

Technology assisted voting

Paper 3

Final review report

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Foreword

I am pleased to publish this final report of my review into the feasibility of Technology Assisted Voting (TAV) in New South Wales. The review started in November 2022, with the launch of an issues and questions paper that invited stakeholder analysis, insights and experiences. In August 2023 I published an interim review report containing provisional analysis, findings and recommendations. I thank everyone who provided feedback to the interim review report. This final review report has taken the feedback into account to inform the recommendations and options for the NSW Government and Parliament concerning future approaches to TAV.

The review has considered whether internet voting and other forms of TAV are feasible for the 2027 NSW State general election and beyond. Overall, I have found that there is no sound basis on which to contemplate a large-scale program of TAV in New South Wales in the short term. The systems to control risks to electoral integrity from the broad use of TAV – particularly internet voting – are not sufficiently mature or proven to an acceptable standard. The existing paper ballot voting system is more secure and better understood and trusted by electors. It should continue to be offered as the primary voting channel.

Operator-assisted telephone voting, which appears to be emerging as the preferred TAV channel in other jurisdictions for its technical simplicity and greater security from external threats, should continue to be offered to eligible electors in New South Wales.

Election administrators should have flexibility, however, to support electors for whom existing voting channels limit access to an independent and secret vote, subject to controlling system risks. In New South Wales, legislation can help to address technical performance risks by limiting the size of the voter cohort, assuming it is possible to procure robust technology. I therefore am proposing the use of internet voting for electors who are blind or have low vision from the 2027 NSW State general election. This is contingent, however, on a secure solution being available, additional funding from the NSW Government and related legislative reforms.

In the longer term, the review identifies voting kiosks in voting centres as a potential complementary channel to attendance voting with printed paper ballots – and proposes a limited trial being undertaken in New South Wales at the 2028 local government elections to test this option.

There are, however, limits to state and territory election administrators separately pursuing a TAV future, such as voting kiosks, due to costs, organisational capacity and the maintenance of consistent voting experiences for electors across Australian electoral systems. There is a compelling case for Australian federal, state and territory jurisdictions to jointly consider whether any forms of TAV can and should be offered at scale on a common national election platform, in place of individual jurisdictions developing their own separate systems.

As well as offering benefits of technical scale and cyber security assurance, a common TAV interface for national, state, territory and local government elections would deliver a consistent experience for electors. I will continue to explore the potential of a national election platform with other Australian electoral commissioners – and recommend that the NSW Government advocate for the initiative in inter-governmental policy-setting bodies such as National Cabinet.

Beyond Australia's borders, there recently have been several high profile events that provide a flavour of the contentious intersections of technology, elections policy and electoral administration. In August 2023, the UK Electoral Commission revealed that a cyber attack had penetrated its systems two years earlier and accessed servers holding the Commission's email, control systems and copies of electoral registers.¹ The data of 40 million voters was exposed to the hackers.² Two months earlier, the Supreme Electoral Court in Brazil barred the former President from running for office for eight years, having found him guilty of abuse of power for falsely claiming that electronic voting machines were vulnerable to hacking and fraud.³ In Estonia, the 2023 national parliamentary elections saw, for the first time, more votes cast by the internet than by paper ballots.⁴ Each of these events in 2023 illustrate some of the opportunities and risks facing electoral management bodies globally relating to the role played by information technology in election management.

Against this background, as information technology continues to deliver both new opportunities and risks for citizens and organisations, it is inevitable that election management bodies will need to adapt digitally in order to conduct secure, accurate and inclusive elections according to law.

The Electoral Commission is currently undertaking a digital modernisation program which, if fully implemented, will see a refreshed information services architecture capable of meeting the complex election administration needs and expectations of New South Wales in coming years. The key aim of the program is to ensure that information services design, procurement and operations deliver systems that reduce risk to elections and work better for electors, political participants and electoral officials. In particular, the program will reduce friction points, bottlenecks and complexity for users who must interact with Electoral Commission systems and applications. Many of these systems operate 'behind the scenes' such as those for the recording, distribution and publication of votes and results at elections. These systems play an essential role in maintaining trust in elections and delivering legitimate results. Others, like TAV systems and political participant registration and transparency portals, are more outward-facing. All our systems, however, must meet contemporary technical expectations and obligations around privacy, performance reliability and cyber-security.

Any TAV systems commissioned in the wake of this review will operate within the Electoral Commission's digital modernisation model, to ensure that all integrations with new systems are secure by design and support the ongoing effectiveness and integrity of elections. The development of any TAV systems will also be undertaken in close consultation with the representatives of electors who are blind or have low vision.



John Schmidt
Electoral Commissioner for New South Wales
10 November 2023

¹ [Public Notification of cyber-attack on Electoral Commission systems](#), The Electoral Commission (UK), London, 8 August 2023

² Emma Woollacott, [Russia Tipped as Prime Suspect Over Huge Cyber Attack on UK Electoral Commission](#), *Forbes*, Jersey City, 9 August 2023

³ Robert Plummer, [Eight-year election ban for Brazil's Jair Bolsonaro](#), BBC, London, 30 June 2023

⁴ ERR News, [Estonia sets new e-voting record at Riigikogu 2023 elections](#), Tallinn, 5 March 2023.

