# Effective Designs for the Administration of Federal Elections

Section 6: Research report: Nebraska pilot test

June 2007

## Nebraska pilot test overview

Preparing for an election can be a challenging, complicated process for election officials. Production cycles are organized around state-mandated deadlines that often leave narrow windows for successful content development, certification, translations, and election design activities. By keeping election schedules tightly controlled and making uniform voting technology decisions for local jurisdictions, States aspire to error-free elections. Unfortunately, current practices rarely include time or consideration for user-centered design development to address the basic usability needs of voters.

As a part of this research effort, a pilot study was conducted using professionally designed voter information materials and optical scan ballots in two Nebraska counties on Election Day, November 7, 2006. A research contractor partnered with Nebraska's Secretary of State's Office and their vendor, Elections Systems and Software (ES&S), to prepare redesigned materials for Colfax County and Cedar County (Lancaster County, originally included, opted out of participation). The goal was to gauge overall design success with voters and collaborate with experienced professionals within an actual production cycle with all its variables, time lines, and participants.

This case study reports the results of voter feedback on election materials, observations, and interviews from Election Day, and insights from a three-way attempt to utilize best practice design conventions. Data gathered in this study informs the final optical scan ballot and voter information specifications in sections 2 and 3 of the best practices documentation.

#### **Pilot study goals**

Pilot test goals were identified within the following three categories:

#### Gain empirical knowledge of an elections production process

- Understand production relationships between Nebraska officials and ES&S.
- Understand legislated requirements and time lines in Nebraska affecting election design.
- Understand how to successfully implement the professionally designed optical scan ballot and voter information guidelines.
- Review historic election materials and processes.

#### Study the effectiveness of implemented guidelines on Election Day

- Observe the success of designed materials in multiple polling environments.
- Discuss materials with poll workers, voters, and officials for qualitative feedback.

#### Analyze results and feedback

- Compare current and historic election results to gauge design influence on voting success.
- Compare final Colfax County and Cedar County ballots.
- Compare final ballot designs against proposed design conventions.
- Analyze success of voter information materials.
- Analyze observation data.

## **Event goals**

All research events (listed in section 7), including this case study, support activities guided by these core objectives:

Clarify election official, poll worker, and voter requirements in the following areas:

- Usable: Tasks can be accomplished efficiently, accurately, and easily.
- Accessible: Materials are usable by people with disabilities.
- Language: English and non-English reading options are clear and understandable.
- Legible: Typewritten characters and paragraphs are easily read.
- Readable: Ideas presented are clear and easily understood.
- Learnable: Tools, skills, and new concepts are easily mastered.
- Credible: The voting process is authentic, capable, and trustworthy.

Clarify legislative requirements at State and county levels.

Clarify nonlegislative requirements.

Clarify production requirements:

- Scalable: Adjustments in content quantities are easily handled.
- Flexible: Adjustments to changing conditions are easily handled.
- Reusable: Re-creations are easy and effective.

Clarify existing election official and vendor practices.

## Methodology

To achieve pilot test goals, the following qualitative research methods were used:

- Observations of Election Day materials and activities, from preproduction to the close of polls.
- Field interviews with poll workers, voters, and election officials.
- Reviews of historic election materials from Colfax County and Cedar County.

## Production timeline

The table below provides an overview of research, design, and production activities in partnership with election officials and Nebraska's ballot vendor, ES&S, leading up to the 2006 general election. All tasks supported State-regulated deadlines (shown in gray) as well as production requirements and deadlines communicated to officials by ES&S.

