MT at the location listed below.**

All Bids shall be submitted F.O.B. Destination unless Otherwise Specified. Per the attached specifications, terms, and conditions, as well as the state services contract.

**Offerors are urged to read the bid thoroughly before submitting a bid.**

### Issuing Office

This Request for Documented Quote (DQ) is issued by the State of Colorado, Department of State, (CDOS) on behalf of the Elections Division. All contact regarding this solicitation is to be directed to:

Kimberly Taylor  
1700 Broadway, Suite 200  
Denver, Colorado 80290  
[Kim.Taylor@sos.state.co.us](mailto:Kim.Taylor@sos.state.co.us)  
303.860.6902

### Purpose

The purpose of this Request for Documented Quote, issued by CDOS, is to obtain competitive quotes from qualified individuals and firms to develop and maintain during the contract period a software tool enabling CDOS to implement a type of post-election audit – called a risk-limiting audit, or RLA – on a statewide basis for the November 7, 2017 Coordinated Election and subsequent elections.

### Introduction/ Background

Beginning with the Coordinated Election on November 7, 2017, Colorado law (C.R.S. § 1-7-515) requires the Secretary of State to implement risk-limiting audits on a statewide basis. A risk-limiting audit provides strong statistical evidence that the reported election outcome is correct, and has a high probability of correcting an incorrect outcome.

The Secretary of State is currently in the process of promulgating administrative rules dictating the manner in which counties will conduct risk-limiting audits. In general terms, however, CDOS anticipates that the Secretary will require counties with voting systems capable of exporting ballot-level cast vote records (CVR) to follow the ballot-level comparison audit methodology proposed by M. Lindeman & P. Stark, *A Gentle Introduction to Risk-limiting Audits*, IEEE Security and Privacy 2012 (March 16, 2012) (available at <https://www.stat.berkeley.edu/~stark/Preprints/gentle12.pdf>).

The Department of State intends to utilize the Documented Quote (DQ) procurement method to identify and engage a vendor to develop a RLA software tool to enable CDOS and counties to implement ballot-level comparison risk-limiting audits for the 2017 Coordinated Election and subsequent elections. An example of such an RLA software tool, developed by Dr. Philip Stark of the University of California –

## State of Colorado Documented Quote

Berkeley, is available at <https://www.stat.berkeley.edu/~stark/Vote/auditTools.htm>.

The desired RLA software tool will:

- Allow county administrators to upload their ballot manifests and CVR files.
  - Counties will export CVR files in .CSV format. A sample CVR file is attached as Appendix 1.
  - A sample ballot manifest is attached as Appendix 2.
- Organize and compile all data uploaded by county administrators for a particular election into one or more central repositories accessible to authorized state administrators
- Allow the state administrator to select for audit by all counties at least one statewide ballot contest
- Allow the state administrator to select for audit at least one countywide or other local ballot contest in each county
- Allow the state administrator to randomly select ballots for audit by individual counties based on the uploaded county data, a pseudo-random number generator, and Dr. Philip Stark's comparison RLA algorithm as defined in "A Gentle Introduction to Risk-limiting Audits" (available at <https://www.stat.berkeley.edu/~stark/Preprints/gentle12.pdf>). The random selection process is explained at <https://www.stat.berkeley.edu/~stark/Vote/auditTools.htm>. The pseudo-random number generator application is separately explained at <http://statistics.berkeley.edu/~stark/Java/Html/sha256Rand.htm>
  - The ballots randomly selected for audit of the statewide ballot contest must be randomly selected from all ballots cast in all counties
  - The ballots randomly selected for audit in countywide or other local contests must be selected from ballots cast in the particular county
- Allow the state administrator to generate and transmit to all participating counties a list of randomly selected ballots to audit for the statewide and countywide (or other local) ballot contests, identifying individual ballots that individual counties must retrieve, review and audit
- Allow counties to report the results of their audits
- Allow counties and members of the public to download data and reports

**The state expects vendors to meet the specifications stated within this DQ. If no Offeror can meet all the specifications then CDOS will evaluate the Offerors partially based on the number of system specifications that they can meet.**

Bidders are responsible for providing information to address products being bid that may include published information, such as brochures, descriptions, or other information made available in the general course of the vendor's business.

It is the intent of Colorado Department of State to make one award to one vendor from this solicitation.

The determination of the equivalency of proposed substitute(s) of the software system is solely the responsibility of CDOS.