Summary of conclusions and findings

1. As Electoral Commissioner, I have conducted this review to examine the feasibility of internet and other forms of technology assisted voting (TAV) for New South Wales state and local government elections.
2. To maintain the security and transparency of the New South Wales election system, **paper-based voting** should continue as the primary voting channel for the foreseeable future.
3. TAV has inherent risks that, if they were to materialise, could impact the integrity and delivery of an election. These risks require mitigation steps, including strictly limiting eligible elector cohorts in the short term to those who require TAV for accessibility reasons only.
4. **Operator-assisted telephone voting** remains a feasible voting channel for electors who are blind or have low vision and should remain available for state and local government elections in New South Wales, noting that other Australian states currently are proposing widening operator-assisted telephone voting to other classes of electors, including those who are interstate or overseas.
5. **Internet voting** is a high-risk channel, facing a worsening cyber and misinformation threat environment involving state and criminal actors seeking to disrupt elections. Moreover, the processes for verifying votes and other assurance steps are not generally understood by electors or political participants.
6. Internet voting appears to be the preferred way for electors who are blind or have low vision to cast their votes independently and in secret – and may be feasible for these electors only from 2027 for NSW State and local government elections. This is contingent on the availability of suitable market solutions, adequate government funding and legislative reform.
7. Automated telephone **Interactive Voice Response (IVR) voting** shares system components and design features with internet voting. IVR could be examined as an alternative or complementary channel to operator-assisted telephone voting, notwithstanding its low historic-take up in New South Wales when compared to internet voting. Emerging solutions (such as voice response software) also should be considered.
8. Work on internet and operator-assisted telephone voting in New South Wales should progress on the assumption that up to 4,000 electors who are blind or have low vision would use internet voting and up to 1,000 would use operator-assisted telephone voting in 2027, representing around 0.08 per cent and 0.02 per cent of New South Wales electors, respectively.
9. Modelling of election data from 2015 and 2019 New South Wales elections indicates there is a low probability that the exclusion of up to 5,000 votes would materially affect a state election outcome, which is greater than the number of electors proposed to be eligible to use TAV in 2027. It remains possible, however, that in small or very close contests the unavailability of TAV for even a single eligible elector could be material to the result.
10. The cost and adverse impact on public trust in democratic processes of re-running an invalid election due to a material irregularity arising from TAV requires mitigating legislation. It would be appropriate and proportionate to those risks if legislation protected, in specified circumstances, the validity of an election result despite technical performance issues with a TAV channel; for example where it is not available for all or some eligible electors to use or where votes that are already cast cannot be verified or counted.
11. The scenarios for applying a savings provision to technical performance issues for TAV require the support of a clear legislative framework before internet voting is offered again.

12. Other constitutional and legislative reform to support TAV from the 2027 State general election should be considered including:
 - a) lengthening the pre-election timeframes for candidate nominations and ballot draws to provide sufficient time to prepare TAV systems for use at elections;
 - b) replacing the current ballot sampling system for preference distributions in the NSW Legislative Council with a full count system (such as that now used at local government elections in New South Wales); and
 - c) simplifying the way parties, groups and candidates are nominated for and/or displayed on the Legislative Council ballot, so it is better suited to digital display and other assistive technology.
13. System architecture and governance for internet voting should follow the operational protocols and auditing requirements set out in the *Eleven Essential Principles for an Australian Internet Voting Service* published by the Electoral Council of Australia and New Zealand (ECANZ).
14. Wider deployment of internet voting to other elector classes for the 2027 State general election would introduce an unacceptable level of risk to electoral integrity, including risks relating to short lead-times between nomination of candidates and production of ballot papers, technical performance, cyber security and, potentially, disinformation.
15. **Kiosk voting** machines at voting centres could deliver accessibility benefits and support faster counting and declaration of results.
16. While the capital, operational and maintenance costs for a standalone New South Wales kiosk voting system currently do not offer a viable state-wide value proposition, the channel's potential should continue to be examined, supported by suitable funding.
17. The feasibility of limited-scale kiosk trials at the 2028 Local Government elections should be explored, subject to a request for information to the market demonstrating the availability of suitable technology solutions and the provision of budget supplementation to the Electoral Commission before July 2026.
18. Longer term, the public interest demands the exploration of larger scale TAV solutions to meet challenges arising from the projected ongoing decline of physical mail services and potentially limited availability in Australia and internationally of suitable paper and printing supplies. This particularly affects electors in remote locations in New South Wales, interstate or overseas.
19. The challenge to develop secure, cost-effective and sustainable TAV channels is faced by all Australian electoral commissions.
20. Any additional TAV initiatives for New South Wales (beyond those proposed in this review for limited kiosk trials and the internet option for electors who are blind or have low vision) would best be undertaken as part of a national electoral technology platform, cooperatively designed, commissioned and operated on behalf of the states, territories and the Commonwealth.
21. A common national election technology platform would promote electoral transparency, consistent with Australia's democratic conventions and values, and provide a consistent electoral experience for citizens, with national privacy, identity and cyber security assurance.

Aims of the review into technology assisted voting

Background and context

Purpose of the review

22. This review into TAV assesses whether internet and other forms of TAV (in addition to telephone voting) can be provided by the NSW Electoral Commission at future elections and referenda for particular classes of eligible electors and, if so, in what form and at what scale.
23. The review follows a range of performance and system upgrade issues with the previous TAV platform in New South Wales known as iVote, set out from paragraph 30.
24. The review's [Terms of Reference](#) are published on the NSW Electoral Commission website.
25. The review considers, in particular, the requirement for accessible voting options for people who are blind or have low vision and for people with other disabilities. If a new TAV system is approved and funded, the NSW Electoral Commission will involve people who are blind or have low vision in its development.⁵
26. This publication is the Final review report (Paper 3). It sets out analysis, stakeholder feedback and options for limited voting in New South Wales via the internet, kiosks and telephone. This report is directed to the New South Wales Government and Parliament to enable consideration of the review's recommendations for budget and legislative planning.
27. The previous papers published for the review are:
 - 1) [Issues and Questions paper \(Paper 1\) \(PDF 820KB\)](#) – November 2022
 - 2) [Interim review report \(Paper 2\) – \(PDF 1MB\)](#) – August 2023
28. The review received 18 submissions in response to the Issues and Questions paper and six submissions in response to the Interim review report. The submissions are referred to in this final review report and are published in full on the NSW Electoral Commission's [website](#).

What is TAV?

29. Technology assisted voting (TAV) refers to an elector casting a vote by means of an electronic device. The current principal TAV channels used in Australia and internationally are:
 - 1) **Telephone operator-assisted** voting, where an elector phones a secure call centre and conveys their voting instructions to a telephone operator, whose interactions may be supported by a supervisor or “second assistant”
 - 2) Telephone **IVR** (telephone voting via an **interactive voice response** system) where the elector is given options by a recorded voice and enters voting instructions via keypad input
 - 3) **Internet** voting, where an elector votes via a web browser or an application on their private device (for example, mobile phone, tablet or personal computer), entering instructions by touchscreen, touchpad, keyboard and/or mouse
 - 4) **Kiosks**, also known as electronic voting machines⁶, where electors at a voting centre enter voting instructions through a keypad, keyboard or touchscreen (potentially with visual and audio assistance). For security, kiosks and voting machines are not usually connected to the internet. A digital kiosk or voting machine may have a vote-verifiable paper audit trail feature, that displays a paper record of the vote to the elector, before the paper record is stored securely by the electoral management body for audit or recount purposes.

