



**ELECTORAL
COUNCIL
of AUSTRALIA**

Automated Telephone Voting

Australian Electoral Industry Standard

Revised December 2011

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Industry Standard Automated Telephone Voting

Part 1

1 Preface

This document addresses Automated Telephone Voting technologies and provides a set of requirements and guidelines for use by Australian Election Management Bodies (EMBs) for their design, deployment and operation for Australian parliamentary, local government and industrial or commercial elections. Many of the principles of this standard may also be applicable to elections beyond the above scope.

2 Introduction

- 2.1.1 This Standard has been developed by a Working Group comprising members of the Electoral Council of Australia (ECA) and community representatives and with assistance from a telephony usability expert.
- 2.1.2 This Standard was reviewed and refined in 2011 following its successful implementation in the 2011 NSW State Election using feedback from the implementers and vendors of the telephone voting software developed for that election.
- 2.1.3 The Standard was funded and developed under the sponsorship of the Australian Electoral Commission (AEC). The AEC appreciates and acknowledges the input and assistance provided by the Australian Human Rights Commission, ECA members, Vision Australia, Blind Citizens Australia and The Australian Blindness Forum.
- 2.1.4 Special thanks to the Australian Bankers' Association for allowing us to incorporate content from the 2001 Australian Telephone Banking Standard.

2.2 Intended Audience

- 2.2.1 This Standard is to provide guidance to EMBs, where possible, to ensure an intuitive and similar voting experience for the voter, regardless of the election in which they are voting.

2.3 Purpose

- 2.3.1 The Electoral Council of Australia sought to standardize the usability of technology that is being developed in different Australian Electoral Management Bodies (EMBs) in response to increasing public need and commercial and parliamentary requirement. Telephone Voting brings added benefits of accessibility that technology can bring to voters who previously relied on assistance to mark the ballot paper.
- 2.3.2 The Standard was initially instigated in an effort to regularize the voting experience for people who are blind or have low vision, but it is recognized that this approach is applicable to anyone who is able to hear and comprehend spoken instructions and also be able to activate a telephone keypad. Whenever a voter uses a telephone voting system, whether or not they are blind or have low vision they will be casting a vote without the benefit of being able to "see" the ballot paper.
- 2.3.3 This Standard addresses issues of usability and navigation while also ensuring that Australian electoral principles are observed and not diluted by the introduction of technology.
- 2.3.4 The work conducted by other groups and standards bodies, including the Australian Bankers' Association (ABA), Standards Australia, the US Voluntary Voting



System Guidelines group (VVSG), the Human Factors and Ergonomics Society (HFES), Ameritech, US Access Board, ACIF and others, has assisted in formulation of the content of this document.

2.3.5 In formulating these guidelines, the Working Group has sought to incorporate the best information and guidance from available sources, as well as new research.

2.3.6 This document should be read in conjunction with AS/NZS 4263: 2003 - Interactive voice response systems—User interface—Dual tone multi frequency (DTMF) signalling.

3 References

- 3.1.1 Commonwealth Joint Standing Committee on Electoral Matters - Report on the conduct of the 2007 federal election and matters related thereto
- 3.1.2 Automated Telephone Banking Industry Standard. Australian Bankers' Association (2001) online at <http://www.bankers.asn.au/Default.aspx?ArticleID=344>
- 3.1.3 Australian Banking Association's Guiding Principles for Accessible Authentication. Online at <http://www.bankers.asn.au/Industry-Standards/default.aspx>
- 3.1.4 Scrutiny of Acts and Regulations Committee. 55th Parliament. Inquiry into Electronic Democracy. Online at <http://www.mmv.vic.gov.au/Assets/576/1/eDemocracyReport.pdf>
- 3.1.5 "Meeting the Needs of Older Adults in Speech Application Design", Daryle Gardner-Bonneau, Principal, Bonneau and Associates
- 3.1.6 "Telephones for All", Nordic Committee on Disability, Nordic design guidelines
- 3.1.7 "The Telecommunications Charter", COST 219 bis, National Research and Development Centre for Welfare and Health (STAKES), European Union, <http://www.stakes.fi/cost219/charter.htm>.
- 3.1.8 AS/ACIF S002:2001 Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network
- 3.1.9 AS/ACIF S040:1999 Australian Standard - Requirements for general use Customer Equipment for use with the Standard Telephone Service – Features for special needs of persons with disabilities
- 3.1.10 AS/NZS 4263: 2003 - Interactive voice response systems—User interface—Dual tone multi frequency (DTMF) signalling
- 3.1.11 Designing User Friendly Interactive Voice Response (IVR) Telephone Services for all. (1998) SoftSpeak Computer Services <http://www.softspeak.com.au/ivrpap98.htm>
- 3.1.12 Draft Information and Communication Technology (ICT) Standards and Guidelines, Published in the Federal Register on March 22, 2010. <http://access-board.gov/sec508/refresh/draft-rule.htm#i903>
- 3.1.13 HFES 200.4 Software User Interfaces – Interactive Voice Response (IVR) and Telephony Human Factors and Ergonomics Society
- 3.1.14 VVSG (Voluntary Voting System Guidelines) Recommendations to the EAC. The US Election Assistance Commission - Technical Guidelines Development Committee: 2007

4 Disclaimers

4.1.1 This document is based in part on the local and international research on best practice in the design, deployment and operation of voice-output electronic voting approaches, as well as Automated Telephone solutions which were available at the time of publication. Any future versions of the document will endeavour to incorporate the latest research and experience.



- 4.1.2 Since material in this document was developed by the Working Group, some of which is drawn from a number of other sources, it should not be distributed outside election management bodies without permission from the Electoral Council of Australia. It may however be referred to in tenders, research, requests for expressions of interest and requests for proposals, without permission, where interested organisations are seeking to adopt its requirements.
- 4.1.3 There are many liability and other legal issues relating to matters covered in this Standard, the resolution of which falls outside the scope of the document. These include:
- 4.1.3.1 Registration procedures for telephone voting
 - 4.1.3.2 Procedures for generation and issuing of telephone voting credentials
 - 4.1.3.3 Conditions of use (eg, proxy relationships, determinations of breaches)
 - 4.1.3.4 PIN and Voting Identification Number entry (eg, inability to enter PIN, PIN replacing signature)
 - 4.1.3.5 PIN disclosure
 - 4.1.3.6 Disclosure of user IDs and passwords
 - 4.1.3.7 Strategies for avoidance of fraud
 - 4.1.3.8 Compliance with Commonwealth Electronic Transactions Act
 - 4.1.3.9 Compliance with the Commonwealth Privacy Act 1988 (which incorporates the amendments made to it by the Privacy Amendment (Private Sector) Act 2000).
 - 4.1.3.10 Any electoral legislation that may be governing the particular ballot that is using Telephone Voting.
- 4.1.4 This Standard does not replace legislation and where there is a conflict between legislative requirements and this Standard, the legislation must take precedence.
- 4.1.5 Although the intended primary application of this Standard is stated in its Scope (see below, Section 7), it is important to note that it remains the responsibility of the deployers of the Standard to judge its suitability for their particular purposes.
- 4.1.6 The Standard ought not to be relied upon as a substitute for professional advice in complying with the law, and it is recommended it be implemented and assessed under the guidance of experienced usability professionals.
- 4.1.7 The Electoral Council of Australia, and all other parties associated with the publication of this document have made every effort to ensure the accuracy of information, but accept no responsibility for any loss or damage occasioned by any party in its seeking to implement any provision of the Standard.

5 Force of Document

- 5.1.1 This document is an Industry Standard: a set of standards and guidelines for the design, deployment and use of Automated Telephone Voting services for the Voting and Elections industry. The adoption of this Standard is voluntary.
- 5.1.2 This Standard does not have the force of law and adopting it does not guarantee fulfillment of legal responsibilities under the Disability Discrimination Act (DDA), nor does it remove from any institution their obligation to comply with the requirements of that Act or any other relevant legislation.
- 5.1.3 The Standard has been developed in consultation with interested parties, including the Australian Human Rights Commission with the objective of describing best practice for accessibility consistent with the DDA. An organisation choosing to adopt the Standard may therefore have some confidence that they are implementing requirements which have evolved from community consultation with interested parties



and Australian electoral management bodies. The adoption of the Standard will carry some weight as a defence against a complaint lodged under the DDA.

