

## **Effective Designs in Election Administration Testimony for the Public Meeting**

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## **Project Overview**

In September 2005, AIGA was awarded a research and design contract by the Election Assistance Commission to assist states in meeting election reform requirements for ballot design and publicly posted voting information as mandated by sections 241 (b)(2) and 302 (b) of HAVA.

This project remains a landmark opportunity for Design for Democracy to assist the US Government in improving the quality of the voting experience for all by means of effective design. We thank the EAC for entrusting us with this responsibility.

As we cycle through iterative stages of development, our key project activities include:

- Examining the voting experience as a collaboration among voters, election officials (and other administrators), poll workers, voting machine manufacturers and printers
- Monitoring election reform news and legislation
- Auditing current practices for election design
- Incorporating usability requirements for our solutions gathered from legislature, accessibility experts and advocacy groups
- Designing solutions tested for success
- Compiling a “best practices” set of guidelines for the design of election materials

Today we will review design requirements and the current state of our ballot and sign exhibits; summarize our research and usability testing methodology; and outline core goals for the remainder of our project.

### ***About AIGA***

AIGA, the professional association for design, is the oldest and largest membership organization for professionals engaged in the discipline, practice and culture of designing. Its mission is to further excellence in design as a broadly defined discipline, strategic tool for business and cultural force. AIGA is committed to stimulating thinking about design through the exchange of ideas and information, the encouragement of critical analysis and research and the advancement of education and ethical practice.

Founded as the American Institute of Graphic Arts in 1914, AIGA now represents more than 18,000 designers through national activities and local programs developed by 55 chapters and more than 150 student groups.

## ***About Design for Democracy***

Design for Democracy is a strategic initiative of AIGA. Our goal is to increase civic participation by making experiences clearer, more understandable, easier to accomplish and more trustworthy. Design and social research professionals collaborate to enable compelling, efficient and trust-building experiences between government and the governed.

Prior to being awarded our current project for the EAC, Design for Democracy spent 5 years developing successful election design solutions in Cook County, Illinois; the state of Oregon; and with NIST.

## **Solution Requirements**

As stated in the *2005 Voluntary Voting System Guidelines*, every US citizen is entitled to privacy and independence while voting. In identifying best practices to enable this right, our project team is challenged by two main forces: **legislative imperatives** and the **practical operational challenges of the election design environment** at state and local levels. While conducting our work we are always attempting to reconcile these forces—practicality (how elections are run) and legality (state and federal bottom lines)—and acknowledge **our own responsibility**, the imperative to bring proven design principles to the voting experience to clarify written communication.

These tensions, plus others presented to us from our patchwork of election laws hint that best practices probably won't be embodied as static rules on paper but in the intangible realm of hard decisions and trade-offs made by officials in the best interest of their constituents.

### ***The Bottom Line***

The core set of governmental regulations influencing our work comes from:

- Help America Vote Act of 2002
- *2005 Voluntary Voting System Guidelines*
- Americans with Disabilities Act publications
- NIST documents, particularly the *Moderate Test Ballot* guidelines and the *Ballot Design Guidance* document from 2005

### ***The Election Design Environment***

We are targeting our final set of best practice materials at election officials, although we know they don't act alone to prepare for elections or have sweeping authority over voting design decisions. We attempt to understand how they collaborate with teams and are influenced by forces—voters, clerks, state law, budgets, judges, voting machine manufacturers and printers, to name a few—to arrive at their ballots and signs each polling day. We'd like our final solutions to

be as relevant as possible given the operating sphere of these officials while we point them to the best visual manifestations of federal mandates.

## **Ballot Designs**

Ballots and signs are primarily visual communications. The “signals” emitted from them should emphasize usability, clarity and consistency. These signals are cued by typography, color, layout, illustration and the use of symbols. A voter or pollworker should not have a learning curve to utilize our work. The classic user mandate for function, not decoration, is especially pertinent to election design.