⁵ [NSW Electoral Commission commits to explore technology assisted voting options to replace iVote](#) Joint statement between Blind Citizens Australia and the New South Wales Electoral Commission, 22 November 2022.

⁶ The term 'kiosk' is used in this report to describe any machine or device to record an electors vote that is located inside a supervised voting centre, noting that the devices go by various names and have a mixture of designs and features among jurisdictions.

History of TAV in NSW – iVote

30. The TAV offering of internet and IVR voting – named iVote – was introduced by the NSW Electoral Commission for the 2011 State general election, following an investigation into the feasibility of TAV by the then Electoral Commissioner in 2010.⁷ The report concluded that internet and IVR voting could be implemented for a limited stakeholder group.⁸
31. The *Parliamentary Electorates and Elections Act 1912* (NSW) was amended in 2010 to provide for TAV.⁹ Providing a means for electors who were blind or had low vision to cast an independent secret ballot was the key justification for the introduction of iVote.¹⁰
32. Other classes of electors were also made eligible to use iVote at this first election, including:
 - 1) people with a disability;
 - 2) those who lived 20 kilometres or more from a polling place; and
 - 3) those who were going to be outside of New South Wales on election day.
33. In 2017, iVote eligibility was extended to include silent electors.¹¹
34. At the 2019 State general election, the iVote platform experienced intermittent performance issues, most significantly in the week leading up to election day (including the day before election day and election day itself). These technical issues may have affected between 35,000 and 45,000 people in some way, including delays and having to use other channels.¹² None of these service incidents affected the security of the iVote system.
35. On 4 December 2021, local government elections were held across NSW, having been delayed due to the COVID-19 pandemic.¹³ To support electors affected by the ongoing pandemic, iVote was used in local government elections for the first time. It was made available to the same elector cohort as state general elections, as well as electors outside their council area or ward on polling day.¹⁴
36. A total of 652,983 electors used iVote, almost triple the projected demand of 218,000 users.¹⁵ While system testing had indicated that the iVote system could cope with higher numbers than those estimated, there was a delay in sending out credentials to electors who applied late in the voting period, due to an unidentified technical error. Many eligible electors therefore did not receive their credentials before voting closed to be able to cast their vote through iVote.
37. Of the electors who did not receive their credentials by the end of election day, 56 per cent found other channels to vote.¹⁶ The majority of the iVote electors who voted using alternative voting channels did so by in-person ordinary voting at a polling place in their area or ward (53.4 per cent).¹⁷

⁷ NSW Electoral Commission, [Report on the feasibility of providing 'iVote' remote electronic voting system](#), Parliament of NSW, Sydney, 23 July 2010.

⁸ NSW Electoral Commission, [Report on the feasibility of providing 'iVote' remote electronic voting system](#), Parliament of NSW, Sydney, 23 July 2010, ii.

⁹ The PE&E Act was amended by the [Parliamentary Electorates and Elections Further Amendment Bill 2010](#).

¹⁰ New South Wales, [Parliamentary Debates](#), Legislative Assembly, 24 November 2010 (John Aquilina MP, Parliamentary Secretary).

¹¹ [Electoral Bill 2017](#), cl 152 (d)

¹² NSW Electoral Commission, [Report on the conduct of the 2019 NSW State election](#), Sydney, 2019, 78.

¹³ Office of Local Government (NSW), [Local government elections postponed](#), (Media Release, 25 July 2021).

¹⁴ [Local Government \(General\) Amendment Regulation 2021](#), cl 333C.

¹⁵ NSW Electoral Commission, [Submission 14, Inquiry into the conduct of elections in New South Wales](#), NSW Legislative Council Select Committee on the Conduct of Elections in New South Wales, 53, 82

¹⁶ NSW Electoral Commission, [Submission 14, Inquiry into the conduct of elections in New South Wales](#), NSW Legislative Council Select Committee on the Conduct of Elections in New South Wales, 55.

¹⁷ NSW Electoral Commission, [Submission 14, Inquiry into the conduct of elections in New South Wales](#), NSW Legislative Council Select Committee on the Conduct of Elections in New South Wales, 55.

38. On 23 December 2021, the NSW Electoral Commission released an [assessment](#) of the potential impacts to the 2021 local government elections as a result of the iVote system access issues.¹⁸ Based on this analysis, the Electoral Commissioner determined that there was a material impact to elections in three local government areas:
 - 1) Kempsey – Councillor elections,
 - 2) Singleton – Councillor Elections, and
 - 3) City of Shellharbour – Ward A – Councillor elections.¹⁹
39. For these three elections, the Electoral Commissioner considered that there was a possibility that, if each individual who had registered to use iVote on election day had been able to vote, a different outcome may have occurred.
40. On 11 January 2022, the Electoral Commissioner commenced proceedings in the NSW Supreme Court, seeking orders in relation to the councillor elections held on 4 December 2021 for Kempsey Shire Council, City of Shellharbour Council (Ward A) and Singleton Council.
41. On 17 March 2022, the Supreme Court of NSW delivered its judgment in [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409](#). The Court decided that the problem that occurred for some internet voters in these areas was an irregularity, with the result that the affected elections were declared void.
42. In its decision, the Court noted that the failure to provide eligible electors with the opportunity to vote by the iVote channel because of technical issues, was capable of being a material irregularity according to the requirements of regulation 333E of the Local Government (General) Regulation.²⁰ The Court also decided that the correct approach to assessing the materiality was to consider the difference between the margin at each of the exclusion points in the count against the number of electors who were approved to use iVote and did not vote by any other means.²¹ The approach taken by the Electoral Commissioner prior to the proceedings differed from this approach. The Electoral Commissioner employed a Monte Carlo simulation, which calculated the probability of a different outcome by considering a thousand simulations of the missing iVotes based on random selections of actual vote preferences in impacted contests.²²
43. For each of the three elections in dispute, the Court found that because the number of potential “missing iVotes” was greater than the margin between candidates at one (at least) of the exclusion points, that was sufficient to find there were reasonable grounds to believe that a majority of the voters may have been prevented from electing the candidate they preferred.²³
44. On 5 April 2022, each of the elections referred to in the proceedings was declared void by the Court. The recontested elections were subsequently conducted on 30 July 2022.
45. In March 2023, the NSW Electoral Commissioner determined that, except for telephone assisted voting for electors who are blind or have low vision, TAV would not be used at the 2023 State general election or any state or local government by-election in the intervening period.²⁴
46. In October 2022, the NSW Parliament passed legislation which confirmed these arrangements for the 2023 State general election.²⁵

¹⁸ NSW Electoral Commission, [iVote system performance issue: Assessment of the potential impacts to the 2021 local government elections](#), 23 December 2021.