Date	Activity/deadline	Notes	
August 1–31	Colfax and Cedar counties identified for pilot study participation by the secretary of state's office.	Lancaster County was engaged early in the process but dropped out because a key staff member left at the beginning of the process. The county decided that a new ballot production process and new staff would pose too many variables to serve voters efficiently and with adequate assurance of success.	
August 1–31	Ballot design work based on counties' draft election content begins.	Counties provided draft ballot content for initial layout. County clerks showed a clear understanding that previous ballots had significant room for improvement, and enthusiastically accepted a wide range of ballot design changes.	
August 1–31	Clerks in Cedar and Colfax counties approve final ballot designs, which are delivered to ES&S for initial production.	Ballot designs approved by county clerks were developed based on significant previous research and usability testing.	
September 15	The secretary of state certifies ballot content.		
September 15–22	ES&S and county officials provide onsite and phone support to incorporate design best practices into final ballots.	Major hurdles included vendor's proprietary ballot design software and file formats. Also, the software was not developed to accommodate major design changes, so many recommended best practices were difficult or impossible to implement.	
September 16	Secretary of state provides Spanish translations for Colfax County ballots.	The official Nebraska election calendar did not include requirements for translations necessary in Colfax county (currently the only county in the state required to offer a second language on the ballot).	
September 22	Registered absentee voters are sent ballots for early voting.		
October 1	ES&S completes ballot production.	Final ballots varied significantly from design best practices—including recommended fonts, leading, spacing between vote mark and candidate name, shaded fills to differentiate voting instructions, and referendum layout.	
October 16–20	Field visits to polling locations in both counties.	Election officials interviewed, ballot preparations observed, poll locations analyzed for voter information strategy.	

October 1–31	Voter information materials in English and Spanish designed.	Nebraska's secretary of state provides voter information materials previously used and approved by legislation. Materials were reviewed and edited by simple language experts before initial layout began.		
October 15–31	Simple language experts review draft voter information materials.			
October 2	State deadline to publish/post notice of elections.			
October 22– November 4	State publishes sample ballots in newspapers.			
October 27	State deadline for posting sample ballots in county offices.			
November 1	State deadline to mail early ballots.			
November 3	State deadline to distribute sample ballots to county, city, or village.			
November 5	Voter information materials produced.	Materials printed on vinyl from e-mailed digital files.		
November 6	Participation in poll worker training in Colfax County and distribute voter information materials in Cedar and Colfax counties.	Walk-through of all voter information materials with county poll workers prior to Election Day.		
November 7	Election Day.	Cedar County printed their own ballots on a laser printer with ES&S-supplied paper and ES&S shipped printed ballots to Colfax County.		

## Findings

## **Production process relationships**

- Local officials had modest control over service, costs, and quality in their Statesponsored vendor contracts.
- Counties competed with one another for vendor resources to accomplish identical goals under identical state election deadlines. During the ballot design and production phase, pilot test personnel temporarily shared this management responsibility with officials so that the proposed best practices could be implemented to their fullest extent.
- The Nebraska secretary of state's office had strong working relationships with pilot test personnel, ES&S, and the Cedar and Colfax county clerks. As an executive sponsor, the deputy of elections raised the visibility and credibility of the project and facilitated decision making. Pilot test personnel offered weekly, and sometimes daily, guidance and feedback to ES&S on local ballot layout, as well as suggestions for quality services (e.g., translations) that would advance the ballot design used in the general election.

## Legislative requirements

- Nebraska's legislative time line allows only 2 weeks for ballot design and production between content certification and absentee voting deadlines for all ballot variations (splits) in each jurisdiction.
- Nebraska law mandates the use of italicized text in referendums, which undermines ballot legibility as well as the core typographic value of italics (which should be used on a limited basis for emphasis).
- Language used to describe statewide issues in the ballots is simplified from the "official" descriptions offered in newspapers and on record, but it still poses a challenge for many voters.

## Implementing best practices

- ES&S and officials were enthusiastic about incorporating best practices but did not prioritize their execution.
- Colfax County's bilingual ballot layout deviated from recommended best practices, which called for a vertical layout with English in one column and Spanish side-byside in the next column. Instead, the Colfax County ballot displayed an English paragraph followed by the translated Spanish paragraph, which made it difficult to read in either language.
- Cedar County's ballot colors did not conform to design best practices when produced on an ES&S laser printer.