According to electionline.org’s *Election Reform 2000-2006* report, voting system use in January indicated 41% of registered voters use optical scan ballots and 38% use electronic formats. Because these technologies provide nearly 80% of all voter experiences, we have opted to focus our ballot design energies on them.

Of all our design variables, improving the readability, clarity and consistency of complex referenda language feels like our greatest challenge and potential reward for voters. We plan to continue working with simple language experts to effectively tackle this challenge in our guidelines.

### ***DRE Ballot***

Our Direct Recording Electronic ballot (or DRE) prototypes offer a voting experience mediated by a touch screen interface. Although security and reliability concerns hover around paperless voting, we know most polling places meet accessibility requirements by owning (at least) one DRE machine.

### **Rolling Screen**

Our landscape-oriented rolling screen prototype largely mimics the structure outlined in the NIST *Ballot Design Guidance* document, and separates voting and reviewing processes into discrete activities. We built a low-fidelity demo in Flash software to test during phase 1 with non-disabled users, and we plan to incorporate our initial research findings with the full suite of compliance requirements for disabled voters in a high-fidelity demo for subsequent tests.

For all of our ballot prototypes, we utilized *Moderate Test Ballot* data from NIST. Key views or voting instances in our current scrolling DRE demo include:

- Language Selection
- Straight Party Vote (this because it affects multiple contest pages)
- Contests Section
- Retentions Section
- Referendums Section
- Review Ballot Screen (draft)
- Submit Ballot Screen

In our high-fidelity prototype, we plan to incorporate all remaining content requirements for fully accessible and usable voting.

We also plan to apply guidelines honed from our landscape-oriented prototype to a 1-page proof-of-concept illustration for voting machines with a *vertical* orientation—currently favored by just one of four main voting manufacturers in the US.

### **Full-face Hybrid**

Our full-face mixed paper and electronic ballot prototype effectively “flattens” the rolling voting sequence into a single matrix of contest data, where user voting and reviewing tasks are merged. Variations of this ballot between counties were observed during New Jersey primaries this season, where uniform voting technology was implemented across the state.

Although full-face voters input their contest selections into a machine, our plotter-sized sketch is formatted according to our optical scan/paper conventions. Having garnered insights from field research and interviews with county officials and their ballot printers (who are also their ballot designers), we plan to engage our New Jersey contacts in a roundtable discussion of our template and hope to user-test our hybrid DRE ballot with their cooperation.

### **VVPAT**

Twenty-five states now require a VVPAT, or voter-verified paper audit trail, to accompany a DRE voting experience. The *Election Reform 2000-2006* report indicates that 16 states require their VVPAT be the official ballot in a recount, and that the remaining 12 count them after each election to certify the accuracy of their DRE system.

Since the proposed Voter Confidence and Increased Accessibility Act (H.R. 550) of 2005 describes the VVPAT as the voter’s paper ballot of record (VVPB), we are probing the opportunity to include a VVPAT solution that retains voter privacy and security in our best practice guidelines. An audit of current VVPAT technologies and targeted field research, ideally with machine manufacturers, will lead our inquiry process.

### ***Optical Scan Ballot***

Our current optical scan template is mainly derived from NIST’s *Ballot Design Guidance* document and has been modified to accommodate bilingual, simplified language, layout, and color experiments for research and testing purposes.

Most provisional, absentee and emergency ballots are in optical scan format, regardless of a jurisdiction’s ballot technology of choice for “mainstream” voting

scenarios (registered, non-disabled individuals who vote in-person on election day).

## Voting Information Designs

We have developed a five-category system for temporary polling place signs that support HAVA and ADA requirements plus other identified environmental and voter needs. Because elections are held in physical spaces not designed with voting activities in mind, and due to the variability of most sign data, we are providing a set of prototypes for easily reproducible and managed paper signs.

In addition to meeting our full roster of accessibility goals, we continue to seek opportunities to simplify and generalize the content of our polling place information for common use and reuse by all states from election to election. For example, we have taken a cue from the summarized format of California’s Voter’s Bill of Rights presentation in creating our version of generalized federal rights—we accommodate states’ full disclosure requirements by offering an accompanying multilingual and large-print binder for non-impaired voters seeking detailed information.