¹⁹ NSW Electoral Commissioner, [‘iVote and the 2021 NSW local government elections’](#) (Media release, 23 December 2021).

²⁰ [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409](#), [84]-[86].

²¹ [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409](#) [83].

²² [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409](#) [83].

²³ [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409](#), [84]-[86].

²⁴ NSW Electoral Commissioner, [‘iVote will not be used for 2023 NSW State election’](#) (Determination, 16 March 2022).

²⁵ [Electoral Legislation Amendment Bill \(No 2\)](#), Schedule 1, cl 14

47. During the six days the telephone assisted service was available for the March 2023 election, 830 electors who identified as blind or as having low vision cast their votes via the service. This compared with 1,174 who used iVote at the 2019 State general election and 2,382 at the 2021 NSW local government elections.
48. Surveys of electors who used the telephone assisted service in March 2023 indicate that the experience was simple and reassuring concerning registration and casting a valid vote. There was, however, feedback that telephone assisted voting removed some independence as voting instructions must be spoken to the operator. As well, electors who would have liked to vote below the line for Legislative Council candidates felt it was not feasible given the complexity of options, length of the candidate list and time required.
49. Views on TAV from the survey – which were drawn from a range of electors with disability – indicated support for internet voting, with benefits including increased independence, greater privacy compared to telephone assisted voting and less time pressure to complete the vote to allow research to be undertaken if desired.²⁶

Stakeholder submissions in response to the interim review report

50. During September 2023, a range of interest groups, including advocacy organisations for electors who are blind, have low vision or have other accessibility needs, made submissions in response to the interim review report.
51. Submissions were received from six organisations:

The Victorian Electoral Commission	submission 19
Scytl Australia	submission 20
Blind Citizens Australia	submission 21
Accessibility NSW	submission 22
Vision Australia	submission 23
The Law Society of New South Wales	submission 24
52. Submissions 1 to 18 from the first phase of the review, responding to the Issues and Questions paper published in November 2022, are summarised in Part 4 of the [Interim review report](#) and also are published in full on the NSW Electoral Commission [website](#).
53. Information from all submissions has been considered in the preparation of this final report.
54. The following is a summary of matters raised in submissions responding to the Interim review report in September 2023.

Multiple voting channels to meet accessibility needs

55. Vision Australia and Blind Citizens Australia supported the proposal in the interim review report to pursue an internet voting solution for blind and low vision electors for the 2027 election, subject to resourcing and availability of a market solution.²⁷
56. Moreover, there was a recognition among stakeholders that a range of voting channels is required to support varying accessibility needs for electors.

²⁶ *Evaluation of NSW Electoral Commission services at the 2023 NSW State election*, independent research report by Fiftyfive5 Pty Ltd, 178-179

²⁷ [Submission 23](#), Vision Australia, 18 September 2023, 2; [Submission 21](#), Blind Citizens Australia, 14 September 2023, 2.

57. Blind Citizens Australia endorsed a “multifaceted approach to accessible voting”. This includes operator-assisted telephone voting, which “remains a useful mechanism for many people who are blind or vision impaired”, noting the potential for both IVR using keypad response and voice response software.²⁸
58. Vision Australia endorsed the approach for several TAV options, stating:
- “We remain firm in our belief that a multi-channel implementation of technology assisted voting is the only way of ensuring that people who are blind or have low vision have an independent, secret and verifiable vote on an equal basis with the rest of the community”.²⁹
59. Vision Australia says internet and kiosk voting can be woven into the suite of co-designed solutions, without foregoing low-tech, low-cost options such as tactile stencils to enhance paper ballot voting.
60. Accessibility NSW is in favour of a range of options for voting that individuals can self-select based on their own needs. It notes that all TAV options in the interim review report (telephone, internet and kiosk) can present both accessibility benefits and barriers, depending on the needs of an individual elector.³⁰
61. In regard to kiosk voting, Vision Australia states that there are significant accessibility barriers that prevent kiosks from becoming an acceptable voting option for the majority of electors who are blind or have low vision. Accordingly, most people who were blind or low vision would choose to use operator-assisted telephone voting system in preference to a kiosk, notwithstanding the limitations around telephone voting concerning a secret and independent vote.³¹
62. While recognising the historic integrity of the paper ballot voting system, Vision Australia considers paper ballots represent the least trusted and least accessible form of voting for electors who are blind and low vision as it is a barrier to a secret vote which cannot be independently verified.³²

TAV system design

63. Specific recommendations were provided concerning accessibility standards for procurement and operation of any TAV solutions. Accessibility NSW nominated Australian Standard [AS EN 301 549](#) concerning functional accessibility requirements applicable to ICT products and services and the latest version of the [Web Content Accessibility Guidelines \(WCAG\)](#) at level AA for voting content on the web.³³
64. The TAV solution provider, ScytI Australia, identified potential cost economies in the design of systems infrastructure to support different voting channels. It stated that kiosk and internet voting may be able to utilise the same backend system if the kiosk device is a commodity style generic computing device – such as a tablet or desktop computer – that works with browser support.³⁴
65. Vision Australia pressed the need for disability organisations to be involved in the development of TAV systems ahead of implementation.³⁵
66. The need for TAV solutions to meet needs of interstate and overseas electors was highlighted by the Victorian Electoral Commission. It believes it is imperative that interstate and overseas electors are provided a voting channel that removes the uncertainty of postal services, which will only increase in future elections.

²⁸ [Submission 21](#), Blind Citizens Australia, 14 September 2023, 2.