6 Definitions

- 6.1.1 For the purpose of this Industry Standard, the following definitions apply:
- 6.1.2 **Australian Human Rights Commission** - formerly HREOC (Human Rights and Equal Opportunity Commission) The Australian Human Rights Commission administers federal legislation in the area of human rights, anti-discrimination, social justice and privacy. This includes complaint handling, public inquiries, policy development and education and training.
- 6.1.3 **Automated Telephone Voting service** – voting in an election is made available to the voter using a telephone. The voting session can be completed independently by the voter.
- 6.1.4 **Automatic Call Distributor (ACD)** - A front end menu from which telephone voting might be selected.
- 6.1.5 **Ballot** – A contest or race for which the voter is required to respond.
- 6.1.6 **Ballot Navigation Mode** – Allows the voter to move between candidates or groups in a virtual paper ballot. BNM provides a consistent set of key assignments to allow for vertical or horizontal navigation of the ballot as well as mechanisms for adding and removing preferences for candidates, groups or yes/no ballots. In this standard key assignments differ to the conventions commonly found in traditional automated voting services in order to provide two dimensional navigation.
- 6.1.7 **Ballot Preference Zone** - The zones of the virtual ballot available in Ballot Navigation Mode are determined based on a selection by the voter of which zone of the ballot they want to allocate their preferences. When the user is within a Ballot Preference zone they are unable to traverse to the alternate zone of the ballot without exiting the Ballot Navigation Mode and selecting an alternate zone. For Example – the Australian Senate ballot has two preferencing zones for use by the voter. An Above the Line zone which allows for ticket voting and a Below the Line zone which allows for full preferential voting.
- 6.1.8 **Ballot Selection Menu** – In the case of the voter being required to complete more than one ballot, the Ballot Selection Menu allows the voter to choose which ballot they want to edit.
- 6.1.9 **Caller** - a voter registered for telephone voting who calls the system.
- 6.1.10 **Cast** – the act of saving the preferences on a ballot. For the purposes of this standard a distinction is created between the act of saving a ballot containing preferenced items and submitting the ballot, which is in effect lodging the ballot(s) irretrievably into the virtual ballot box.
- 6.1.11 **Command** - a DTMF input from a user that controls an IVR system. Examples of commands are Help, Stop, Skip, Back-up and Exit. A command is not a response to a menu of choices or to a data input request. A command is usually a single key-press.
- 6.1.12 **Credentials** – In most instances credentials are a pair of numeric strings. One being the identifier of the voter usually issued by the EMB and the other being a numeric PIN/Passcode usually provided by the voter at the time of registration.
- 6.1.13 **Culturally and Linguistically Diverse (CALD)** – anyone for whom English is not their first spoken or written language. People of a non-English speaking background often benefit from plain English writing, and may prefer spoken English to written English.



- 6.1.14 **Data input** - a sequence of DTMF tones input by a user to convey information such as credentials, numbers, values, times and names. Data input may be of variable or fixed length such as a PIN.
- 6.1.15 **Disability** – the use of this term in the Standard relies on the DDA definition which includes:
- 6.1.15.1 Physical
 - 6.1.15.2 Intellectual
 - 6.1.15.3 Psychiatric
 - 6.1.15.4 Sensory
 - 6.1.15.5 Neurological
 - 6.1.15.6 Learning disabilities
 - 6.1.15.7 Physical disfigurement
 - 6.1.15.8 The presence in the body of disease-causing organisms.
- 6.1.16 **Dual tone multi frequency (DTMF) Signalling** – also termed Touchtone, a system for transmitting address and other information from terminal equipment by superimposing a succession of voice frequency signals on the established DC current in a PSTN line. Each signal comprises two simultaneously transmitted tones of different frequencies. Up to 16 different signals may be transmitted by standard DTMF signalling (in Australia, see ACIF S002: 2001). Almost all telephones are limited to 12 keys and hence 12 signals. The 12 standard keys are 1, 2, 3, 4, 5, 6, 7, 8, 9, *, 0, and #. The four additional keys (not normally provided on a telephone) are referred to as A, B, C and D.
- 6.1.17 **Electoral Data** – Registered party names, candidate names, electorate names, position on the ballot paper, are all examples of electoral data.
- 6.1.18 **EMB** – Election Management Body that is responsible for the administration of the election.
- 6.1.19 **Feedback** - information supplied by the system to indicate that user actions have had their intended effects. Typically, feedback consists of a spoken prompt indicating that an action has had its intended effect, but feedback may also include error indications and tones.
- 6.1.20 **First Past the Post/Plurality Voting** - the candidate who polls the highest number of formal votes is elected– even if that number is less than 50% of the formal vote.
- 6.1.21 **Formal** – a ballot that has been marked in accordance with the rules of that election and will therefore not be excluded from the count.
- 6.1.22 **Full preferential voting** - the elector must show a preference for **all** candidates listed on the ballot paper. In some electoral systems which use full preferential voting, the voter can leave one box empty if the voter's intention with regard to the other preferences is clear. The empty box is treated as the voter's last preference
- 6.1.23 **Group Voting Ticket (GVT)** - some electoral systems allow for a political party or group to register a replica of the ballot paper showing how the preferences will be distributed if the voter chooses to vote using the ticket voting method. When the voter chooses to ticket vote, the EMB will then distribute the preferences according to the GVT that has been lodged with the EMB prior to the commencement of voting.
- 6.1.24 **How to Vote Card (HTVC)** – An instruction that contains details about a candidate or party as well as instruction on how to cast a vote in the manner that the issuer of the how to vote card wants the voter to follow.



- 6.1.25 **Informative** - the term 'informative' has been used in this Industry Standard to define the application of the appendix to which it applies. An 'informative' appendix (if included) is only for information and guidance.
- 6.1.26 **Informal** – a ballot that has not been marked in accordance with the rules of the election and will not be included in the count. Sometimes known as an invalid vote.
- 6.1.27 **Interactive voice response (IVR) system or service** - an automated telephone-based system or service that allows users to enter information and make menu selections using DTMF devices, and to receive audible information. Examples include Automated Telephone Voting, Telephone Banking and bill pay (BPay) services. IVR system output is presented as audible signals or voice (whether live, recorded, digitised or synthesised) carried over an interactive telecommunications medium (whether public or private or a combination of both, or whether wired or wireless) including the PSTN or ISDN.
- 6.1.28 **IVR provider** – an organisation that develops and/or operates IVR services, for example, an EMB or 3rd party provider.
- 6.1.29 **Interrupt capability** - the ability to interrupt system output with valid input.
- 6.1.30 **May** – indicates the relative importance of a requirement. "May" follows "should" in importance in this Standard.
- 6.1.31 **Menu** - the presentation to the user of a list of possible actions. A menu typically comprises a set of prompts each describing an available function and the user action necessary to invoke that function.
- 6.1.32 **National Relay Service (NRS)** - in Australia, the National Relay Service is contracted to provide access to the telephone network between people who have a hearing or speech impairment or who are Deaf and the wider community. The NRS can be accessed by a teletypewriter (TTY), computer and modem or standard telephone. A Relay Officer (RO) is involved to facilitate all calls. Relay Officers are bound by Commonwealth laws to keep all calls confidential.
- 6.1.33 **Non Preferential Voting** – often used in First Past the Post Voting. Where the voter marks one or more squares to indicate the candidate(s) they wish to vote for.
- 6.1.34 **Operator** – a person who is available to assist a caller of an IVR service. An operator service may not necessarily be available 24 hours a day, or 7 days a week.
- 6.1.35 **Overvoting** - an overvote occurs when a person has voted for more than the maximum number of selections allowed in a ballot. The result is an informal vote which cannot be included in the final result.
- 6.1.36 **Plain English** – language that is written as clearly and simply as is appropriate for the content. Clear and simple writing will aid all users, especially those with cognitive, learning, and/or reading disabilities. This should not discourage the writer from expressing complex or technical ideas. Using clear and simple English also benefits people whose first language is not English, including those people who communicate primarily in sign language.
- 6.1.37 **PIN** – Personal Identification Number. A number provided by the voter to the EMB to be used in accessing the system. The PIN must be numerical, be 4-6 digits and must not commence with a zero as the zero key is reserved for help from anywhere within the system.
- 6.1.38 **Preferential Voting** - voters indicate an order of preferences for candidates on the ballot paper. eg. who they want as their 1st choice, 2nd choice and so on.
- 6.1.39 **Full preferential voting** - the elector must show a preference for **all** candidates listed on the ballot paper. In some electoral systems which use full preferential voting, the voter can leave one box empty if the voter's intention with regard to the other preferences is clear. The empty box is treated as the voter's last preference