Key design attributes of our proposed voting information system include:

- ADA-compliant color use (70% foreground/background contrast level) keyed by sub-system and the use of universally-recognized symbols
- Bilingual templates positioning English as the first language option
- Recommended paper sizes for easy reproduction
- Reproduction-safe, high contrast black-and-white wayfinding signs
- Signs for information and instruction with simplified content for universal relevance

### **Information Sub-system (24” x 36”)**

- Voter’s Bill of Rights w/binder *HAVA requirement*
- General Information *HAVA requirement*
- Polling Place Identification *HAVA requirement*
- Polling Place Identification (fill-in)
- Polling Place Moved
- Polling Place Moved (fill-in)
- Precinct Identification

### **Instruction Sub-system (24” x 36”)**

- Ballot Sample *HAVA requirement*
- Voting Instructions *HAVA requirement*
- Provisional Voting *HAVA requirement*

## **Identification Sub-system**

### **Exterior (18" x 24")**

- Accessible Main Entrance *ADA requirement*
- Accessible Main Entrance (fill-in)
- *Exterior Directional (under development)*

### **Interior (18" x 24", 11" x 17")**

- Station Identifiers: Information
- Station Identifiers: Check-In
- Station Identifiers: Voting
- Pollworker Identification (group)
- Pollworker Identification (individual)

### **Interior Wayfinding Sub-system (11" x 17")**

- Accessibility Circles w/Arrows *ADA requirement*
- Voting Place Directional: In-Vote
- Voting Place Directional: Out-Exit
- Restroom
- Accessible Restroom *ADA requirement*

### **Regulatory Sub-system (18" x 24")**

- Restricted Entry Marker
- No Cell Phone Use
- No Smoking
- *Polling Place Code of Conduct (under consideration)*

## **Research and Usability Tests**

### **Phase 1: Field Research and Evaluations**

Two types of qualitative research were conducted simultaneously in this first round: formative field research and usability evaluations.

#### **Formative Field Research**

By looking at the election community and context in which ballots and signs are situated, our intention was to better understand the interests, attributes and needs of election officials. This approach is ethnographic, experiential and observational, and was designed to expand our realm of inspiration and insight.

The following themes were our focus for this research:

- Common practice in ballot and signage development
- Challenges and pitfalls experienced by election officials

- Challenges and pitfalls experienced by voters
- Current successes—tips and best practices
- Constraints (technical and legal) and new opportunities

Our specific field activities included:

- Interviews (by phone and in-person) with 17 election officials
- Interviews (by phone and in-person) with 22 expert advisors from advocacy groups, academia and voting machine manufacturers
- Observations and interviews during June 6 primary elections in contrasting New Jersey locations—rural Hunterdon County and the city of Newark
- Focus groups with 16 election administrators in three locations: Nebraska, Maryland and Orange County, California

### Usability Evaluations

Forty-four non-disabled voter participants completed tasks designed to identify successes and deltas in our low-fidelity ballot prototypes, which were informed by NIST's *Ballot Design Guidelines*, their *Moderate Test Ballot* document, legislative requirements and insights from our field studies. Our tasks supported typical voting scenarios such as choosing multiple candidates in a contest, voting for or against referenda, skipping a contest and casting a ballot.

We also evaluated design elements with users such as ballot size; sequencing patterns; fonts; text size and alignment; contrast variations; language; instructional illustrations; navigational elements; white space; line weight; and color. We analyzed and tested methods for establishing hierarchy and moving voters more effectively through ballot completion. We also reviewed the form and placement of voter selection areas or marks in contests.