This Documented Quote (DQ) is issued by CDOS. During the Solicitation process for this DQ, all official communication with Offerors will be via notices on ColoradoVSS (VSS), the State of Colorado's Vendor Self Service website, at <https://codpa-vss.hostams.com/webapp/PRDVSS1X1/AltSelfService>. Notices may include any modifications to administrative or performance requirements, answers to inquiries received, clarifications to requirements, and the announcement of the apparent winning Offeror. It is incumbent upon Offerors to monitor VSS for any such notices, as the State accepts no responsibility for a prospective

## **State of Colorado Documented Quote**

---

Offeror not receiving Solicitation documents and/or revisions to the Solicitation.

All information contained within this DQ, and any amendments and modifications thereto, reflect the best and most accurate information available to the State at the time of the DQ preparation. No inaccuracies in such data shall constitute a basis for legal recovery of damages or protests, either real or punitive, except to the extent that any such inaccuracy was a result of intentional misrepresentation by the State.

(The rest of this page is left intentionally blank.)

# State of Colorado

## Documented Quote

---

### Definitions

Ballot contest - A partisan or nonpartisan candidate race, or a ballot measure, that appears on the ballot for an election in a county.

Ballot Manifest – A document that describes how ballots are organized and stored, and relates a CVR (defined below) to the physical location in which the original marked ballot is stored. The ballot manifest should show, in human-readable format, the physical location of a ballot to allow a county worker to efficiently find the specific ballot represented by a given CVR. A ballot manifest will contain the following information: county ID, tabulator ID, batch ID, (Shown in Appendix 2.) number of ballots in each batch, and the storage location where the batch is secured following tabulation. A sample ballot manifest is attached as Appendix 2.

Cast Vote Records (CVR) – Electronic records created during scanning of paper ballots indicating how the voting system interpreted physical marks on every ballot. A sample CVR is attached as Appendix 1.

Contests – A contest in this context is each item up for decision on a ballot. Ex: Jane Doe for Colorado Secretary of State.

Coordinated Election -- Coordinated Elections occur on the first Tuesday of November in odd-numbered years. If the Secretary of State certifies at least one statewide ballot measure to the counties, every county will conduct the Coordinated Election, and the vast majority of counties will include additional local ballot content in the election. If the Secretary of State does not certify at least one statewide ballot measure to the counties, then only those counties to which local political subdivisions certify ballot content will conduct a Coordinated Election in that year.

County administrator – The designated representative(s) of each county clerk and recorder who possesses RLA administrative user privileges sufficient to upload a cast vote record and ballot manifest for the county.

Contest Name – The title of a ballot contest.

Election Day - The day mandated by Colorado law for conducting a State Primary Election, Presidential Primary Election, Coordinated Election, and General Election.

Offeror – A vendor that submits a responsible bid for this Documented Quote.

Pseudo-random number generator – A random number generator application that is further explained at <http://statistics.berkeley.edu/~stark/Java/Html/sha256Rand.htm>

Random Seed - A random seed (or seed state, or just seed) is a number (or vector) used to initialize a pseudorandom number generator.

Responsible bid – A bid from a vendor that can responsibly (i.e. is reasonably able and qualified) do the work stated in the solicitation.

Risk-limiting Audit (RLA) – An audit that provides strong statistical evidence that the election outcome is right, and has a high probability of correcting a wrong outcome. One paper describing risk-limiting audits is

# State of Colorado

## Documented Quote

---

located at <https://www.stat.berkeley.edu/~stark/Preprints/gentle12.pdf>.

State administrator – The designated representative(s) of the Colorado Department of State, who possesses RLA administrative user privileges to perform administrative tasks.

Tabulated ballots - Paper ballots that have been scanned on a ballot scanning device, and the voter's markings on which have been interpreted by the voting system's software as valid votes, undervotes, or overvotes.

Two-factor authentication – Defined as two out of the three following requirements:

- Something you have (Examples: token code, grid card)
- Something you know (Example: passwords)
- Something you are (Example: biometrics)

### Scope of Work/Specifications

A. This bid is for development of a risk-limiting audit software tool or system to be used for implementing ballot-level comparison audits of tabulated ballots.

### Insurance

A. The contractor shall obtain, and maintain at all times during the term of this contract, insurance in the following kinds and amounts:

- 1.) \$1,000,000.00 in Liability Insurance.

### Good standing with the Secretary of State

A. In order to do business in Colorado, the Colorado Secretary of State requires Vendors to register in accordance with C.R.S. 7-90-801, and obtain maintain a rating "good standing" status throughout the term of an awarded Contract.

### Inquiries

Offerors may make written inquiries concerning the solicitation and its specifications. No inquiries will be accepted after the date and time specified in the Schedule of Activities, Inquiry Deadline.