- 6.1.40 **Optional preferential voting** – only the number "1" preference must be shown and other preferences may be indicated.
- 6.1.41 **Partial Preferential** - the elector must show a minimum number of preferences as per the instruction for the ballot.
- 6.1.42 **Prompt** - an audible system output that instructs or guides the user. A prompt may consist of recorded voice, synthesised speech, tones, sound effects or any combination of these.
- 6.1.43 **Public Switched Telephone Network (PSTN)** - that part of the public telecommunications network which enables any customer to call and communicate with any other customer either automatically or with operator assistance, normally associated with a landline (wired) telephone service. The PSTN has a nominal transmission bandwidth of 3 kHz (in Australia, see ACIF S002: 2001).
- 6.1.44 **Registration Process** – the method by which the EMB acknowledges the entitlement of the voter to access the telephone voting process.
- 6.1.45 **Remote Telephone Voting** – The method of being able to vote using the telephone without the requirement to attend a specific location to participate in voting.
- 6.1.46 **Robson Rotation of Candidate Names** - a process of rotating candidate names within a column so that favoured (top and bottom) positions are shared equally between all candidates.
- 6.1.47 **Shall** – indicates the relative importance of a requirement. "Shall" is of the highest importance in this Standard.
- 6.1.48 **Should** – indicates the relative importance of a requirement. "Should" follows "Shall" in importance in this Standard.
- 6.1.49 **Submit Ballot** – the ballot is placed in the "virtual ballot box" by the voter. Submit generally means that the voter has completed voting and cannot retrieve the submitted ballot.
- 6.1.50 **System** - an interactive voice response (IVR) system.
- 6.1.51 **Telephone Relay Service** - a telecommunications service that enables text telephone users and voice telephone users to interact by providing translation between the two modes of communication. This translation is normally provided by a human operator. See National Relay Service.
- 6.1.52 **Telephone Voting in a Polling Venue** – the voting method is only available from within a venue controlled by the EMB managing the election.
- 6.1.53 **Timeout** - an interval of time where there is no user input, which causes the system to change state; or, the state change resulting from such an interval. For example a timeout may result in information being repeated or more details being offered to the user, the call being transferred to an operator or the vote being cancelled and reset.
- 6.1.54 **Text Telephone** - the generic term commonly used to describe a device used to perform text telephony whether through Baudot, DTMF, ASCII or other methods used in various countries throughout the world. Such devices are usually used by at least one party who has a hearing impairment. It could be a stand-alone unit or as an addition to a voice telephone or as an application in a multi-function computer based terminal.
- 6.1.55 **TTY**: one name that Australian and North American (Baudot-based) text telephones are commonly known by. The deaf community in Australia has adopted the term "TTY" as a common usage name for text telephones. TTY text telephones use the Baudot system to communicate across the telephone network.
- 6.1.56 **User ID** – the number which identifies the user and their accounts to the system.



- 6.1.57 **User Interface** - the term used to describe the methods and equipment by which people and technology interact. User interface includes the output and input formats that programs generate and recognise. .
- 6.1.58 **Voter** – a person who has enrolled with the managing EMB and has subsequently registered for Telephone Voting in order to use this service.
- 6.1.59 **Voter Identification Number (VIN)** - a term sometimes used for User ID in electronic voting systems. See User ID.



Part 2

7 Scope

- 7.1.1 This Industry Standard is intended for use by developers, suppliers and designers of Automated Telephone Voting services and by EMBs providing Automated Telephone Voting services through the use of interactive voice response (IVR) technology.
- 7.1.2 This Standard does not attempt to standardize the software to be used or the security around that software, but instead provides guidelines to the EMB and to software developers to bring a consistent and familiar experience to Australian voters using telephone voting services.
- 7.1.3 Principally the Standard relates to automated telephone services and does not extend to direct communication between a customer and an employee of an EMB, other than by specifying requirements which may enable a user to gain access to a human operator from within the IVR system or general guidance on telephone voting.
- 7.1.4 Whereas AS/NZS 4263 applies to generic user interface guidelines for automated telephone services, the Telephone Voting Standard specifically deals with telephone applications relating to voting in elections.
- 7.1.5 As this Industry Standard is supplemental to AS/NZS 4263, in most instances it does not duplicate information appearing in that document. It is therefore essential that AS/NZS 4263 be read in close conjunction to this document or instructions found in this Standard will be incomplete and insufficient to implement a telephone voting system.
- 7.1.6 The primary focus for this document is on automated IVR systems, not Automatic Call Distributor (ACD) systems or Auto Attendant 'front ends'.
- 7.1.7 This Standard primarily specifies requirements, guidelines, recommendations and suggestions for Automated Telephone Voting services so that they are more accessible to people with disabilities and for rural and remote voters. Nevertheless Nothing in this standard should technically preclude the use of telephone voting services by anyone who is able to hear and comprehend spoken instructions and who can activate a telephone keypad
- 7.1.8 This Standard does not address vote counting methods.
- 7.1.9 Automated Telephone Voting assumes a voter with the capacity to hear recorded voice messages and the ability to operate a telephone keypad, or to be able to generate DTMF tones as telephone input.
- 7.1.10 Automated Telephone Voting Systems shall be designed to accept DTMF input. It is a requirement that the telephone or telephone device being used for telephone voting is capable of generating DTMF signalling (often termed Touchtone®) and that the device is not set to the outdated decadic (click) signalling mode. In Australia a very small number of older landline phones may not support Touchtone® signalling and others may still be set to the older decadic signalling mode. Decadic signalling is not compatible with automated telephone voting or most current IVRs. This potential issue may need to be raised in literature and in troubleshooting procedures.

7.2 Overview of Automated Telephone Voting Usability Challenges

- 7.2.1 Derived from: VVSG Recommendations to the EAC 2007
- 7.2.2 The importance of usability and accessibility in the design of voting systems has become increasingly apparent. It is not sufficient that the internal operation of these systems be reliable; in addition, voters and election officials must be able to



use them effectively and efficiently. There are some properties of voting systems that make good design especially difficult:

- 7.2.2.1 The voting task itself can be fairly complex; the voter may have to navigate an electronic ballot, choose multiple candidates in a single ballot, understand the effect of ticket voting versus preferential voting, or decide on referendum questions written in legal language;
- 7.2.2.2 Voting is performed infrequently (compared with tasks such as using telephone banking or an ATM), so there is less opportunity for voters and polling officials to gain familiarity with the process.
- 7.2.2.3 Changes in the election process, including new voting systems, may require voters and polling officials to use new and unfamiliar procedures; and
- 7.2.2.4 Voters who register to use the telephone voting service are exceptionally diverse. The voting public encompasses a broad range of factors, including physical and cognitive abilities, language skills and technology experience.

7.3 Functionality

- 7.3.1 The service must be able to be operated regardless of whether the voter has a speech impairment or is unable to talk. The service must not require voice input by the voter. If user verification processes or other aspects of the service ask the voter to speak, fall-back alternatives need to be in place for voters who do not have that ability. See section 8.6.6 for voice activated credentials.
- 7.3.2 The service is at its optimal performance from a fixed phone rather than a mobile phone. Voters should be encouraged to use a fixed phone to ensure audio quality, to increase security and to minimise the chance of dropouts and battery life issues.
- 7.3.3 The voter shall be allowed to restart or preferably resume a voting session if the voting session drops out.
- 7.3.4 If the election requires Robson Rotation, then the voter shall be served the same rotation on subsequent attempts.
- 7.3.5 If the system allows for the voting session to be resumed after call disconnection or dropout, then the partial vote should be discarded if the voter has not reconnected to the service within 12 hours. Note: In the NSW State Election, 12 hours was considered to be an appropriate time frame.
- 7.3.6 Whenever a voter enters a ballot that already contains preferences they shall be alerted as to the number of existing preferences in the ballot and should be taken to the candidate or group that has been allocated the highest ordinal numbered preference. Note: This may be after an unanticipated call disconnection or it may be after a voter has opted to change or edit their ballot.
- 7.3.7 The voter should also be informed of the process to clear all preferences from the ballot and then be placed in Ballot Navigation Mode to continue voting.
- 7.3.8 Following authentication, the voter shall be issued the ballot paper(s) for which they are enrolled. The voter shall be informed of the ballot name (for example name of electorate) before commencing each ballot. .
- 7.3.9 No identifying information about the voter shall be spoken. Eg voter's name
- 7.3.10 Unless the rules of the ballot state otherwise, the voter should not choose their own ballot(s) from multiple electorates.
- 7.3.11 The ballot(s) presented to the telephone voter shall be a true and fair representation of the printed ballot paper. For example - with the order of candidates preserved.
- 7.3.12 Where there is a closed list voting option (for example Group or Party voting) the association between a party or a group and the closed list of candidates for that party or group, should be made available through the telephone voting system to the



voter. Note: Even though the list may not be printed on the paper ballot, the telephone voter should be given the opportunity to access that information during the voting process.

7.3.13 Where there is an open list of candidates presented along with closed list voting options (eg Group or Party voting) the candidates in the open list and their order of presentation on the ballot shall be available to the telephone voter regardless of whether they have chosen to vote either using the group voting method or to directly choose candidates from the open list. For example, the Australian Senate has open list voting Below the Line. See [Ballot Preference Zone](#).

7.3.14 The EMB shall implement robust procedures to ensure that candidate and party names are pronounced correctly reflecting the pronunciation guidance provided by the candidate or the appropriate officer of the political party. Refer to [Party and Candidate Names](#).

7.3.15 Text to speech rules used by synthetic speech technology cannot replicate proper name pronunciation and shall not be used other than for prototyping purposes. Note: As in any ballot, the correct identification by the voter of the candidate's name is paramount, particularly when it is only presented in spoken form.

7.3.16 Where deemed possible, candidates' names should be spoken in first name/last name order so that telephone voters can efficiently identify a candidate by name, even when the names are not presented in this format on the paper ballot. Note: As per the 2011 NSW State Election implementation.

7.3.17 The system shall not allow the voter to submit more than one vote for each ballot except where legislation allows.

7.3.18 The preferences of the voter shall not be linked to the voter's identity so as to meet the requirements of a secret ballot.

7.3.19 The EMB should consider whether there is a risk of a cohort being identified if the votes are reported in a group or block.