### General Findings: Election Design

1. Ballot design practice is generally constrained by limited budgets, staffing and technology constraints, and by an election process possessing little need for change and a limited history of meaningful innovation.
2. At a task level, voter need is trumped by legislative requirements (mostly state-level), which drive election planning and design activities. Trained design resources are rarely used to address ballot and sign strategy.
3. In some states, certification is required for many aspects of the election process related to ballots, specifically for service providers (such as printers and translators) and voting equipment and software. To our knowledge, no certification standard has been developed for ballot designers or for the ballots themselves.

4. There exists a stop-go tension around the idea of change. Election officials, legislators, machine manufacturers and voters may see value in changing their practices but often find comfort in and argue cost to justify the status quo. The evolution of election design practices may need to be gradual to accommodate users' learning curves and ensure manufacturers' compliance.

5. As our team foresaw, there is no one-size-fits-all solution for every jurisdiction, but we are identifying successful practices and modular design elements to be adopted incrementally—gradual steps may be a successful and realistic theme in our guidelines. Ballot deconstruction, for example, would enable us to highlight specific elements of our system—like the treatment of voting instructions—that a jurisdiction may embrace in whole or in part, as appropriate.

6. It does not surprise us that successful ballot and polling place signage implementation is dependent on pollworker knowledge and preparation. Training and familiarity should help attune workers to a variety of voter needs—since many disabilities we're addressing in our work are invisible—to utilize our materials in smooth and legal fashions.

### **Research Highlights: Ballots**

1. Voter preference tipped to our DRE prototype—it was considered shorter, faster and easier to use than our optical scan/paper ballot despite their identical content. Security, not usability, was the primary voter concern with electronic formats.

2. Sample voters appreciated ballot overview content. They considered it useful in understanding their voting place/progress in the ballot sequence and in reviewing their contest selections.

3. Dexterity limitations in pencil holding, as well as vision limitations in marking ovals, made optical scan voting frustrating (or at least difficult) for some non-disabled test participants.

4. Language-support practices ranged from simultaneous translations in-display to translation booklets in Los Angeles County, California, for non-English readers to consult against an English ballot. Although voters supported multiple language options, a majority preferred ballots to be in a single language presentation for allowing them to work quicker and with greater clarity.

5. Simple language requirements should be implemented to create baselines for reading levels and paragraph length in ballots. Legibility and readability in lengthy referenda proved problematic for some users, and issues around labels and voting instructions arose. At least one jurisdiction we encountered supports a 5<sup>th</sup> grade reading level benchmark (or below) in the development of voting materials.

6. Colors in our optical scan ballot may help differentiate information for low literacy voters, but some election officials and testers feared this would “dumb-down” the ballot and contribute to a “lazy” discernment of candidates when color is applied to party names. Although we support a (compliant) black-and-white ballot, we plan to address colored paper and ink use in further tests.

7. The production and refinement of election content, such as district contests, candidates, rotations and splits, is often complicated and manually directed. Election management software integrated with ballot production (as used in Orange County, California) permits a greater focus on the design of usable ballots.

8. Veteran officials often have important election design practices committed to memory. Documenting and sharing their review protocols, for instance, (which assure their ballots meet local standards) would serve their own local management efforts as well as that of the larger election administration community.

### **Research Highlights: Signage**

1. Election officials and voters both acknowledged a typical sense of information overload when entering a voting place. In some cases, a multitude of visual languages and data sources makes information difficult to prioritize and digest. In testing, our bold, color-keyed headers were appreciated, considered useful, visually distinct and perceived as financially feasible given their one-color print solution.

2. Testing showed that simple language, short paragraphs, and bulleted text lists organized by step or by topic made posters easier to read and remember than data taken directly from legal documents, such as a state’s Bill of Rights.

3. To get ahead of voter needs, sample ballots, voting instructions and Voter’s Rights are often offered prior to Election Day via public demos, mailings and newspaper placements. These locally determined materials also appear on flyers distributed by hand at polling places on Election Day.

4. Variations in polling place layout and size pose challenges when determining general signage materials and guidelines. Some jurisdictions offer standard and site-specific training packages, but few provided written guidance to pollworkers strategizing signage *effectiveness* as well as compliance. Workers also commonly bring their own supplies to hang posters and create or modify county and state signs.