Kimberly Taylor  
Procurement and Contracts Specialist  
1700 Broadway, Suite 200  
Denver, CO 80290  
[Kim.Taylor@sos.state.co.us](mailto:Kim.Taylor@sos.state.co.us)  
303.860.6902

Inquiries sent by fax **will not** be accepted. Inquiries through telephone or telephone messaging **will not** be accepted. Inquiries through the VSS system **will not** be accepted.

The preferred method for submitting inquiries is via email **as an attachment that can be opened by Microsoft Word**, along with any of the attachments in their original format or PDF format. (Ex: Excel) The answers to the written inquiries received by the deadline will be answered and these answers will be posted in a new document that will be posted on VSS by the deadline stated in the Solicitation

## State of Colorado Documented Quote

Schedule. The subject of an inquiry email must be: "DQ inquiry: RLA" and it must be sent to the email address listed above.

Alternatively, you may mail inquiries to the address listed above, but the mail must be received on or before the cut-off date and time in the Schedule of Activities.

- If you have questions about the **process** to submit a bid response, please call the Procurement and Contracts Specialist, identified above.

Schedule of Activities	
Request for Documented Quotes Posted	Friday, May 5, 2017
Written Inquiry Deadline	Friday, May 12, 2017 by 3:00 pm MT
Answers to Written Solicitation Questions to be posted on VSS	Wednesday, May 17, 2017 by 5:00 pm MT
Bid Submission Deadline	Wednesday, May 24, 2017 by 3:00 pm MT
Bid Opening	Wednesday, May 24, 2017 3:30 pm MT
Expected Bid Review period	The first two weeks in June, 2017
Expected Bid award Announcement	The first two weeks in June, 2017
Expected Contract Start date	The second two weeks in June, 2017
Deadline for successful Offeror to deliver initial code or system to CDOS, with run books, installation guides & user manuals	Monday, July 17, 2017
CDOS User Acceptance Testing (UAT) period begins	Tuesday, July 18, 2017
Deadline for CDOS to notify Offeror of bugs and deficiencies	Friday, July 28, 2017
Deadline for Offeror to deliver 2 <sup>nd</sup> iteration of code or system that fixes bugs and deficiencies identified by CDOS	Friday, August 4, 2017
Deadline for CDOS to notify provider of bugs and deficiencies in 2 <sup>nd</sup> iteration of code or system	Friday, August 11, 2017

## State of Colorado Documented Quote

Schedule of Activities	
Deadline for Offeror to deliver final iteration of code or system to CDOS	Friday, August 18, 2017
Deadline for CDOS to accept in writing final iteration of code or system	Friday, August 25, 2017
CDOS conducts load and penetration testing	Monday, August 28, 2017 through Friday, September 8, 2017
Deadline for Offeror to give written notice that code or system is ready to be released in production environment; go-live date for county administrators	Monday, September 11, 2017
Counties must complete logic and accuracy tests of voting systems per Election Rule 11.10.3 – latest date that counties should upload ballot manifests and CVRs from LAT test decks	Tuesday, October 24, 2017

### Inquiries and Questions

During the written inquiry period, and on or before May 12, 2017 at 3:00 pm MT, Offerors may submit inquiries and questions concerning this DQ to obtain clarification on specifications and requirements. All inquiries must be submitted via email to: [Kim.Taylor@sos.state.co.us](mailto:Kim.Taylor@sos.state.co.us) or through postal service to the address listed above. Please refer to the guidelines for inquiry questions above.

Response to Offeror questions will be published as a modification on VSS. Offerors should not rely on any other information if it is not published on VSS, either written or oral, that alters any specification or other term or condition of the DQ during the open Solicitation period. Offerors are NOT to contact any other State office or individual regarding this Solicitation, as doing so may result in Offeror being disqualified.

The identity of potential Offerors will not be published with the answers, but the text of questions may be restated, so Offerors are cautioned about including context in questions that may reveal the source of questions.

### Cancellation of Procurement

This DQ may be cancelled at any time if the State determines such action to be in the best interest of the State, and in accordance with Colorado Procurement Rule 24-103-301.

# State of Colorado

## Documented Quote

---

### **Governing Laws and Regulations**

This procurement is conducted by the State of Colorado, Department of State in accordance with the State Procurement Code, which is available at <https://www.colorado.gov/pacific/osc/procurement-manual-other-guidance>.

This procurement is governed by the laws of the State of Colorado. Venue for any administrative or judicial action relating to this procurement, Evaluation, and Award, shall be in the City and County of Denver, Colorado.