7.3.20 The voter must not be encouraged to submit a ballot that is informal. However, the telephone voter must retain the ability to submit an informal ballot as is the right of a voter submitting a conventional paper based ballot.. For preferential voting, the voter shall be alerted if the ballot that is about to be submitted is incomplete, therefore making the vote informal.

7.3.21 In the case of non preferential voting, the voter should be alerted if the ballot that is about to be submitted will not be counted due to an over vote situation.

7.3.22 The EMB, where possible, should make available to the voter Group Ticket information ideally presented in preferential order. That is, the voter should be able to know to which candidates preferences will be allocated if they choose to ticket vote. Perhaps this service could be offered from the ACD menu as an information service before entering the voting system.

7.3.23 If the EMB is required to supply How to Vote Card (HTVC) information in the polling place then the HTVC information should also be available via the telephone system presented in preferential order.

7.3.24 If there is no legislative requirement for the EMB to provide HTVC information then they may still choose to supply this information which is of assistance to the voter via the telephone voting system or another channel.

7.4 Exclusions

7.4.1 Other than requiring equipment which supports DTMF signaling, features of the customer's telephone including keypad layout and handset design are outside the scope of this Standard.

7.4.2 EMBs cannot control the environment in which the remote telephone voter may cast their vote. Voters may choose to use a speaker phone facility which could lead to others in close proximity to the voter hearing the voice output from the telephone



voting system. Note: Literature and system instructions may include a caution to the voter to be mindful of situations where their vote could be overheard.

8 Requirements and Guidelines – General

- 8.1.1 This section contains a variety of high-level design principles for automated telephone voting services, derived in part from AS/NZS 4263 and the Australian Bankers' Association Telephone Banking Standard.
- 8.1.2 Throughout this document, there are specific requirements and recommendations sequenced against each of the key steps that may be involved in casting a vote via an automated telephone voting system.
- 8.1.3 The wording of requirements as “shall”, “should” or “may” clauses indicates the relative importance of each requirement.
- 8.1.4 To claim compliance with this standard, all “Shall” clauses must be met.
- 8.1.5 It is recommended that an EMB that is developing a telephone voting service compliant with this standard agree, with the software vendor which of the “should” and “may” clauses present in this standard are to be implemented.
- 8.1.6 During design, and prior to implementation, it is strongly recommended that users with a range of capabilities and limitations be engaged to trial the automated solution and provide feedback.
- 8.1.7 There are significant benefits to consulting with users from the beginning of the project (for example through focus groups at the initial planning stages) and at key stages within the project. Feedback from users can then be incorporated into the business/user requirements that create a framework for the development of technical and design specifications. This helps minimise usability and accessibility problems after implementation.

8.2 Compliance with AS/NZS 4263

- 8.2.1 Except where specifically stated in this Telephone Voting Standard, all Telephone Voting systems shall comply with AS/NZS 4263: 2003 or the most current version of that standard. This ECA Industry Standard document provides specific guidelines for voting that are beyond the scope of AS/NZS 4263.

8.3 Consistency

- 8.3.1 All users of IVR systems will benefit from consistent use of terminology, both across channels within a single EMB and across channels within the Electoral industry. For example in written and audio materials relating to voting. It is desirable to have consistent terminology across different EMBs, but very important that consistency exists in all channels within a specific EMB telephone voting implementation. Examples where terminology consistency is important include:
 - 8.3.1.1 Access number and Voter Identification Number
 - 8.3.1.2 PIN, Password and passcode
 - 8.3.1.3 Receipt and transaction number
 - 8.3.1.4 The order of steps for casting a vote
- 8.3.2 Experience has shown that consistent and predictable human interfaces benefit users. The benefits can include faster learning, greater productivity, fewer errors and greater satisfaction.
- 8.3.3 Consistent interfaces also benefit the industry by promoting greater acceptance of products and services. Standardization of Automated Telephone Voting systems is particularly important because callers infrequently use, or have never before used a



telephone voting system, and do not have the opportunity to read instructions each time they access a different automated Telephone Voting service.

8.3.4 Terminology use should be consistent throughout an application and among applications that are integrated with each other within a system.

8.3.5 Example: If an Automated Telephone Voting service and an Internet Voting service are both in use concurrently by an EMB, it is important that terms be used consistently throughout the two applications, and for all other channels (such as correspondence and customer communication) associated with the services, except where the services themselves need to be differentiated.

8.4 Registration Principles and Credentials Format

8.4.1 If the telephone voting service is available for a voter attending a voting venue, then the voter may not need to be pre-registered for the service.

8.4.2 If pre-registration is not required then the general principle should be that the correct ballot for that voter is determined and selected in the system by the EMB before the voter starts interacting with the voting system.

8.4.3 Subject to identification and security requirements, the user should be able to register for the telephone voting service using the telephone, internet or indirectly through a telephone relay service, without completing printed forms and subject to legislative requirements. This assumes the person is already on the electoral roll.

8.4.4 This standard does not preclude registration and authentication processes provided by a trusted source on the behalf of the EMB.

8.4.5 The EMB may also allow for the collection of consent to register for telephone voting at the time of enrolment or via enrolment update processes.

8.4.6 Note: As print handicapped voters are a logical audience for telephone voting the legislative requirement to register for this service using a signature should be minimised on the basis that the voter has already enrolled with the EMB and that any further registration is an extension of that enrolment.

8.4.7 User IDs shall be 6 or more digits in length and should not be more than 8.

8.4.8 Note: User IDs more than 8 digits in length are very hard for most people to remember. This is a particular issue when a person is unable to read the number from printed correspondence, or when they are trying to hear a multi-digit number spoken via computer voice output. This occurs when a person who is print handicapped is accessing a registration number that has been sent via SMS or email.

8.4.9 The voter should provide a PIN to the EMB of 4-6 digits.

8.4.10 The User ID should contain no leading zeros so the voter can press 0 for help during input prompts.

8.4.11 Note: Because the Voter will nominate their PIN, the PIN only may contain a leading zero.

8.4.12 User IDs shall only contain numeric characters (digits).

8.4.13 When issuing credentials for telephone voting, via email, SMS on paper or in Braille, numbers of more than 4 digits should be chunked into groups of 3 or 4 digits to assist comprehension and memory retention.

8.4.14 For example, the voting identification number 12345678 should be sent to the user as 1234 5678 or the number string 123456 should be sent to the voter as 123 456 and should be read out in single digits.

8.4.15 When a voter is issued with a user ID, the ID should remain unchanged for that registration, unless it has to be changed for security reasons.



8.4.16 Accessible receipts or credentials should be delivered in the voter's preferred accessible format, either by the system, phone, SMS, email, Braille, printed letter format or a combination thereof.

8.4.17 If the receipt is required to be entered into a component of the telephone voting system at a future date to check if the vote has been counted, then the receipt shall be numeric characters only.

8.5 Key Assignments

8.5.1 General or System Keys

8.5.1.1 This section relates to the general keys that are used to access the system and menus within the system. Ballot Navigation key assignments will be covered in the next section.

8.5.1.2 Unless otherwise stated, key assignments should be as specified in AS/NZS 4263.

8.5.1.3 Where two or more menu choices are presented to the voter, these should be in the form of a menu of options, usually assigning the first option to key 1, the second to key 2 and so on.

8.5.1.4 Where the voter is asked a yes or no question, the affirmative option shall be indicated by the 1 key and the negative by the 2 key.

8.5.1.5 If the voter is given the option to save/submit or edit/review a ballot then the 1 key shall be associated with saving or submitting and the 2 key associated with changing or editing.

8.5.1.6 Note - Care needs to be taken in the user interface design to ensure there is no conflict or confusion for the voter of the role of the 2 key because it is also used in vertical navigation within a ballot. See [Ballot Navigation Mode](#).

8.5.1.7 The # key shall be used to move forward to the next stage in the voting session but shall not be used to submit a completed ballot. This is to avoid any risk of double entry of the # key resulting in the unintentional submission of the ballot.

8.5.1.8 Note: Examples of using the # key to move forward might include entering and exiting the ballot navigation or voting mode, moving to review the voter's preferences or saving but not submitting the current ballot.

8.5.1.9 The Star key shall be used to enter the 'Options Menu' explained below.

8.5.1.10 The 0 key shall be used to request context-sensitive help, which may provide the option to transfer the voter to a human operator for assistance.

8.5.2 Within Ballot Navigation Mode

8.5.2.1 When a voter is in Ballot Navigation Mode some keys operate differently to how they operate in other automated telephone services. This is to provide one or two-dimensional movement within a ballot.

8.5.2.2 Within Ballot Navigation Mode, 4 and 6 shall be used to move left and right within a horizontal list of candidates or group tickets.

8.5.2.3 2 and 8 shall be used to move up and down within a vertical list of candidates or group tickets.