5. Wall space, storage and the transport of sign materials are common considerations for officials. Posters are commonly 11” x 17” or smaller to accommodate for these restrictions, although larger posters are considered

easier to read by voters. Our larger, conventionally sized signs ought to satisfy both voters and officials. The number of signs relative to polling place size is also a factor we are examining.

6. Signs are often developed or purchased on a reactive, as-needed basis to address frequently changing local and state requirements. Low cost and compliance, rather than usability and cohesion, are default determinants. We feel our systematic and strategic approach will mitigate these pitfalls and make the process more efficient, organized and effective for all.

### ***Phase 2: Research and Refinement with Experts***

After researching current and successful practices nationwide, we will incorporate a full and complete set of compliant design solutions for our prototypes. Our team has planned another session of usability testing with representative sample voters, but our intended focus in this phase will be consultation with our network of experts and advisors to meet all voter requirements.

### **Usability Testing**

While we are in New Mexico, we plan to conduct six task-based evaluations with our current prototypes. Each evaluation is scheduled for 75 minutes to reveal insights and gather a qualitative assessment of the materials.

### **Expert/Advisory Assessments and Discussions**

After a period of revising our design exhibits, we look forward to scheduling roundtable research sessions with specific EAC working groups and our team's subject matter experts on accessibility, usability, literacy/simple language and alternate languages for strategy, effectiveness and compliance guidance.

Feedback gathered in this phase will inform our iterative prototype development and phase 3 testing for our ballots and signs.

### **Public Survey**

Our team is considering running a public survey online focused on nation-wide ballot practices and design elements. In such a study, we would deconstruct a typical optical scan and DRE ballot and explore general design practices known to positively effect usability. We would look to our network of election officials to provide input into our survey format to elicit relevant feedback. Studies examining the ordering of ballot contests, treatments of voting instructions, treatments of contest-specific instructions and methods for presenting multi-lingual ballots are envisioned starting points.

### ***Phase 3: Compliance Assessment***

To effectively assess our work, our team will need to analyze our materials in-context via pilot tests. We plan to consult with the EAC and our advisory network to author protocols and requirements for simulated voting experiences. Our team will recruit a broad panel of informants reflective of the target voting population to participate and provide feedback, including voters with visual, audio-tactile, visual-tactile, low-vision and alternate language needs.

### **Best Practices Guidelines**

Our final guidelines for the EAC will identify best practices in the design of ballots (optical scan and DRE formats) and polling place signage to help election officials achieve HAVA, ADA and VVSG compliance.

Our team has audited similarly conceived guidelines and checklist examples from states, federal resources, private organizations and election officials to determine the most successful format for our recipients. Our guidance will provide adequate flexibility and consistency within our ballot and sign systems to establish basic, minimum standards to be implemented across jurisdictions, voting technologies and other local variables.

We believe a checklist expressed in terms of election planning *components* for officials and their teams will appeal to our audience, as will visual explanations of our design anatomies and data keyed to federal compliance requirements.

A draft set of topics and evaluation criteria for developing our best practices, that we intend to refine with our experts, includes:

- Error rate: Does it (guideline) assure low error rate?
- Time: Does it (guideline) positively impact time efficiency?
- User needs: Does it (guideline) satisfy voter requirements?

Discussions, notes, references, variations and negative examples will be used when necessary to reinforce guideline messages.

The current working outline for our best practices includes these sections:

- Goals
- Disclaimers
- Priorities (federal requirements; design recommendations)
- How to Use
- Ballot components (optical scan, DRE full-face, DRE rolling)
- Sign components (5 categories)

## **Conclusion**

In closing, we are honored to be contributing to this important effort and acknowledge that this is a work in progress. The work this team continues to pursue is one component of a complex system of influences that make for smooth and effective elections. Our team continues to solicit resources and relationships that positively contribute to the development of useful, usable, efficient and replicable election design recommendations—examples and practices we hope will make an impact.