## **Ballot comparison**

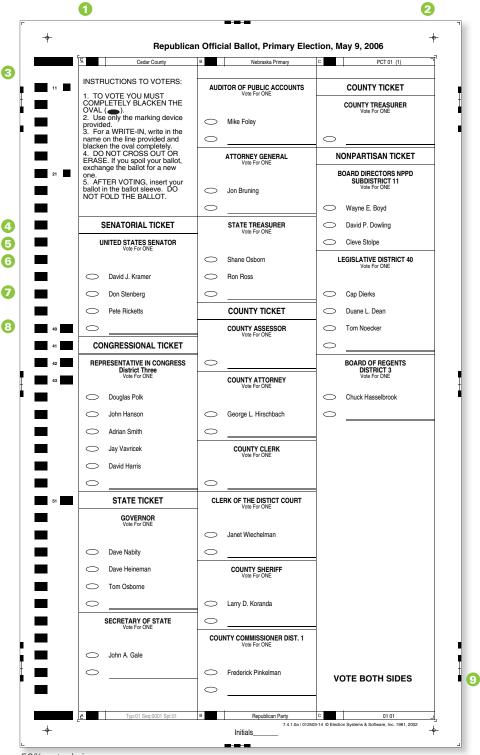
 For a complete comparison among the previous, proposed, and implemented ballots in Cedar and Colfax counties, see pages 6.8–6.14.

## **Election day observations**

- Voters did not notice a significant difference between pilot study ballots and those used in the past in their jurisdictions.
- Voters had few problems with ballots, and the chief complaint was ballot measure language.
- Poll workers in Colfax County supported a new, coherent voter information system.
- On Election Day, placement of voter information posters was limited to available wall space in polling places. This often reduced voters' ability to see and use the information.
- Few voters noticed the voter information materials, and few poll workers directed voters to them. Poll workers generally answered voters' questions themselves.
- When voters were directed to the information materials, voters and poll workers agreed on their value.
- Some voters were reluctant to request help from poll workers. Some asked other (sometimes active) voters for assistance instead.
- For voter information materials to be effective, they must be placed where voters will see them and can read them.
- Poster formats alone do not meet the needs of all polling precincts. In-booth and tabletop versions of the materials may be necessary.

## Cedar County Ballot, May 2006

Primary election ballot from May 9, 2006. Significant differences from the redesigned ballot (page 6.9) are numbered below and annotated on page 6.14.