8.5.2.4 Keys 2, 4, 6 and 8 shall not be able to traverse to a different preference zone on the ballot. See [Ballot Preference Zone](#) in definitions

8.5.2.5 As the voter moves through the list, the candidate name or group name shall be spoken.



- 8.5.2.6 When the voter moves to an item in the ballot which has previously been assigned a preference, then the system shall announce the number of the preference first, and then shall speak the candidate name second. For example:
- 8.5.2.7 “Preference 3, <candidate_name> <party_name>”
- 8.5.2.8 If the voter moves rapidly from one item to another when in Ballot Navigation Mode, speech output shall be interrupted immediately, and the next item the voter lands on shall be spoken.
- 8.5.2.9 Note: This interrupt capability is very important to maximize efficiency of navigation and assigning preferences.
- 8.5.2.10 After the candidate name and any party affiliation has been spoken a pause of 3 to 6 seconds should occur before the Ballot Navigation Menu of available options is spoken. This is to allow the voter to hear and consider the candidate data that they have just heard without distraction.
- a) When on a candidate or group that is not preferenced, menu options presented to the voter may be in the following form: To select this this candidate, press 5.
 - b) To move down press 8
 - c) To move up press 2
 - d) To move left press 4
 - e) To move right press 6
 - f) To hear these instructions again press Star 1.
- 8.5.2.11 If the voter is on a candidate or group at the bottom, top, far left or far right of the ballot then this menu shall not present a choice to move down, up, left or right if they are already at that border of the ballot.
- 8.5.2.12 Note to telephone voting providers: The Ballot Navigation Menu may need to be assembled dynamically by the system based on the voter’s location in the ballot. As a result designers may choose to record prompts separately to allow for each of the above cases.
- 8.5.2.13 For specifics on use of the 5 key in the Ballot Navigation Mode see [Keys used to navigate between candidates or groups on the ballot paper](#).

8.6 Navigation and Input Factors

8.6.1 Non-duplication of information input

- 8.6.1.1 Within a voting session, unless information re-entry is required for reasons of privacy, security, or verification, the user should not be required to enter any given piece of information more than once.

8.6.2 Minimisation of user key presses

- 8.6.2.1 The number of key presses required of the user should be minimised.

8.6.3 Access to Operator

- 8.6.3.1 Voters who are having difficulty in navigating or comprehending the automated telephone voting service should be given the option to speak with an operator in order to either cast their vote with the assistance of a human, or to obtain technical support on the telephone voting service.
- 8.6.3.2 Voters shall always be asked if they wish to transfer to an operator and confirm this action through the use of the 1 key. If in transferring to an operator the voter’s partially completed vote would be discarded, then the



voter shall be informed of this and be asked to confirm if they still wish to transfer to an operator.

8.6.3.3 Before the call is transferred to the operator/third party the telephone voting session should be closed.

8.6.3.4 The hours of operation of the Call Centre should be assessed by the EMB to ensure a good level of customer service.

8.6.4 **Changing information that has been entered for a saved or unsubmitted ballot.**

8.6.4.1 When technically feasible, a voter should be provided with the opportunity to cancel a ballot, and/or change preferences and information that they have entered during the call.

8.6.4.2 When a voter indicates that they wish to cancel or clear all preferences from their current ballot, the system shall present the voter with the confirmation menu before acting on the instruction.

8.6.4.3 When the voter has entered their preferences for the current ballot, the system shall provide a confirmation stage where the voter will hear the preferences cast against each candidate in preference order, not ballot paper order.

8.6.4.4 Example: After the caller has finished entering their preferences for the current ballot, the system shall repeat the preferences and ask the voter if they would like to save these preferences or return to ballot navigation mode to make any changes.

8.6.5 **No Reliance on Speech Input**

8.6.5.1 Where an IVR system requests voice input, such as a means for user authentication, provision shall be made for callers who do not speak within a certain period by either allowing for DTMF input or transfer to a human operator, for example voice authentication requirements for security. Voice authentication is generally not recommended, and DTMF processes are preferred.

8.6.5.2 Menus, commands and prompts should be designed to minimise confusion and minimise the complexity of performing voting tasks.

8.7 **Voice and Audio Output**

8.7.1 Commonly required or essential voice output functionality. Most telephone voting systems will include some or all of the following voting messages

8.7.1.1 Informative Welcome message;

8.7.1.2 There shall be prompts for entry of authentication information by the voter;

8.7.1.3 Prompts for any declarations to be made by the voter before voting – depending on legislation

8.7.1.4 A description of commonly used keys throughout the voting system and the options menu. Eg – important keys from the options menu.

8.7.1.5 Voting session overview including general instructions and an overview of service including the number of ballots and their title

8.7.1.6 For each ballot a summary of ballot layout. For example the number of candidates in this ballot, if they are listed vertically and the number and nature of groups across the ballot

8.7.1.7 Instructions for Ballot Navigation Mode.



- 8.7.1.8 A description of the ballot(s) and information about what the voter will be required to do to correctly complete the ballot(s).
- 8.7.1.9 Summary of candidates associated with a voting ticket
- 8.7.1.10 Status messages indicating the voter's progress through the voting process (eg. number of candidates selected and number remaining)
- 8.7.1.11 Navigational information identifying current location on the ballot(s) eg. Group or party name or "you are at the right edge of the ballot at <group_name>" or "you are at the top of the candidate list (candidate name is then spoken)"
- 8.7.1.12 Audio presentation of voter's preference(s) in preference order, including preference number, candidate name and any party affiliation. This needs to be provided prior to the voter confirming their vote or to make edits if required
- 8.7.1.13 All candidate names and with any affiliated party names and all group names with any associated party names.
- 8.7.1.14 Instructions on how to submit partial or complete ballots and confirmation to the voter of these actions
- 8.7.1.15 Receipt facility if provided.
- 8.7.1.16 Interruptible and Non-interruptible prompts
- 8.7.1.17 There are a small number of circumstances where the system will be required to play an audio message to the voter which must be heard without interruption. These messages will be known as non-interruptible prompts. If in doubt as to whether a message needs to be non-interruptible or not, the designer should err on the side of the prompt being interruptible to assist usability and minimize frustration

8.7.2 Some instances where non-interruptible prompts may be desirable include:

- 8.7.2.1 Legal declarations - such as "I have not voted previously in this election";
- 8.7.2.2 Irreversible actions such as submitting the ballot(s);
- 8.7.2.3 The first time complex ballot instructions (such as instructions for open list voting) are spoken to the voter.

Note: It is important that a voter that has called the system more than once or who is resuming completion of their ballot is not forced to listen to non interruptible instructions if it can be determined that they have heard that message previously.

8.7.3 Party and Candidate Names

- 8.7.3.1 Automated telephone voting solutions shall use recorded human speech for presentation of all party and candidate names.
- 8.7.3.2 Candidate and party names are pronounced correctly reflecting the pronunciation guidance provided by the candidate or the appropriate officer of the political party.
- 8.7.3.3 To ensure guaranteed consistency of pronunciation and better use of resources, party names should be recorded once and associated with the candidate programmatically. (eg. play candidate name followed by party name as two separate files). Note: this means that the candidate names can be read in one run and the party names can be recorded just once instead of along with every candidate name.
- 8.7.3.4 The same voice talent shall be used, and volume and speed of delivery must be the same for all candidates and political parties, with equal neutral vocal emphasis given to each name.



- 8.7.3.5 The same voice shall be used to speak each candidate's name appearing in a single ballot, and where ever possible should be used across all ballots in a voting session.
- 8.7.3.6 Text to speech rules used by synthetic speech technology cannot replicate proper name pronunciation and shall not be used other than for prototyping purposes.

8.7.4 Spoken Instructions

- 8.7.4.1 Automated telephone voting solutions shall use recorded human speech for all English instructions and feedback, except in instances where the system is required to speak unanticipated textual information. Note: there may be circumstances where the system is required to speak some text to a user from a data source.
- 8.7.4.2 In almost all instances human voice recordings will be understood more effectively by voters, in particular for infrequent users, as the voice talent can be directed to emphasise important words and telephone keys while speaking instructions and presenting feedback.
- 8.7.4.3 The primary or base language for any official wordings and instructions derived from the ballot paper shall be English. Only instructional text and help messages may be provided in other languages. All election data, such as candidate and party names shall be in English reflecting what is printed on the paper ballot or unless other languages are provided for in legislation.
- 8.7.4.4 For Australian elections neutral Australian accents will have the greatest clarity and broadest appeal.
- 8.7.4.5 The EMB should use voice fonts to distinguish between instructions and election data including candidate and party names. Ideally a female voice for the instructions should be used, and a male voice for the candidate, party or group data.

8.7.5 Audio Quality

- 8.7.5.1 Audible prompts, messages and instructions require excellent audio quality. They should be without distortion or interference, moderately paced, and be played at optimal volume and clarity.
- 8.7.5.2 Telephone Voting Systems should use an audio encoder (codec) which has been optimized for voice quality and clarity.
- 8.7.5.3 Note on audio quality: Audio that is optimally produced will avoid the necessity to provide a user-adjustable volume control feature in the telephone voting service.
- 8.7.5.4 Female modulation is often received more easily by people who use hearing aids and tends to be perceived as more friendly. However, all audio output should be within the lower frequency ranges of human hearing, for example, through use of medium or lower pitched voices.
- 8.7.5.5 Standard and clear enunciation in order to differentiate between similar sounding numbers such as 5 and 9 is paramount.
- 8.7.5.6 Audio should be recorded in a professional recording studio which has experience with spoken-voice recording. Best results will be gained from attentive vocal direction of the voice talent by a telephony expert, with assistance by EMB staff familiar with the project, while the scripts are being recorded.
- 8.7.5.7 Clean and consistent trimming of audio files is crucial to ensure they sound natural when played one after another.