²⁹ [Submission 23](#), Vision Australia, 18 September 2023, 2.

³⁰ [Submission 22](#), Accessibility NSW, 14 September 2023, 1.

³¹ [Submission 23](#), Vision Australia, 18 September 2023, 6.

³² [Submission 23](#), Vision Australia, 18 September 2023, 7.

³³ [Submission 22](#), Accessibility NSW, 14 September 2023, 1.

³⁴ [Submission 20](#), ScytI Australia, 14 September 2023, 1.

³⁵ [Submission 23](#), Vision Australia, 18 September 2023, 2.

67. The Victorian Electoral Commission supports expanding the current operator-assisted telephone offering from electors who are blind, have low vision or a motor impairment to interstate and overseas electors.³⁶

National coordination of TAV design and operation

68. Submissions identified benefits from greater coordination of TAV design, procurement and operations between Australian jurisdictions.
69. Vision Australia says that a national approach to the implementation of TAV would likely lead to economies of scale, shared best practices for security and risk management, a uniform approach to accessibility and a predictable experience for electors. It does, however, urge each Australian jurisdiction to proceed with TAV as soon as it is ready to maximise inclusive voting.³⁷
70. Blind Citizens Australia supports inter-governmental efforts to develop a national consistent TAV system that provides multiple options for electors who are blind or vision impaired to support an independent, secret and verifiable vote, provided it does not affect existing options in New South Wales.³⁸
71. The Victorian Electoral Commission supports the inclusion of local government and fee-for-service elections in any nationally coordinated TAV initiatives.³⁹

Legislative reform to support TAV

72. The interim review report set out requirements for enabling legislation for TAV, including a regime of savings provisions to protect the validity of election outcomes in the event of technical performance issues with TAV.
73. The Law Society of New South Wales supported the approach where savings provisions applied differently for multi-member proportional representation elections (such as the Legislative Council or local government councillor elections) and other contests (such as Legislative Assembly elections, local government mayoral elections and local government by-elections), to reflect the respective scale of public interest and costs of holding elections again.⁴⁰
74. Blind Citizens Australia also supported the savings provisions, noting however that it may give rise to perceptions among blind and low vision electors that their collective vote can be disregarded in an election if there is a technical issue with TAV.⁴¹
75. The Law Society supported legislative reform proposals concerning longer pre-election time frames, replacing the ballot sampling system for preference distribution in the Legislative Council and rationalising the way parties, groups and candidates are displayed on the Legislative Council ballot paper. Overall, it advocated for technologically neutral expression in legislation.⁴²

³⁶ [Submission 19](#), Victorian Electoral Commission, 11 September 2023, 2.

³⁷ [Submission 23](#), Vision Australia, 18 September 2023, 9-10.

³⁸ [Submission 21](#), Blind Citizens Australia, 14 September 2023, 1.

³⁹ [Submission 19](#), Victorian Electoral Commission, 11 September 2023, 2.

⁴⁰ [Submission 24](#), The Law Society of New South Wales, 21 September 2023, 1.

⁴¹ [Submission 23](#), Vision Australia, 18 September 2023, 9.

⁴² [Submission 24](#), The Law Society of New South Wales, 21 September 2023, 1.

TAV: context, risks and benefits

Introduction

76. TAV is a system through which an election management body provides for an elector to lawfully cast a vote via an electronic device such as a telephone, tablet, personal computer or kiosk.
77. TAV may enable an elector to vote from a personal device at home or another location remote from a voting centre (so their voting environment is **unsupervised** by electoral officials). By contrast, **supervised** TAV is where the elector records their vote on a kiosk at a voting centre staffed by electoral officials or by speaking to election officials on the telephone.
78. The current principal TAV channels used in Australia and internationally are: telephone assisted (supervised); IVR (unsupervised), internet (unsupervised) and kiosk (supervised). Evolving technology may introduce other solutions, such as automated spoken instruction voting (by telephone or computer headset) using voice recognition and response software.
79. Risks and benefits vary between TAV solutions. For example, internet voting may improve elector accessibility, however the potential risk of voter coercion is higher (similar to postal voting), as the environment is unsupervised.⁴³ A benefit of kiosk attendance voting, like traditional paper attendance voting, is that electors are in a regulated “safe space” and participate in a common democratic experience with other citizens, overseen by impartial election officials.⁴⁴

Internet voting

Usage and features of internet voting

80. Internet voting requires an elector to have a device such as a personal computer, tablet or smartphone with a browser to cast a vote via a web browser or app.⁴⁵ The elector enters their voting selections on the ballot paper displayed on the device’s screen. Once the elector has submitted their voting selections, the voting instructions are encrypted on the device using an encryption key produced by the election management body and transmitted over the internet to a server which functions as a virtual ballot box (Table 1). Only the election management body has the key that is needed to decrypt encrypted data.⁴⁶
81. Internet voting was the principal channel for the iVote system used at New South Wales elections between 2011 and 2021. Apart from the former iVote system in New South Wales, there are no large-scale internet voting systems operating in jurisdictions with bicameral Westminster parliamentary systems.
82. Western Australia offered internet voting in 2017, supported by the New South Wales iVote platform. The internet voting channel was available to electors with disabilities and was used by 2,200 electors. Looking to future TAV deployment, Western Australia recently has undertaken a market testing exercise via a Request for Information process. For the 2025 State general election it is developing a procurement strategy for a kiosk Direct Recording and Electronic (DRE) replacement solution for its Vote Assist kiosk product (previously deployed at two voting centres in Perth) and an IVR platform. Longer term, the Western Australian Electoral Commission says it is committed to a full online internet voting.⁴⁷

⁴³ David Kerslake ‘[Out with the old, in the with new: the case for internet voting in Australia](#)’ *The Parliamentarian*, 3, London, 2015, 190.

⁴⁴ S Birch et al, ‘[Putting Electronic Voting Under the Microscope](#)’ 85(2) *The Political Quarterly*, Wiley, Hoboken: United States, 2014, 187-190.