### **Confidential or Proprietary Information**

Written requests for confidentiality must be submitted by the Offeror with the Proposal for consideration and acceptance of confidential status by the State. The Offeror must state specifically what elements of the Proposal are to be considered confidential/proprietary. Confidential and Proprietary Information must be readily identified, marked, and packaged in accordance with the instructions in Subsection 5.2, Sealed Proposal Submission. Neither a Proposal in its entirety, nor Proposal price information is considered confidential and proprietary. Any information that will be included in any resulting Contract cannot be considered confidential. In the event the State does not concur with the Offeror's request for confidentiality, the written determination will be sent to the Offeror. Colorado Open Records Act (CORA) (§24-72-201 et seq., C.R.S.) governs what Public Records are open for inspection.

### **Ownership or Disposition of Proposals and Other Materials Submitted**

The State has the right to retain the original Proposal and other DQ response materials for its files received by the Solicitation closing and not withdrawn prior to the public opening. As such, the State may retain or dispose of all copies as is lawfully deemed appropriate. The State has the right to use any or all information/material presented in the reply to the DQ. Proposal materials may be reviewed after the "Notice of Intent to Award" has been issued, subject to the terms of C.R.S. Title 24, Article 72, Part 2, as amended.

### **Certification of Independent Price Determination**

By submission of its Proposal each Offeror certifies, and in the case of a joint Proposal each party, thereto, certifies as to its own organization, that in connection with this procurement:

- a) The prices in the Proposal have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Contractor or with any competitor; and
- b) Unless otherwise required by law, the prices which have been quoted in the Proposal have not been knowingly disclosed by the Offeror and will not knowingly be disclosed by the Offeror prior to opening, directly or indirectly to any other Contractor or to any competitor; and
- c) No attempt has been made or will be made by the Offeror to induce any other person or firm to submit or not to submit a Proposal for the purpose of restricting competition.

### **Firm Offers**

Responses to this DQ, including proposed costs, will be considered firm for One-hundred and Eighty days after the Proposal due date.



# State of Colorado

## Documented Quote

---

### ColoradoVSS Website

This solicitation is published using the ColoradoVSS system; [www.colorado.gov/vss](http://www.colorado.gov/vss). Solicitation documents and information (including any amendments, answers to inquiries, or modifications) will be updated with revisions on this site. It is very important that bidders check VSS on a regular basis, as this is the sole method for communicating any changes. Modifications published on the VSS system take precedence over information in this Documented Quote.

### Vendor Recommendations

- It is required that Vendors register on the Vendor Self-Service (VSS) website. Registration on the VSS is free and vendors will receive email notifications about current bid opportunities with the State of Colorado.
- VSS and its registration information can be found at: <https://codpa-vss.hostams.com/webapp/PRDVSS1X1/AltSelfService>

### Award Document

A Contract will be issued to the awarded bidder. The Contract will include all documents associated with the bid including this Request for Documented Quote, the Offeror's response and the Colorado State Contract Terms and Conditions, which are attached to this solicitation. **(Attachment A)**

### Acknowledgement and Acceptance of Contract terms and Conditions

By submitting a Documented Quote, the Offeror confirms its willingness to enter into a contracting document containing the terms and conditions or substantially similar terms and conditions to the draft contract and the requirements of this solicitation without exception, deletion, qualification or contingency.

If the Offeror is not willing to accept all terms and conditions, the Offeror should provide a statement of explanation and a listing of all exceptions the Offeror requires with its response. Requests for changes, additions, or exceptions to the standard terms and conditions must be submitted as Additional Attachments. The request must include a listing of all changes, additions or exceptions desired; an explanation of why Offeror is requesting each change, addition or exception; and the specific effect it will have on the Offeror's ability to perform the requirements of this solicitation.

No changes to the legal provisions of the contract will be considered unless the Offeror proposed specific, alternative language to that included in the contract with its proposal submission. If your firm normally seeks counsel on contract terms, please do so before submitting a response to this RFP.

Should the contract not be completed and agreed to by both parties within 30 calendar days following the issuance of a draft contract to the successful Offeror for review, through no fault of the Department's, the Department, at its sole discretion, may elect to cancel the existing award announcement and make an award to the next most advantageous Offeror.

The Department will not accept any Documented Quotes that are conditional on acceptance of modified state terms and conditions.

# State of Colorado

## Documented Quote

---

The Offeror's signature on the Documented Quote Cover Sheet is confirmation that the Offeror understands and acknowledges that any award will require a contract between the State and the Offeror containing the terms and conditions in the attached contract.