8.8 Scripts, Prompts and Wordings

8.8.1 Statement Phrasing

8.8.1.1 Where appropriate to the context, scripts for audio should adhere to the following guidelines:

- 1) Sentences should be short and simple in structure, and only the simplest vocabulary used. Care however should be taken to avoid patronising messages;
- 2) Informative messages which advise the voter of the progress of the activity and inform the voter when or how to perform a step in the activity should be clear and to the point.

From AS/NZS 4263 see Section 3.2 Prompt Characteristics

8.8.2 Spoken Menus

8.8.2.1 Except where the voter is within Ballot Navigation Mode, numbered menus should be used to present options. For example choosing to vote either above or below the line.

From AS/NZS 4263 also see section 3.4 Menus

8.8.3 Consistent Symbol and action Names

8.8.3.1 In Australia all symbols, including #, * and 0 shall be spoken consistently, as specified in clause 3.5.2 of AS/NZS 4263.

8.8.3.2 That is:

8.8.3.2.1 # shall be spoken as 'Hash' or 'The Hash Key'

8.8.3.2.2 * shall be spoken as 'Star' or 'The Star Key'

8.8.3.2.3 0 should be spoken as 'zero' or 'The Zero Key'.

8.8.3.3 The preferred terms for actions such as "hang up" "entering data via the keypad" etc. listed in table 3.2 under clause 3.5.3 of AS/NZS 4263 should also be consistently used in telephone voting systems.

8.9 Repeat and Speed of Delivery-

8.9.1 IVR providers shall provide voters with an option to repeat the last spoken menu, command or prompt.

8.9.2 This repeat feature shall always be available by pressing the Star key followed by the 1 key.

8.9.3 IVR providers shall provide voters with an option to alter the speed of delivery of IVR system prompts. Many voters who are blind or have low vision are accustomed to accelerated rates of speech and will benefit from such an option.

8.9.4 Menus, instructions and feedback, but not electoral data, shall have speed adjustment available.

8.9.5 The audio system shall allow the voter to change the rate of speech throughout the voting session while preserving the current state of any partially or fully completed ballot(s). The range of speeds supported should provide speaking rates from 100% up to 200%.

8.9.6 In the NSW State Election usability testing resulted in the base recording not being speed adjusted. The medium speed was 150% and the fastest speed 175%. Note: the base or normal speed should be announced at a moderate pace.

8.9.7 The pitch of audio shall remain constant regardless of the speed of the audio.



8.9.8 Speed shall be adjusted through the Options Menu, by pressing Star, followed by 4, 5 or 6.

8.9.9 To set the speaking rate to normal, press 4. To set the speaking rate to medium, press 5. To set the speaking rate to fastest, press 6.

8.10 Extended Use of Star – Automated Telephone Voting

8.10.1 Reasons for Extended Use of Star

8.10.2 Telephone Voting systems shall implement the Extended Use of Star as specified in clause 2.6.3 of AS/NZS 4263. In telephone voting applications Extended Use of Star will be referred to as the Options Menu. The benefits of an Options Menu implemented through Extended Use of Star are as follows:

8.10.2.1 When completing most ballots (Ballot Navigation Mode), the keypad is reassigned with one or two-dimensional movement, using the 2, 8, 4 and 6 keys to move up, down, left and right respectively. This largely precludes standard presentation of audio menus to the voter.

8.10.2.2 Extended Use of Star allows the voter to access a menu of functions at any time, regardless of the context including at login so that the voter is able to clear a keying error or to change the rate of the system voice.

8.10.2.3 Automated Telephone Voting is a sophisticated use of an IVR and Extended Use of Star allows extensibility to provide new features and functions over time, without breaking the conventions being set out in this standard.

8.10.2.4 It provides a consistent way to support speed control, repeating the last spoken message, pausing and resuming the voting session, switching between languages, additional instructions etc. without overloading key assignments which are already assigned when in ballot navigation mode.

8.10.3 Recommended Options Menu Order and Wordings

8.10.4 Any time the Star key is pressed, some or all of the following general options are presented provided they are valid and meaningful to the voter at that time. Spoken messages shall be arranged to meaningfully reflect the context at the time the Star key was pressed. For example, if the person is not in ballot navigation mode, then the option to clear all the preferences from the current ballot is not valid and therefore should not be offered. If a key has no meaning in the voter's current context, it shall not be spoken.

8.10.5 To activate a feature of the options menu the * key must be pressed followed by one of the following keys.

8.10.6 Options Menu: * - Move to most recently allocated preference or go back one step

To move to your most recently allocated preference, or to go back one step, press star

Conditional upon the voter's system context when Star is pressed from within the options menu, they should hear a relevant message pertaining to the action of pressing Star a second time. eg. During Ballot Navigation Mode the voter might hear the instruction to move to the most recently allocated preference press star, but in another context the voter might hear the instruction to go back to the previous menu press star. Another example might be during entry of the Voter Identification Number, the prompt could say;

"To clear the digits you have entered so far, and start again, press Star"

8.10.7 Options Menu: 1 - Repeat

To repeat the last spoken message, press 1

The last spoken message could be the current menu, the last prompt spoken, a receipt number, or other relevant information.



8.10.8 Options Menu: 2 - Pause

To pause your voting session for up to 5 minutes, press 2.

This pause feature is recommended so that the voter during a long voting session can pause and resume their voting session.

Note: Once activated, a prompt shall inform the voter how to resume from the pause state. The press of any key should resume the voting session.

8.10.9 Options Menu: 3 – Clear all preferences

To Clear all your preferences from the current ballot, press 3.

If the voter presses the 3 key they shall be presented with a confirmation menu to allow them to clear all their preferences or cancel this option. For example, if the user is mid-way through completing a ballot, then pressing 3 from the options menu would alert the voter that proceeding will result in the current ballot being cleared. In such instances, a confirmation menu is presented, with 1 confirming the action and 2 cancelling the request and returning the user to the Ballot Navigation Menu.

8.10.10 Options Menu: 4, 5 and 6 – Speed Control

To set the speaking rate to normal, press 4

To set the speaking rate to medium, press 5

To set the speaking rate to fastest, press 6

Options 4, 5 and 6 allow for three speeds.

The slowest speed should be 100 % of the nominal speaking rate.

If two faster speeds are offered, these should be 150 % and 175% of the nominal speaking rate.

If only one faster speed is offered, this should be 175 % of the nominal speaking rate.

Note that while a faster delivery speed may suit experienced and expert voters, it can be overwhelming for new users, older people, and those with other disabilities. Consequently it is important to provide a clear message to the voter spoken at normal speed explaining how to change the speed to a slower rate.

Example. After pressing star 6 the voter might hear the following message spoken at the slowest rate before the speed change is applied “The speed is now set to the fastest speed. To return the speed to normal press star four at any time.”

8.10.11 Options Menu: 7 – Return to earlier context or start over

To go to the ballot selection menu press 7

To return to the start of this voting session press 7

When a voting session consists of more than one ballot, pressing 7 from the options menu initiates the process of taking the voter to a menu from which they can select any of the available ballots, [The Ballot Selection Menu](#), the voter should be asked to confirm that they have requested to leave the current ballot by pressing the 1 key. If by pressing the 1 key results in the voter’s preferences in the current ballot being lost, then the system shall alert the voter of this.

8.10.12 Options Menu: 8 – Change Language

To change to another language, press 8

This is the key assignment for language change recommended by ISO IVR Standards and AS/NZS 4263.

8.10.13 Options Menu: 9 – End Call

To end this call, press 9.

The voter is presented with a confirmation menu before the call is ended and shall be notified if one or more ballots would be lost if they terminate the call. If the system offers a feature



where the vote can be resumed during a subsequent call, then the voter shall be asked if they wish their current progress to be stored on the system.

An 'end call' facility shall be provided by the telephone voting system, to ensure that no other person is able to connect to a partially completed telephone session, if a voter hangs up and the line is left open.

8.10.14 Options Menu: # – Exit Menu

To exit this menu and be returned to your current ballot, please press the Hash key.

Pressing the Hash key is the way to exit the options menu if the voter does not choose any of the options available.

8.10.14.1 Note to telephone voting providers: The Options menu may need to be assembled dynamically by the system based on the voter's location in the voting system. As a result designers may choose to record Options menu sub prompts separately to allow for each of the above cases. For example at Login, for information messages or system menus and in Ballot Navigation Mode

8.11 Help and Documentation

8.11.1 Although printed and alternative format information such as quick reference guides and instructions may be provided, the IVR system shall be designed in such a way that it can be operated without reference to such information.

8.11.2 All printed information provided should be in plain English and available in accessible formats on request and in other supported languages.

8.11.3 Deployment of automated telephone voting solutions shall include implementation of online context-sensitive help, accessible via the 0 key.