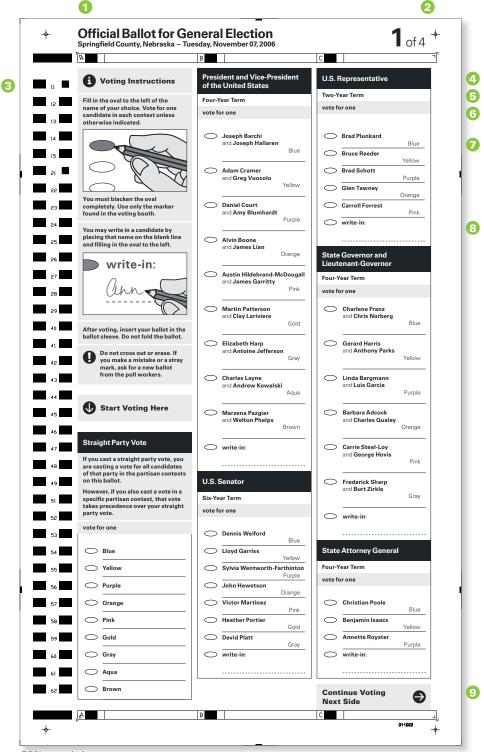




#### **Cedar County recommended best practices, November 2006**

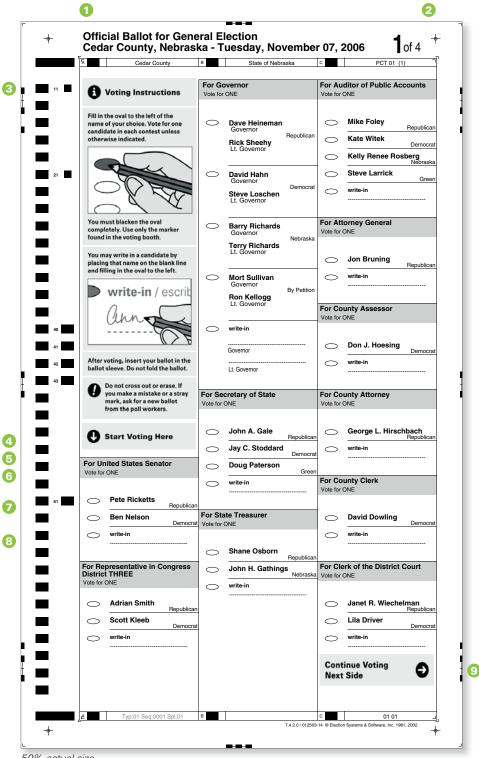
Findings

Proposed general election ballot displaying the recommended design best practices. This ballot uses sample content originally developed by the National Institute of Standards and Technology (NIST). This design was approved by the county clerk before production by the ballot vendor. Significant differences from the May 2006 ballot (page 6.8) are numbered below and annotated on page 6.14.





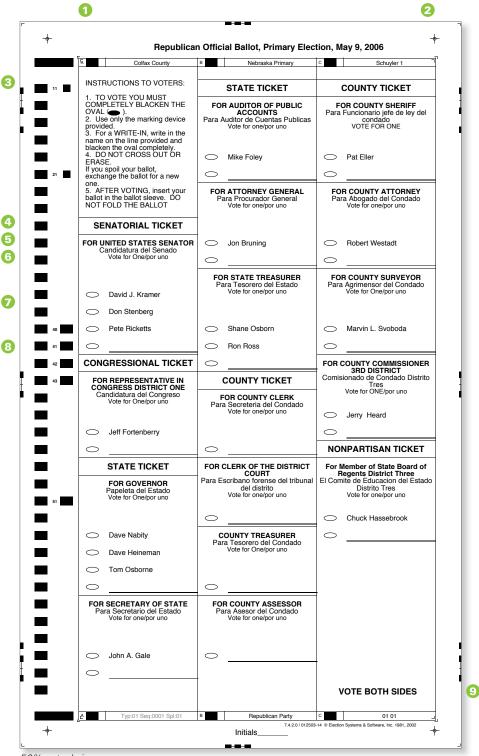
General election ballot based on partial application of new design standards. Significant differences from the proposed ballot design (page 6.9) are numbered below and annotated on page 6.14.





## **Colfax County Ballot, May 2006**

Primary election ballot from May 9, 2006. Significant differences from the redesigned ballot (page 6.13) are numbered below and annotated on page 6.14.