### Attachments

- A. State of Colorado Sample Services contract
- B. DQ Pricing Sheet (Included in this file)
- C. Vendor Response Sheet (Included in this file)
- D. DQ Cover Sheet (Included in this file)

### Appendix

1. A sample CVR file
2. A sample ballot manifest

**Vendor Exhibits: (to be supplied by vendor, more details on page 17.)**

- A. Vendor Exhibit A: Hourly rates for additional vendor work**

### How to Submit a Bid Response

All Offerors wishing to submit a bid response for this Documented Quote must submit their proposal that includes:

- 1) The Bid Pricing and Specification Verification **Attachment B**
- 2) The Vendor Response Sheet **Attachment C**
- 3) Sample screenshots, coding examples, reports, or samples.
- 4) Vendor Exhibit A.**
- 5) Copy of your current Insurance policy
- 6) Current Vendor W-9, if applicable, by one of the following methods:
  - Via email to [kim.taylor@sos.state.co.us](mailto:kim.taylor@sos.state.co.us);
  - Delivery via USPS or other courier services or;
  - Personal delivery (hand delivered) to Colorado Department of State, Procurement Office  
Attn: Kim Taylor  
**DQ 2017-0906**, 1700 Broadway, Suite 200 Denver, CO 80290.

Failure by the vendor to submit items #1 and #2, above shall be deemed a non-responsive bid and will not be evaluated. Offerors may submit additional information if it assists in explaining their bid, but cannot replace or be provided in lieu of items #1, #2, #3 and #4 above.

Winning vendor will be responsible for registering on the Secretary of State's website before the contract performance start date. For more information:

<http://www.sos.state.co.us/pubs/business/businessHome.html>

PLEASE NOTE: All bids must be received by the Procurement Unit at 1700 Broadway Suite 200, Denver Colorado, 80290 by the bid closing time or the bid will not be accepted – NO EXCEPTIONS.

# State of Colorado

## Documented Quote

### SPECIFICATIONS

The State expects the Offerors to meet all system specifications outlined below. The state will evaluate the Offerors, partially on the number of system specifications that they meet.

#### Minimum Requirements:

- General familiarity with election and risk-limiting audit processes and nomenclature
- Two years of software development experience

#### Hosting environment

CDOS will give preference to Offerors that propose to develop the RLA software tool for hosting on systems owned and operated by CDOS. CDOS-hosted software and applications must satisfy the following requirements:

Topic	Preference	Alternatives
Development Language	Java (JDK 1.7, JEE 1.6)	C#, PHP, Ruby, JavaScript
Web/Application Server	WebSphere 9	IIS, Tomcat
Database	Informix, SQL Server	None
Authentication/Authorization	JAAS, Active Directory	LDAP
License	Apache 2.0, GPL 3.0	None
Source Repo	GitHub	None
Remote Access	None	2FA VPN (managed by CDOS)
Emails	None	SMTP
Reporting	None	Brio

CDOS will entertain bids that propose a different hosting environment, in which event additional security requirements will apply. Regardless of the hosting environment proposed by the offeror, CDOS will regard the developed software code as a public record, and will disclose the software code in its entirety to members of the public.

#### Overall System Specifications:

- Stage One – Create Repository of Data for an Election for Risk-limiting audit Purposes
  - System must allow county administrators to upload a ballot manifest and a Cast Vote Record (CVR) file.
  - CVR file contains data that identifies individual ballots, contests, and choices made by voters within contests.
  - A sample CVR file is attached as Appendix 1. CVR files are in .CSV format.
- Stage Two – Calculate Number of Ballots to be Audited (for each contest to be audited)
  - System must allow the state administrator to:
    - Select at least one statewide contest for audit in all counties in a given election.
    - Select at least one countywide or other local contest for audit in each county in a given election
    - From the uploaded CVRs, independently calculate the total votes for each choice within the selected contests.
    - From the uploaded CVRs, calculate the diluted margin in votes between the apparent winning candidate or voting choice with the least votes, and the apparent losing

## State of Colorado Documented Quote

---

candidate or voting choice with the most votes, divided by the number of ballots counted in that contest.