8.11.4 The EMB will provide information to the voter on how to access the voting service, and other relevant information.

Adapted from AS/NZS 4263 see also 2.7.1 Use of 0 (zero) key

8.12 Timeouts and Errors

8.12.1 IVR providers should refer to and extend the timeout values listed in AS/NZS 4263 Table 4.1., which contains a range of values for different timeouts. If timeout values are too short, then insufficient time is available to many callers to make decisions and perform tasks or even to log in to the system successfully. In other telephone applications such as telephone banking, users become familiar with the log in process, however with telephone voting, the voter will log into the service infrequently requiring log in timeouts to be more tolerant.

8.12.2 Timeout values should be refined through usability testing. Note: A time of twenty seconds or perhaps more for entry of the voter identification number may be a good starting point.

8.12.3 The voter shall be allowed a minimum of 3 attempts at logging in during a call to the service. If the voter fails each of these attempts then the voter will receive a message and the call will be terminated. While the system must allow for 3 attempts it is recommended that 5 attempts be available to the voter from a single call. Note: Particular attention needs to be invested by developers and usability testing to ensure that the login mechanism is robust to as to minimize the possibility that a voter is discouraged by the login process.

8.12.4 After the voter has successfully logged in to their voting session, and a voting session is inactive with no input from the voter via the DTMF interface for longer than 30 minutes, then the voting session should time out and reset so that the voter would then be required to dial into the service again in order to freshly cast their vote.



- 8.12.5 The EMB needs to determine whether any partially completed ballots are retained or discarded being mindful of the balance between usability and security.
- 8.12.6 This timeout can be altered by the EMB being mindful of the balance between usability and security.
- 8.12.7 To reduce the opportunities for “denial of service attacks”, the system should only allow a small number of concurrent sessions against a single voter login.
- 8.12.8 IVR providers should consider extending the length of time for valid inputs in menus for a user’s second chance (after an error or timeout has been triggered).
- 8.12.9 For example – when re-prompting for User ID after a timeout.

8.13 Error recovery

- 8.13.1 Voters should be provided with the opportunity to recover from their most recent error, without being required to re-enter correct information.
- 8.13.2 Words such as "wrong", "illegal", “fatal” and “critical” should be avoided in error messages for Voters.
- 8.13.3 Note: Providers should also refer to AS/NZS 4263 Section 4 for error recovery procedures.

9 Requirements and Recommendations for Each Voting Step

- 9.1.1 This section contains brief notes on key steps in the telephone voting system.

9.2 Calling the service

- 9.2.1 Welcome message

9.3 Logging in to the System

- 9.3.1 When the system is accessed from outside of a voting venue, the voter shall be required to log in and authenticate themselves using the credentials provided at the time of registration. For information on credential formats see [Registration Principles and Credentials Format](#).
- 9.3.2 The voter will be prompted to enter a User ID and the system shall request the user to complete the entry with the Hash key.
- 9.3.3 Example: “Please enter your six-digit Voter Identification Number, followed by the # key”.
- 9.3.4 The voter will then be prompted to enter their PIN and the system shall request the user to complete the entry with the Hash key.
- 9.3.5 The system should allow sufficient time for the voter to find and retrieve their Used Id and PIN. The maximum times as specified in AS/NZS 4263 Table 4.1 refer to [Registration Principles and Credentials Format](#)
- 9.3.6 If a timeout is reached while prompting for the User Id or PIN then the system should allow a longer period before timing out for the next input request
- 9.3.7 If 20 seconds was the timeout period in the first prompting then 25 seconds might be used as the timeout value for the second prompting.

9.4 Overview of the keys and the voting process

- 9.4.1 Preliminary instructions including an overview of important keys and commands, eg. Help from key 0 and Options Menu from Key Star. This describes the functionality of the universal (or always available) keys. “To hear these messages again, press the 1 key or to continue, press 2”. The 1 key is suggested to hear the message again in this instance, because the user may not yet be familiar with use of



the options menu and to hear the last message spoken. However Star 1 should be operational anywhere in the system.

9.4.2 Example “In a moment you will be presented with <three> ballots the House of Representatives, Senate and a referendum question.”

9.5 Commencing the Voting Session

9.5.1 The system shall prompt the voter to commence voting in the first ballot.

9.5.2 The voter initiates the voting session by pressing the Hash key

9.6 For Each Ballot

9.6.1 For example “You are now allocating your preferences for the House of Representatives ballot. This ballot is for the Division of <electorate_name> and contains <insert candidate_number> candidates which are listed vertically”. This will be followed by instructions on how to allocate preferences and complete the ballot. These instructions will be dependent on the relevant legislation and printed instructions on the paper ballot as the ballot paper wording may need to be adapted to be meaningful in a telephone voting context. For example, an industrial election may require 3 crosses from 10 candidates. The telephone voting system the wording might be adapted to say - “to put a cross in this box press 5”.

9.6.2 Usually for a government election the system would present instructions such as “there are 20 candidates listed vertically on the ballot paper. To go down press 8 or to go up press 2. To select a candidate use the 5 key.”

9.6.3 Great care needs to be taken in navigation through the ballot to ensure for example that the voter does not inadvertently jump past the first candidate in a group by pressing the 8 key when candidates are listed vertically which could result in the second candidate in the list being spoken first.

9.7 Ballot Navigation and Boundaries

9.7.1 The Telephone Voting System shall present a spoken representation of the virtual ballot paper(s) to mirror the physical ballot paper(s).

9.7.2 When entering the telephone ballot it is important that the voter is given information about the layout and navigation of the ballot. In particular the following situations need to be considered.

9.7.3 A spoken overview/description of the ballot such as “This ballot is made up of four vertical columns of candidates. There are three groups of candidates across this ballot plus one group which contains candidates without affiliations.”

9.7.4 A spoken instruction stating the preference requirements in order for the ballot to be formal. For Example “To complete this ballot you must assign preferences to at least 15 of the 300 candidates”

9.7.5 Keys used to navigate between candidates or groups on the ballot paper.

9.7.5.1 Using navigation keys of 2 = up, 8 = down, 4 = left and 6 = right, the ballot should reflect the general layout of the paper ballot. That is, if candidates are listed vertically, then they should be presented vertically on the phone service. In such a situation 2 is used to move up the list and 8 to move downwards.

9.7.5.2 If the voter is in the left most column of the ballot and presses 6 to move one column to the right, they will be automatically positioned on the first candidate of the next group. The same applies for moving to the left for the 4 key.

9.7.5.3 In addition whenever the voter moves left and right between parties or groups on the ballot the new group name shall be spoken followed by the preference status summary followed by the first candidate name in that group.

9.7.5.4 The system should always position the voter on the target candidate.



9.7.5.5 This ensures that the new candidate can immediately be preferenced with the 5 key if desirable.

9.7.5.6 Whenever a person moves to a new group in the ballot the following rules should apply to provide an overview of the preference status of that group. Example "Group B. Garden Party. This group has 12 candidates, 5 without preferences." Or "Group B. Garden Party. This group has 12 candidates, 7 with preferences." The second example is recommended for optional preferential elections such as the NSW Legislative Council below the line.

9.7.5.7 In preferential voting the 5 key shall be used to add a preference to a candidate or group that does not already have a preference. The 5 key shall also be used to remove a preference from a candidate or group when the candidate or group already has a preference but only when the candidate or group was most recently preferenced by the voter. Note: In a preferential system this is the highest ordinal number in that ballot.

9.7.5.8 To avoid creating gaps in preference sequencing, the 5 key shall not be available, except for unpreferencing the highest ordinal number in that ballot.

9.7.5.9 When the voter is on a preferenced candidate or group but not on the highest ordinal number, the 5 key shall not be listed as an option for the voter. Instead the voter shall be informed that star star will take the voter to the highest ordinal numbered preference.

9.7.5.10 If the 5 key is pressed on a preferenced candidate or group which is already preferenced but not with the highest preference the system should play an informative message stating that this candidate or group cannot be unselected because it is not the most recently preferenced item and they will need to press star star to move to their most recent preference.

9.7.5.11 In non-preferential voting the 5 key shall act as a select and deselect toggle as preference numbering is not in effect.

9.7.5.12 The voter should be given information about their relative location within a list of groups or candidates, including when they move between groups, or are at a ballot paper boundary i.e. at the first or last candidate in a group, or on the first or last column of the ballot.

9.7.5.13 For example in a vertical list of candidates, "This is the first candidate in the list. To move down to the next candidate press 8".

9.7.5.14 When the voter is within the ballot and reaches a boundary (edge) of the ballot the system shall advise the voter they have reached a boundary and will announce the name of the candidate or group at that boundary.

9.7.5.15 The system shall not wrap or move from the last candidate or group to the first when at a list boundary, to avoid confusion for the voter.

9.8 Choosing between Group or Candidate Voting

9.8.1 The voter should be prompted to choose their method of voting. The voter shall be provided with information about the number of candidates or groups.