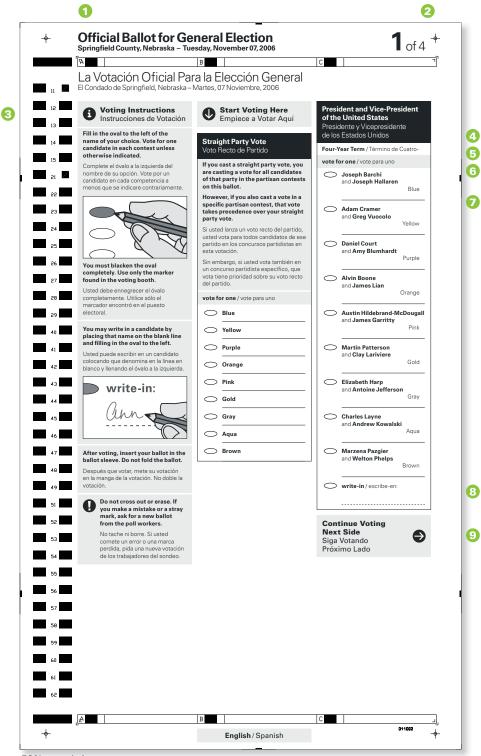




#### **Colfax County recommended best practices, November 2006**

Findings

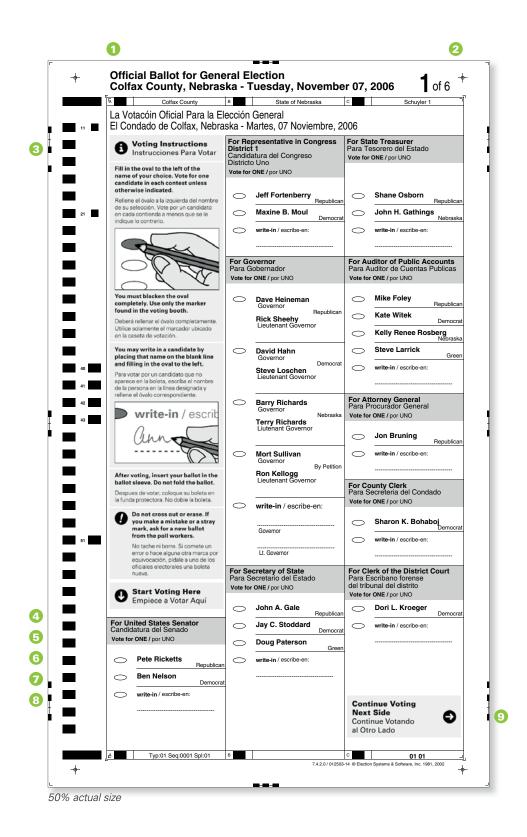
Proposed general election ballot with generic NIST content, displaying the recommended design best practices. This design was approved by the county clerk before production by the ballot vendor. Significant differences from the May 2006 ballot (page 6.11) are numbered below and annotated on page 6.14.



50% actual size

#### **Colfax County Ballot, November 2006**

General election ballot based on partial application of new design standards. Significant differences from the proposed ballot design (page 6.12) are numbered below and annotated on page 6.14.



#### **Ballot comparison**

Various elements were redesigned for the Cedar and Colfax county ballots. The goal of the redesign was to improve clarity, legibility, and ease of use for the voter. Some of these elements were not fully implemented on the actual ballots used for the election.

## Election information

Larger type is used for all information critical to the voter.

#### 2 Page numbers

Page numbers are included to help the voter navigate multiple-page ballots.

#### Oting instructions

Voting instructions have been greatly expanded; the language has been simplified, and they include illustrations.

## Oivisions by "ticket"

Previous ballots included subheads that divided the ballot into various categories. These subheads were removed, as they were inconsistent and redundant, and took emphasis away from the information of primary importance to the voter: candidate name and contest title.

### Question titles

On the new ballots, a gray fill helps voters scan questions more easily. This visual distinction clarifies where each new question begins.

#### Ouestion instructions

Instructions for each question are set apart from the title of the question and separated from the voting options area.

## Separation of candidates

Hairlines are used to clearly separate the candidate names and help voters make sure they are voting for their chosen option.

## 8 Write-in voting

The write-in area has been clarified through the use of a more intuitive dashed line and the explicit "or write-in:" identifier.

## Ballot navigation

The new ballots use a clearer system of navigation to ensure that voters know where they are in the process and what remains to complete. Graphic symbols, such as arrows, provide visual emphasis and help low-literacy and low-vision voters.

#### **State metrics/reporting**

Statistics were derived from 2006 election summary reports provided by county clerks. Reports were electronically generated by ES&S counting equipment with a report title "Grand Totals Node 1 Format." The Cedar County report was dated November 7, 2006, at 22:40:27. The Colfax County report was dated November 8, 2006, at 06:22:36.

Results from ballot questions to assess the best practices' impact were analyzed. Undervoting and overvoting rates were calculated for each race by dividing registered voters by the total number of votes counted.

No strong pattern emerged to suggest that the order or placement of contests (whether on page 1 or page 2) made a significant difference to voters in deciding to vote in a race.