- Calculate of the number of ballots to be randomly selected for audit based on the total number of ballots, number of choices, the diluted margin of the contest, and the risk limit established by the Secretary of State (see <https://www.stat.berkeley.edu/~stark/Java/Html/auditTools.htm> for tools and examples).
- Stage Three – Generate Random Numbers Equal to the Number of Ballots to be Audited (for each contest)
  - Support user input of up to a 20-digit random seed to be used in generating random number samples to be used in identifying ballots for a risk-limiting audit.
  - Support generation of the random numbers to be used in identifying ballots for audit.
  - Support display and printing of the random numbers generated for ballot audits.
- Stage Four – Correlate Random Numbers to Specific Ballots to be Audited (for each contest)
  - Associate random numbers generated with the specific ballots to be audited according to the ballot manifest such that a county user can draw the appropriate ballot to be audited.
  - Support display and printing of a list of ballots to be audited with both the corresponding random number and the ballot manifest position of the ballots.
  - A sample ballot manifest is attached as Appendix 2.
- Stage Five – Create Summary and Detail Reports of Ballot Audit Results (for each contest)
  - System must allow a county administrator to:
    - Download or obtain a list of the ballots randomly selected for audit.
    - For each ballot selected for audit, report whether the voting system’s interpretation of the ballot markings for the audited contests as reflected in the corresponding CVR is correct or incorrect.
    - Display and print a summary report of the total number of audited ballots, the total number for which accurate results were found, and the total number for which inaccurate results were found.
    - Display and print a detailed report showing the audit results. The detailed report will contain for each ballot, at a minimum:
      - The random number generated;
      - The ballot manifest position corresponding to the random number; and,
      - The indication of whether the audit reflected an accurate or an inaccurate result.

### **Non-functional Requirements:**

- The processes of stages one through four (upload of CVR files, calculation of the number of ballots to be randomly selected, selection of random numbers and association of random numbers with ballot manifest data) are time-sensitive and must be completed within a few hours on the day on which counties are notified of random audits to be conducted. Local election officials have several days in which to complete the audits.
- The product will undergo initial testing and user acceptance testing during summer 2017 before production pilot exercises in October 2017 as set forth in the Schedule of Activities.

# State of Colorado

## Documented Quote

---

### Administrator Accounts Specifications:

- Provide a state administrator account and separate county administrator accounts.

### Uptime/Security

The RLA software tool should meet all of the following uptime and security requirements, except as noted for software solutions to be hosted at CDOS datacenters.

The system should:

- Go live to county and state administrators at 8:00 am Mountain Time (MST or MDT, as applicable in the State of Colorado on the date of the election) on the day after Election Day, and remain available to county and state administrators without interruption until the 40<sup>th</sup> day after each Election Day. During other periods of time, the ability of county and state administrators to access or use the system may be suspended or interrupted for system maintenance with 48 hours advance written notice to the state administrator.
- Go live to the public at 7:00 pm Mountain Time nine days after Election Day, and remain available to the public without interruption until the 40<sup>th</sup> day after each Election Day. During other periods of time, the ability of the public to access or use the system may be suspended or interrupted for system maintenance with 48 hours advance written notice and approval by the state administrator.
- Use username/password features for all authenticated users that include the following:
  - Meet specific password complexity requirements for any application requiring a login.
    - Password length support for a minimum of 8 to 15 characters depending on CDOS requirements at time of election.
    - Password must contain three of the following:
      - Upper case letter
      - Lower case letter
      - Number
      - Symbol
  - Password requirements must be easily adjustable to support increased security in the future. Changes to minimum length and complexity requirements must be configurable.
  - All provided services or systems requiring a login by the counties or State must support two-factor authentication. If the system does not currently support two-factor authentication it must be supported by November 1<sup>st</sup>, 2017.
  - Systems must enforce password changes for all accounts every 90 days or sooner.
  - Limit repeated access attempts by locking out accounts after not more than six attempts.
  - Set the account lockout duration to 2 hours or until and administrator unlocks the account.
  - If a session has been idle for more than 15 minutes, require the user to re-authenticate to re-activate the session.
- Provide redundant hosting and fail-over capabilities to the satisfaction of the Colorado Department of State, which capabilities must be described in detail by the prospective provider as part of your proposal.