⁴⁵ A system which relies on the use of a private device to access the voting platform is sometimes described as “remote internet voting” to distinguish it from an arrangement where kiosk voting devices provided by an election management body are connected via the internet

⁴⁶ National Democratic Institute, [The Important Uses of Cryptography in Electronic Voting and Counting](#), Washington, Retrieved 5 October 2023 at <https://www.ndi.org/e-voting-guide/examples/cryptography-in-e-voting>,

⁴⁷ Western Australian Electoral Commission, [Update on Technology Assisted Voting Request for Information \(RFI\)](#), Communications Update 5, Perth, 2 March 2023.

83. The Australian Capital Territory (ACT) offered internet voting for electors outside Australia at its 2020 Legislative Assembly election, to address the declining effectiveness of postal voting from overseas. The ACT's Overseas E-Voting platform (OSEV) resulted in 1,554 internet votes being admitted to the count.⁴⁸ For the 2024 Legislative Assembly election, an Electoral Integrity Advisory Panel is examining the security and integrity of election ICT systems, with OSEV being the first system of focus for the panel.⁴⁹
84. At a national election level, Estonia has the most mature internet voting system, where more than half of all electors cast their votes online.⁵⁰ Estonia's national parliamentary elections, held in March 2023, elected 101 MPs across 12 multi-member electorates using a "party list" proportional representation system.⁵¹ A policy driver for internet voting in Estonia is to increase participation rates among its approximately 1 million registered electors by providing a convenient voting channel.⁵² The national turn-out in March 2023 was 63.7 per cent.⁵³
85. The government of Switzerland in 2023 approved the resumption of a trial of internet voting, using a solution designed and operated by Swiss Post and administered by canton (regional) governments which have responsibility for electoral operations.⁵⁴ This followed the suspension of internet voting in 2019 due to concerns regarding system integrity.⁵⁵ Switzerland has approximately 5.5 million registered electors.⁵⁶
86. For the elections for the National Council of Switzerland (the lower house of the Federal Assembly) in October 2023, the national government granted permission for three of the country's 26 cantons to use internet voting, characterising the event as a trial for the cantons to "gain further experience" using Swiss Post's e-voting system.⁵⁷
87. Online voting was provided to Swiss "voters abroad" registered in any of the three cantons: Basel-Stadt, St Gallen and Thurgau. A total of 3,470 votes from voters abroad were cast electronically in the elections.⁵⁸ Basel-Stadt also allowed citizens with a disability to vote online. In St Gallen, a limited number of electors from communes offering internet voting were also permitted to register to vote online. In all, the cantons asked for around 65,000 voters to be authorised for online voting – around 1.2 per cent of the Swiss electorate.⁵⁹
88. The last time e-voting was used in National Council elections was in 2015, when it was authorised for 132,134 electors in the cantons of Geneva, Lucerne, Basel-Stadt and Neuchâtel.
89. Earlier in 2023, about 3,616 Swiss abroad electors from Basel City, St Gallen, and Thurgau (representing half of the registered abroad voters) voted online in a federal referendum on 18 June 2023.⁶⁰

⁴⁸ ACT Electoral Commission [Report on the ACT Legislative Assembly Election 2020](#) Canberra, 2021, 43.

⁴⁹ ACT Electoral Commission [Overseas e-voting \(OSEV\)](#), Retrieved 4 September 2023.

⁵⁰ ERR News, [Estonia sets new e-voting record at Riigikogu 2023 elections](#), Tallinn, 5 March 2023.

⁵¹ Dylan Difford, [How do elections work in Estonia?](#) *Electoral Reform Society*, 25 February 2023.

⁵² Pirit Ehin, ['Internet voting in Estonia 2005-2019: Evidence from eleven elections'](#), *Government Information Quarterly*, 39(4), Amsterdam, 2022, 4. This study concluded that Internet voting does not increase electoral participation in countries where access to voting is already very good and where early voting is widely available; The number of registered electors in Estonia in February 2023 was 966,129 – see International Federation for Electoral Systems, ['Election Guide: Republic of Estonia'](#), Arlington: United States, 2023

⁵³ Helen Wright, [New turnout record set during Estonia's Riigikogu elections](#), *ERR News*, Tallinn, 6 March 2023.

⁵⁴ Swiss Post, [Votes now possible with Swiss Post's e-voting system](#) (Media Release), 3 March 2023.

⁵⁵ Federal Chancellery of Switzerland, [E-Voting](#), Bern.

⁵⁶ Institute for Democracy and Electoral Assistance, ['Switzerland'](#), Strömsborg: Sweden, 2023: Switzerland had 5,457,940 registered electors in 2019.

⁵⁷ Federal Chancellery of Switzerland, [Federal Council authorises use of online voting in 2023 National Council elections](#), Media Release, Bern, 16 August 2023






⁵⁸ Swiss Broadcasting Corporation, [Swiss Abroad: e-voting doesn't make up for frustrations](#), 24 October 2023

⁵⁹ Federal Chancellery of Switzerland, [Federal Council authorises use of online voting in 2023 National Council elections](#), Media Release, Bern, 16 August 2023

⁶⁰ Swiss Broadcasting Corporation, [Voters and cantons enthusiastic about 'successful' e-voting trial](#), 19 June 2023.

90. The Canadian province of Nova Scotia plans to provide an internet voting service for Canadian Defence Force personnel stationed outside the jurisdiction to participate in provincial elections.⁶¹ Elsewhere in Canada, internet voting is used at small scale by local government authorities for councillor elections and plebiscites.⁶²
91. The Philippines intends to introduce internet voting for overseas absentee voting for the 2025 national elections and, depending on uptake, may consider replacing the existing mail-in and in-person casting of ballots for overseas voters.⁶³

Table 1: Steps involved in casting a vote using an internet voting system

Step	Description
Apply 	The eligible elector registers for the service online or via the telephone. Electors are marked off the authorised roll and are provided with a unique registration number. The elector is usually asked to choose a PIN or password and required to declare their eligibility for the service. For security purposes some services may ask for identification documents to authenticate a person's identity.
Cast vote 	The elector uses their unique registration number and PIN/password to login to the system and cast their vote. Electors are usually provided the opportunity to confirm their preferences before submitting their vote (cast as intended verification), as well as a receipt confirming their vote was cast.
Store 	Vote preferences are encrypted on the voter's device before they are transmitted via the internet and stored in a data storage server.
Verify 	Some systems have a mandatory or optional system to verify a vote. This is where an elector verifies their vote was recorded as cast (that is, the system correctly recorded their preferences) using a receipt or a QR code provided when the vote was submitted.
Include in count 	<p>Voter information is separated from the vote preferences. Some systems also provide a mixnet process, where de-identified votes are mixed so that they cannot be re-identified to a person. The de-identified and mixed encrypted votes, are then decrypted and the vote data is uploaded to the counting system.</p> <p>Counting systems may also receive vote data from paper ballots, via data-entry or ballot scanning.</p>

⁶¹ Elections Nova Scotia, '[Elections Nova Scotia Selects an Internet Voting Vendor](#)' (Media Release), Halifax, 14 February 2023.