	Cedar County	Colfax County
Registered voters	6,415	5,430
Number voting	4,010	3,050

#### Race with most participation

Cedar County	Colfax County
3939 (U.S. Senator)	2955 (County Sheriff)

#### Undervote

	Cedar County	Colfax County	
Average	22.91%	23.61%	
High	64.40% (Board of Governors, District 2)	56.45% (Board of Governors, District 2)	
Overvote	Cedar County	Colfax County	Statewide
Average	.22%	.17%	
High	4.7% (Governor)	2.96% (Governor)	.55%

The governor/lieutenant governor overvote rate increased significantly in both counties—both in terms of previous elections in those counties and in comparison with other Nebraska counties. In Cedar County, the overvote rose from an average 0.22% to 4.7% for the governor/lieutenant governor race. A sampling of 43 other Nebraska counties showed a 0.55% average overvote rate in this race.

There is not enough information to determine what may have caused this anomaly. One possibility is that—unlike the prototype ballot designs using the NIST content—the governor's race was the only paired-ticket contest on the ballot. Further study is necessary to determine what led to the overvote increase to identify its cause and try to prevent similar results in the future.

## Recommendations

The 2006 pilot study in Nebraska demonstrated that the proposed design system was largely acceptable to participating voters and election officials, and could be partially implemented with moderate effort on the part of the participating service provider, ES&S.

The study uncovered areas where adoption of the best practices will prove challenging, including legislative requirements, tight election calendars, limitations of ballot layout software, lack of experience with translation processes, lack of adequate financial resources to fund significant improvements at the county level, and limited availability of skilled resources during peak election production times. These issues led to the following recommendations:

## 1. Conduct more observations and interviews.

Future activity in this area should include conducting additional field interviews with election officials from all levels of government, in all parts of the country, and in all roles in the ballot development process. A corollary recommendation is to continue dialog with manufacturers and service vendors.

# 2. Explore voting experience options related to ballot design with industrial design experts and manufacturers.

Graphic designers and usability experts can enhance the overall voting experience, but the critical relationship between the voter and the voting equipment should also be analyzed, particularly when addressing the needs of voters with disabilities (including mobility or vision).

#### 3. Extend optical scan ballot pilot tests to other locations.

Research should include pilot tests in additional locations that will continue to challenge and refine the proposed design systems. Selected locations should offer diversity in terms of geography, demographics, voting equipment, and legislative requirements.

#### 4. Initiate direct-recording electronic (DRE) ballot pilot studies.

Future studies should include pilot tests with DRE voting equipment. The development of interactive prototypes for pilot-testing in a real election would be complex and would require considerable commitment, but the benefit to voters would outweigh the investment. Pilot test locations should offer diversity in terms of geography, demographics, voting equipment, and legislative requirements.

5. Collect most recent general election ballot samples and voting statistics. NIST's small collection of ballots from 2004 elections was useful in developing the ballot design best practices. Establish a process to collect and make public a library of currently used ballots and correlated voting statistics.

6. Analyze under- and overvoting by race/issue for the 2006 general election. Research should be conducted to understand the impact of design on individual race results by correlating rates of under- and overvoting to ballot design choices. While this would not be a fully scientific study, the information would provide insight into the problems voters may have experienced without infringing on their privacy. 7. Establish a national voter survey to measure ballot usability. Measure voter satisfaction with ballots using interviews and surveys, and analyze the results. The sample should include:

- Ten locations for each optical scan model, reflecting a geographically and demographically diverse population (model + geographical/demographic diversity x 10).
- Ten locations for each DRE model, reflecting a geographically and demographically diverse population.

8. Explore improvements to state and local legislation. Many State and local laws mandate specific design decisions. Study the extent to which Federal, State, and local laws regarding ballot design vary and how these laws may inhibit the creation of an effective national ballot design system.

#### 9. Establish a national ballot design system.

Encourage a single, simple, and consistent national ballot design system, such as the system used for tax forms. This system should give voters control over candidate ordering on DRE ballots and provide a nationwide system for rotating candidate names on printed ballots. The system should include best practices for the use of simple language on ballot issues (referenda, measures, etc.).

## Conclusion

The challenges for achieving a successful and satisfying voting experience extend well beyond ballot design. Ongoing study is necessary to identify existing and proposed legislative requirements that affect ballot design and the voting experience. Unified national ballot design best practices will form a baseline from which to measure national success in terms of the voter's experience; help election officials work more efficiently; and allow manufacturers to focus on other issues of importance.