## State of Colorado Documented Quote

---

- System components, as applicable, must be fault tolerant with Active/Passive failover capabilities at a minimum. All passive failover systems must be able to support full load without performance degradation. (Not applicable if hosted at CDOS datacenters)
- System must support GeoIP blocking to prevent access from all locations outside the United States. In addition, access to login pages should be able to restrict access by specific IP address lists if needed. (Not applicable if hosted at CDOS datacenters)
- All public facing web services and web applications should be protected by the following:
  - Web Application Firewall (WAF)
    - WAF must support both negative and positive attack prevention. Vendor must describe how they have implemented both negative signature detection and positive security model configuration. (Not applicable if hosted at CDOS datacenters)
  - Web Application Penetration testing annually and every time there is a significant change to the system. (CDOS will perform web penetration testing if hosted at CDOS datacenters)
- Penetration Testing and Vulnerability Scanning (CDOS will perform penetration testing if hosted at CDOS datacenters)
  - All systems must undergo external and internal network penetration testing annually and every time there is a significant change to the system.
  - Contractor must provide all medium and high level vulnerability findings from external network penetration testing and web application penetration testing to the Colorado Department of State within one week of the finding.
  - All critical and high rated vulnerabilities, determined by the penetration testing, must be mitigated within 72 hours. CDOS must approve of mitigation plan provided by vendor if a full patch for the vulnerability is not applied.
  - Contractor must allow external network penetration scans and test from the Department of Homeland Security, CDOS, and CDOS's vendors.
- Distributed Denial of Service (DDoS) Prevention (CDOS will provide DDoS prevention if hosted at CDOS datacenters)
  - Contractor must submit a Distributed Denial of Service mitigation plan acceptable to CDOS.
- Systems Hardening and Protection
  - Contractor must ensure all systems are hardened according to industry best practice standards including the Center for Internet Security Hardening standards and applicable software and system hardening standards as specified by the software and/or hardware vendor. Systems hardening documentation must be available for CDOS review.
  - All systems must have vendor-supplied defaults for system passwords and other security parameters changed according to best practices.
  - Any sensitive data stored on systems must be encrypted. Sensitive data includes Personally Identifiable Information (PII).
  - All systems with the capability to support anti-malware software must have up-to-date anti-malware software installed. All Windows based systems must have real-time antimalware scanning enabled. All Linux based systems must perform a full anti-malware scan at least

## State of Colorado Documented Quote

---

- weekly. (CDOS will provide anti-malware and other host protections if hosted at CDOS datacenter)
- All systems must have file and/or configuration integrity monitoring software enabled and monitored for changes. (CDOS will provide anti-malware and other host protections if hosted at CDOS datacenter)
- Ensure systems are set to use NTP for time synchronization.
- Monitoring
  - All systems should be monitored daily for security events. Security systems must be configured to alert necessary personnel if a significant attack is detected. Proper logging should be configured to log security events including intrusion protection, successful logins, failed logins, and malware protection. Centralized logging servers must be segmented and protected from attack with intrusion protection, firewalls, and other security controls as applicable to the environment. (CDOS will provide centralized logging if hosted at CDOS datacenters)
  - At a minimum the following entries for all system components must be logged.
    - User ID
    - Type of Event
    - Data and Time
    - Success for Failure indication
    - Origination of event
    - Identity of affected data or system
- Proper network segmentation should be in place as applicable to the application. Web Services, mid-tier application servers, and databases must be segmented into separate security enclaves with only necessary traffic for system functionality permitted. (CDOS will provide network segmentation if hosted at CDOS datacenters)
  - Network segmentation will be documented with up-to-date network diagrams made available to CDOS.
  - A systems component inventory must be kept up-to-date and available for CDOS inspection.
  - Ensure wireless networks are not permitted in any internal enclaves supporting this system.
- User Provisioning
  - Contractor must perform user ID and password management dissemination. Access to hosting systems, software and ancillary software will be coordinated with the State.
- Systems Administration and Remote Access (CDOS will provide remote access for systems engineers and developers if hosted at CDOS datacenters)
  - All systems administration via remote access must support two-factor authentication.
  - All systems administrator access, local or remote, must be made from secure client devices that have up-to-date malware prevention, properly configured host based firewall, up-to-date operating systems, and other security controls to prevent misuse.
  - Encrypt all non-console administrative access using strong cryptography.
- Code Review
  - Ensure all code has a documented security review, focusing on the OWASP top 10, before being released to production.
  - Ensure all developers are trained on secure coding practices including the OWASP (Open Web Application Scanning Project top 10.

## State of Colorado Documented Quote

---

- Contractor and State agree to set-up and use a mutually agreed upon data encryption mechanism to transfer data between the contractor and State.
- System must meet security requirements posted by the State Chief Information Security officer. <http://www.oit.state.co.us/ois/policies>
- File Uploads: Any component that accepts uploaded files must ensure the following capabilities:
  - Restrictions on file types
  - If file types other than .CSV are accepted, the system must support anti-malware and script detection technologies via ICAP or other supported solution

### Hosting

The Offeror will maintain and provide a hosted computer environment for the state's use or provide specific server and network requirements for CDOS to host the solution.