⁶² Association of Municipalities Ontario, [2022 Municipal Election – Context](#), 26 September 2022; Waqas Chughtai, [Online voting is growing in Canada, raising calls for clear standards](#), CBC 21 October 2022.

⁶³ Ferdinand Patinio, [Online voting eyed for overseas voters in 2025 polls: Comelec](#), Philippine News Agency, Manila, 24 May 2023.

Benefits of internet voting

92. An elector is able to cast a vote from anywhere in the world with an internet connection.⁶⁴ The vote is lodged immediately and does not rely on physical transmission to a counting centre. The use of a personal device (such as phone, tablet or personal computer) to conduct transactions is familiar to many users.
93. When voting choices are made by the elector, an internet voting system can play back or confirm those choices to the elector without another person's involvement. With correct system configuration, it can also verify to the elector that their vote is lodged in the form they selected.
94. Internet voting supports an independent and secret vote – and is recognised as providing unique features that benefit electors who do not have other voting options. In submissions to this review, advocacy groups have emphasised this benefit of access to participation.⁶⁵ Most internet voting systems can be configured with text-to-speech capability on the elector's private device, or increased font size, lessening the need for an elector who is blind or low vision to rely on another person for assistance.
95. Internet voting can also assist electors with low local language proficiency as voting information can be translated into other languages.
96. In submissions to this review, blind and low vision, as well as physical disability advocacy groups strongly support reintroducing internet voting to New South Wales to support an independent and secret vote.⁶⁶ Vision Australia's submission described the platform as being met "with universal acceptance and support", referring to it as "the 'gold standard' in accessible voting for people who are blind or have low vision".⁶⁷ For Blind Citizens Australia, internet voting in the form of iVote was "best practice".⁶⁸ The NSW Ageing and Disability Commission asserts that internet voting is the best channel for an elector who is blind or has low vision to cast a secret and independent vote.⁶⁹
97. For electors whose disability or vision impairment makes attending a voting centre difficult, voting remotely can also remove physical accessibility hurdles when casting a vote in person.⁷⁰ Some electors may also find voting on their own personal device in a familiar environment such as their own home preferable. The Council for Intellectual Disability's submission suggested that Internet voting at home "could provide an opportunity to vote with appropriate support, in a relaxed environment away from the hustle of election day".⁷¹
98. Despite its accessibility benefits, some electors may find internet voting confusing or intimidating to use. Older electors who develop vision-related problems with age may currently not be as familiar with certain technology. In recognition of this, Vision Australia recommends a multi-channel approach, to "accommodate the diversity of the blind and low vision community, including those people who are not comfortable interacting with an online platform and who will find it more convenient to use a human-assisted service".⁷²

⁶⁴ Chantal Enguehard, '[Transparency in Electronic Voting: the Great Challenge](#)', *IPSA International Political Science Association RC 10 on Electronic Democracy*, Conference on "E-democracy – State of the art and future agenda", Stellenbosch: South Africa, 2008, 5.

⁶⁵ [Submission 1](#), Vision Australia, 10 January 2023, 8-12; Directorate-General for Justice and Consumers, [Study on the Benefits and Drawbacks of Remote Voting](#), European Union, (Final Report), 2018, 96; David Kerlake, '[Out with the old, in the with new: the case for internet voting in Australia](#)' *The Parliamentarian*, 3, London, 2015, 191.

⁶⁶ [Submission 1](#), Vision Australia, 10 January 2023, 7; [Submission 10](#), Blind Citizens Australia, 13 January 2023, 8; [Submission 12](#), Guide Dogs Australia, 13 January 2023, 10; [Submission 15](#), Ms Susan Thompson, 31 January 2023, 7; [Submission 2](#), Physical Disability Council, 10 January 2023, 1; [Submission 13](#), NSW Ageing and Disability Commissioner, 20 January 2023, 1; [Submission 17](#), Council for Intellectual Disability, 31 January 2023, 7-8.

⁶⁷ [Submission 1](#), Vision Australia, 10 January 2023, 7.

⁶⁸ [Submission 10](#), Blind Citizens Australia, 13 January 2023, 8.

⁶⁹ [Submission 13](#), NSW Ageing and Disability Commissioner, 20 January 2023, 1.

⁷⁰ Directorate-General for Justice and Consumers, [Study on the Benefits and Drawbacks of Remote Voting](#), European Union, (Final Report), 2018, 96.

⁷¹ [Submission 17](#), Council for Intellectual Disability, 31 January 2023, 6.

⁷² [Submission 1](#), Vision Australia, 10 January 2023, 5.

99. Internet voting, unlike attendance and postal voting, may also not be accessible for electors who do not have access to the technology necessary to use the system, known as “digital divide”.⁷³ The most recent Australian Digital Inclusion Index found that twenty-eight per cent of Australians are digitally excluded, particularly in cohorts that are already at risk of disenfranchisement such as those with disability, not employed, low income, older voters and/or living in regional New South Wales.⁷⁴ The Carers NSW and Council for Intellectual Disability submissions raised this issue of digital exclusion,⁷⁵ noting that many people with intellectual disability do not have access to internet at home or smart devices.⁷⁶
100. Internet voting may support electors who are challenged by their distance from voting centres.⁷⁷ Until 2021, iVote was an option for electors in remote parts of New South Wales (more than 20 kilometres from a voting centre) or who were temporarily interstate or overseas.
101. Electors living or travelling overseas during elections face declining international post services and access to physical voting centres.⁷⁸ The Australian Department of Foreign Affairs and Trade has indicated that in-person voting in consulates and embassies is not likely to be offered at the state level at future elections due to resourcing and logistical constraints.⁷⁹ The Australian Electoral Commission’s decision to provide in-person overseas voting at most Australian diplomatic missions for the Voice to Parliament 2023 referendum,⁸⁰ however, may indicate greater future flexibility by the Commonwealth for election events.
102. Internet voting can also benefit electors who find themselves unable to attend a voting centre in person due to illness, or unexpected events such as natural disasters.⁸¹ Many of these electors currently have the option to cast a postal vote, although the future levels for postal services to remote areas are being reviewed.⁸²