9.8.2 When there are two or more choices, such as above-the-line voting or below-the-line voting, this choice shall be presented in the form of a standard IVR menu. For example "If you wish to vote above-the-line for a single group voting ticket, please press 1; If you wish to vote below-the-line and nominate your preferences for all candidates listed, please press 2."

9.8.3 In some cases there may not be a party or name associated with a group voting ticket. The system shall inform the voter that "This group has no name"



9.9 Reviewing the Ballot

- 9.9.1 It is important that the voter is clear and confident about how their vote will be cast, including information advising them if their vote is incomplete. A careful balance needs to be struck between providing sufficient detail, while avoiding undue verbosity in the output provided.
- 9.9.2 When the voter's preferences are being presented for review and confirmation, the voter shall hear their vote in preferential order, not in ballot paper order.
- 9.9.3 Each preference shall be read out in the following style:
Preference 1 – Keith Cucumber, Garden Party
Preference 2 – Sam Celery, Green Leafy Party
Preference 3 – Gabrielle Grape, Fruit Party
And so on
- 9.9.4 For a ballot with more than 7 preferences allocated, the voter's preferences shall be read back in chunks of no more than 7 items per set and the voter shall be informed how to advance to hear the next chunk and how to continue to save without the need to listen to their remaining listed preferences.
- 9.9.5 The software developer may develop a facility that allows the voter to move backwards and forwards through chunks. After each chunk has been spoken, a brief menu should be presented giving the voter options of navigation between chunks or the option to save their vote.
- 9.9.5.1 4 will move to the previous or first chunk,
- 9.9.5.2 5 will repeat the chunk just heard,
- 9.9.5.3 6 will move to and read the next or last chunk.
- 9.9.5.4 Pressing the Hash key will initiate the process to save, edit or submit the ballot.
- 9.9.6 Once the ballot has been saved, the system shall prompt the voter to either advance to the next ballot, or submit their vote(s) by pressing the 1 key.
- 9.9.7 This chunking facility could be applied to any requirement to present a list of candidates, groups or preferences. See also the information on [Closed Lists](#).
- 9.9.8 In the case of multiple ballots, the voter should be able to review and/or edit a ballot and then return to reviewing that ballot. For example, if the voter wants to edit their first ballot, they should not have to traverse any remaining ballots that they have already completed to return to the review function. The use of Star 7 will be helpful for navigation in these circumstances.

9.10 Ballot Selection Menu

- 9.10.1 The Ballot Selection Menu allows the voter to return to the beginning of the voting session and choose the ballot that they wish to edit. The prompt at the ballot selection menu could say "To go to the House of Representatives ballot, press 1. To go to the Senate ballot, press 2. To go to the referendum ballot, press 3. To hear these choices again, press star 1."

9.11 Types of ballot papers

- 9.11.1 Ballot papers can be visually presented in a variety of ways, depending on the State/Territory and the legislation. The Telephone voting system needs to present, via navigation and voice output, the primary navigation direction (vertical or horizontal) found in the printed ballot. The reasons for this are as follows:
- 9.11.1.1 So the formal instructions for completing the ballot make sense in the telephone context;
- 9.11.1.2 So the 'how to vote' party instructions that the voter may have accessed can be followed, and will correspond to the telephone voting instructions; and



9.11.1.3 So that a voter with previous understanding of paper based ballots can transfer that knowledge to the telephone voting context.

9.11.2 **No tickets Ballot**

9.11.2.1 The voter shall be notified of the total number of candidates in the ballot.

9.11.2.2 Horizontal lists of candidates shall be navigated using the 4 and 6 keys to move left and right respectively.

9.11.2.3 Vertical lists of candidates shall be navigated using the 2 and 8 keys to move up and down respectively.

9.11.2.4 The 5 key shall be used to nominate a preference and to deselect the last preference made. Refer to [Keys used to navigate between candidates or groups on the ballot paper](#).

9.11.3 **With tickets**

9.11.3.1 The user shall be notified of the total number of groups in the ballot.

9.11.3.2 Horizontal lists of groups shall be navigated using the 4 and 6 keys to move left and right respectively.

9.11.3.3 Vertical lists of groups shall be navigated using the 2 and 8 keys to move up and down respectively.

9.11.3.4 The 5 key shall be used to nominate a preference and to deselect the last preference made. Refer to [Keys used to navigate between candidates or groups on the ballot paper](#).

9.11.3.5 Pressing the 1 key shall allow the voter to hear the candidates that are listed for that group. For example if the voter is voting above the line then the candidate names immediately below the line for that group shall be spoken.

9.11.3.6 EMBs should consider providing a facility to the voter that when they have navigated to a group box that they could press the 3 key and hear the group voting ticket preferences lodged with the EMB for that group or party.

9.11.4 **Independents and/or Ungrouped.**

9.11.4.1 In some ballots, candidates do not belong to a party or do not lodge a group voting ticket. In these cases EMBs make provision for them on the ballot paper. If the ballot paper is horizontal it is usually at the far right, if the ballot paper is vertical it is usually at the bottom of the ballot paper, but not in the ticket voting section.

9.11.5 **Groups who do not lodge a group voting ticket.**

9.11.5.1 Candidates can nominate as a group but not lodge a group voting ticket either in error or deliberately. These groups are not able to be allocated a box for ticket voting. Where groups of candidates do not lodge a group voting ticket, they will still appear as a group but in the preferential section of the ballot paper only.

9.11.5.2 In these situations, the system shall clearly describe to the voter that if they wish to vote for candidates in this group, they will need to start again and choose to vote for candidates in the preferential section according to the rules of the ballot. Example – “These candidates do not have a group voting option. To vote for these candidates you will need to return to the ballot selection menu and choose to vote Below the Line”. Note: the example provided is indicative of the Australian Senate where candidates can nominate as a group, but do not provide a group name nor do they register a group voting ticket.

9.12 **Referendum Ballots and Questions**

9.12.1 Referendum questions should be answered using 1 for yes and 2 for no. Statutory wording will need to be reflected in the instructions and presentation of the



question. Clause 2.9.1 from AS/NZS 4263 specifies the association of the 1 key for 'yes' responses and the 2 key for 'no' responses.

9.12.2 The following example is modified from the wording in the 2007 Federal Election Voting Script:

9.12.3 "Referendum on proposed Constitution alteration. A proposed law: "Should all gardens have a shrubbery?" Do you approve this proposed alteration?"

9.12.4 To vote YES for this question, please press the 1 key.

9.12.5 To vote NO for this question, please press the 2 key.

9.12.6 When you are satisfied with your choice, please press the hash key."

9.12.7 Note: it may be necessary for the EMB to consider if the system needs to randomly present the option for No first, and the option for Yes second. Or for every even numbered registration that the presentation order is alternated. Refer to [7.3.4](#).

9.12.8 If this randomization is implemented then the 1 key will remain associated with the Yes response and the 2 key with the No response regardless of the presentation order.

9.12.9 If there is more than one referendum question, each shall be dealt with sequentially.

9.12.10 "To move to the next referendum question, press the Hash key."

9.13 Receiving the vote

9.13.1 If the receipt is not issued during the telephone voting session by the system then IVR providers may wish to consider the use of an automated voice call-back service, SMS applications, or email to supplement output from the telephone service.

9.14 Practice Voting Facility

9.14.1 An option to practice voting shall be offered to the voter prior to doing their real vote, or for callers prior to real voting being available.

9.14.2 The practice voting facility needs to clearly indicate to the voter that they are not casting a real vote. It also may indicate that practice voting session is a smaller version of the actual voting session to enable the voter to understand key elements of the voting system, such as ballot navigation mode and to understand voting tickets. It will allow the voter to be familiar with the voice fonts and should be non-political using (for example) fruits or vegetables as the candidates, groups or parties. The practice session should be reflective of the requirements and guidelines within this document. The practice vote facility needs to use consistent terminology such as "Do you want to submit your pretend ballots".

9.14.3 The size and scale of candidates in this facility needs to be significant enough, so that the voter gains a sense of the level of time and attention required to complete a real vote. For example in some Australian ballots there can be more than 300 candidates. Therefore too small a number of practice candidates would not prepare the voter for the magnitude of the ballot, but neither should the number be too great, for this may discourage the voter.

10 Privacy and Security Considerations

10.1.1 When voting is provided outside the polling place there are inevitably fewer controls over the level of privacy and security of the voter's right to a secret ballot. Similar risks are found in postal vote situations, but should still be considered by the EMB.



10.2 Security Principles

10.2.1 Authentication processes should not reveal the identity of the voter by voice or other means, other than verbally confirming the electorate for which the voter's ballot papers are issued.

10.2.2 It is the responsibility of the voter to cast their vote in a location and at a time which will satisfy their requirements for the secrecy of their vote.

10.2.3 Instructional information and associated telephone voting literature may provide suggestions to minimise such risks.

10.2.4 Voters should be able to notify the telephone voting system that they wish to end the telephone voting session, so as to minimise another householder inadvertently accessing the abandoned voting session.

10.2.5 Note: If the phone is hung up without ending the call via the system menus, under some circumstances the line could be left open.

10.3 Review Clause

10.3.1 This document should be reviewed periodically to ensure that it maintains currency with policy, legislative trends and technological developments.