- Offeror will provide and maintain a hosted computer environment for the State's use of the solution, or provide to CDOS server disk, CPU, RAM, and other redundancy requirements for CDOS hosting. Offeror must provide server hardware quotes from Dell with its proposal. Server specifications must be designed for redundancy as noted previously and include at a minimum RAID 5 or better, redundant power supplies, and redundant network cards for the CDOS disaster recovery (DR) facility.

### Support

The vendor should provide support to CDOS during critical election periods. At a minimum:

- Critical issues during election night must have real-time support available.
- Must be available 24 hours on Election Day and the day following.
- CDOS will provide the majority of support directly to county election officials. In the event that CDOS is unable to provide sufficient support then the vendor must provide support directly to a county election official upon request in real-time.

### Close out

Upon termination of the contract the vendor must:

- At no additional cost to the State, assist and cooperate with CDOS to ensure an orderly and timely transfer of files, computer software, documentation, system turnover plan, knowledge transfer, intellectual property, and other materials.
- The documentation that will accompany the system turnover plan shall include, at a minimum:
  - User manuals with complete documentation
  - function technical descriptions of each program
  - data flow diagrams
- The Offeror must assist CDOS in drafting a transition plan describing the steps required to transition the data from the Offeror to a successor vendor.
- The Offeror must provide to CDOS all portfolio and data definition tables to enable a successor vendor to transition the data to its system.



## State of Colorado Documented Quote

---

- The Offeror must ensure that all hardware, which may have stored State of Colorado data at any time, will be physically destroyed by the Offeror through a shredding process that leaves the device in a condition which prevents its reassembly in any usable form. The Offeror must provide certification of destruction to CDOS immediately following the destruction in accordance with State policy.

### **Additional Work that may be included with the contract as an amendment but it outside of the initial scope of work:**

The Department may include additional work to be done for the 2018 general election. This will be added to the original contract in the form of an amendment letter. This work may include:

- Modifications to the code.
- Modifications to the system.

Please include this in your proposal, a list of hourly rates for the above work and entitle this list: **Offeror Exhibit A.**

## State of Colorado Documented Quote

### Pricing Sheet Attachment: B

The Maximum bid, for this project, is \$150,000.00.

Item	Price
<b>Total Cost for the Election Night Reporting Software system</b> (per above specifications)	\$

Activity/Task	Price
<b>Detailed Project Plan</b> (25% of total services price)	\$
<b>Acceptance of final iteration of code or system after UAT by CDOS</b> (25% of total services price)	\$
<b>Offeror's notice that code or system is ready for release in production environment</b> *25% of total services price)	\$
<b>Final acceptance of code or system by CDOS after successful one in 2017 Coordinated Election</b> (25% of total services price)	\$
<b>Platform/Infrastructure Price<sup>1</sup></b>	
<b>Total Price (May not exceed \$150,000.00.)</b>	\$

<sup>1</sup> If Offeror proposes a system hosted by CDOS, provide technical specifications for hardware and software required by Offeror's proposed solution. Provide copies of hardware quotes from Dell USA as documentation of price. If Offeror proposes a system not hosted by CDOS, provide technical specifications and prices for all hosting, platform, and infrastructure services and components required by Offeror's proposed solution.

# State of Colorado

## Documented Quote

---

### Vendor Response Sheet – Attachment C

**Tell us about your experience developing software applications relevant to the scope of work and requirements described in this solicitation (a web-based application requiring populating, querying and reporting on data in a relational database)?**

**Describe how you will address this project, including staff, time needed, and how you will conform to the timeline set for this project?**

**Describe how your proposed solution will conform to the CDOS security requirements stated in the specification sheet.**

**Please describe to us your business continuity plan, including your redundancy, hosting and fail over back up plan.**

**Please include 2 references from government projects: (State, higher education, political subdivisions, counties, etc.)**

1. Name of organization/agency:

Name of contact:

Phone number:

Email:

Brief 1-2 sentence description of finished project:

2. Name of organization/agency:

Name of contact:

Phone number:

Email:

# State of Colorado Documented Quote

---

Brief 1-2 sentence description of finished project:

### DQ Cover Sheet Attachment: D

Company Name	
Address	
City/State/Zip	
Phone/Fax	
Email Address	
Signature	
Typed/Printed Name	
Title	
Date	

Have all requirements for this solicitation, as stated above, been met? Yes  No

Do you accept Colorado Contract Terms and conditions?  Yes  No

If No is marked to the question above, have you included a statement of Explanation to the Contract terms and conditions as an additional attachment?  Yes  No

Have you included your vendor W-9? Yes  No

Have you included a copy of your Insurance policy?  Yes  No

All costs, shall be figured into the final bid price. State of Colorado will **NOT** pay for shipping and/or freight.