Risks of internet voting and mitigations

103. While no voting system can be entirely risk free, there are features of internet voting that represent a high-level threat to election integrity and that have proven difficult to overcome. Risk mitigations are available, but there remains residual risk to be weighed against the benefits of internet voting. Even if failure of internet voting is considered unlikely at an election event, the consequences of failure can be severe – including the erosion of democratic trust and the potential need to hold the election again.
104. The principal operational risks to internet voting are system integrity (where the wrong result is recorded or tallied – or vote information cannot be retrieved from the system), confidentiality (disclosure of an elector’s voting choices) and system availability (electors not being able to vote using the internet platform when it is open).⁸³

⁷³ Directorate-General for Justice and Consumers, [Study on the Benefits and Drawbacks of Remote Voting](#), European Union, (Final Report), 2018, 101.

⁷⁴ Australian Digital Inclusion Index, [What is digital inclusion?](#), Carlton (Victoria), Retrieved 31 October 2023 at <https://www.digitalinclusionindex.org.au/what-is-digital-inclusion/>

⁷⁵ [Submission 5](#), Carers NSW, 12 January 2023, 2.

⁷⁶ [Submission 17](#), Council for Intellectual Disability, 31 January 2023, 6.

⁷⁷ Directorate-General for Justice and Consumers, [Study on the Benefits and Drawbacks of Remote Voting](#), European Union, (Final Report), 2018, 96.

⁷⁸ Elections ACT, [A limited electronic voting option for electors who are overseas: ACT Electoral Commission report to the Legislative Assembly](#), 11 September 2019, 3.

⁷⁹ [Submission 9](#), Australian Department of Foreign Affairs and Trade, 13 January 2023, 1.

⁸⁰ Australian Electoral Commission, [Overseas voting services to increase for the 2023 referendum](#), Canberra, 22 May 2023.

⁸¹ Joint Standing Committee on Electoral Matters, Parliament of Australia, [Inquiry on the future conduct of elections operating during times of emergency situations](#) (Final Report), June 2021, 2-3, 28.

⁸² Department of Infrastructure, Transport, Regional Development, [Communications and the Arts, Postal Service Modernisation](#), Discussion Paper, Canberra, March 2023.

⁸³ The Institution of Engineering and Technology, [Internet voting in the UK](#), London, 2020, 5.

105. Failures creating these risks could be due to system design or operational capability of the election management body or outsourced service provider. They also may be the consequence of malicious conduct, for example, cyber attacks.
106. A critical, and contested, feature of internet voting platforms is the ability to verify that votes cast by the elector are processed and tallied accurately. While paper-based voting channels allow ballot papers to be physically tracked throughout the scrutiny and count, internet voting (and sometimes kiosk voting) involves no physical ballot elements.
107. The principles and practices around verifiability for electronic voting systems have evolved over the past decade. In 2014 academic analysts stipulated three key elements to achieve “end-to-end” verifiability of votes:
1. **Cast as Intended:** voters make their selections and, at the time of vote casting, can get convincing evidence that their encrypted votes accurately reflect their choices;
 2. **Recorded as cast:** voters or their designees can check that their encrypted votes have been correctly included, by finding exactly the encrypted value they cast on a public list of encrypted cast votes; and
 3. **Tallied as recorded:** any member of the public can check that all the published encrypted votes are correctly included in the tally, without knowing how any individual voted.⁸⁴
108. The approach to end-to-end verification with iVote in New South Wales, set out in table 2, relied on auditors and expert cryptographers for an assessment of the final element in the “end-to-end” verifiability model, that is votes were tallied as recorded.

Table 2: Stages of end-to-end verification applied to iVote in New South Wales

Verification type	Stages	Scenarios
Individual verifiability	Stage 1: Cast as intended: the vote preferences correctly reflect the elector’s choice	An elector had the option of reviewing and confirming vote preferences before submitting it.
	Stage 2: Recorded as cast: the system has correctly saved the elector’s vote preferences in the virtual ballot box	Using iVote, an elector had the option to verify their vote using a QR code on their confirmation receipt through a Verification app, within an hour of voting.
Universal verifiability	Stage 3: Counted as recorded (also known as tallied as cast): the elector’s saved vote preferences are counted correctly	Mixnet process (used in iVote) provided cryptographic proof that the votes were not changed in the shuffling process. Auditors or selected cryptographic experts (rather than the public) evaluated these proofs to ensure that the result has been established correctly. ⁸⁵ Votes were exported to the counting system and tallied (and distributed) alongside votes from other channels to produce election results.

⁸⁴ Josh Benaloh et al, ‘[End to end verifiability](#)’, 2 February 2014, 3.

⁸⁵ Sandra Guasch Castello, [Individual Verifiability in Electronic Voting](#), Universitat Politècnica de Catalunya, Barcelona, 2016, 18-20.

109. The auditors and authorised third parties ascertained the correctness and accuracy of the anonymisation and counting procedures by means of zero-knowledge proofs.⁸⁶ Zero-knowledge proofs underpin many modern electronic voting solutions, allowing election management bodies, auditors and other participants to prove a particular fact without revealing information that might compromise vote secrecy,⁸⁷ for example, that the votes counted match the encrypted votes cast (and verified) by electors, without exposing any link to an elector.
110. Following a redesign of its internet voting system from 2019, the government of Switzerland has mandated an approach it calls “complete verifiability”.⁸⁸ The first verifiability stage provides for electors to check for themselves that their vote has been registered in the electronic ballot box as they cast it (individual verifiability). Electors use unique “return codes” provided to them by mail with paper voting documents to access the information.⁸⁹ Secondly, the electoral management bodies (administered by Cantons) can check the ballot and identify any manipulation attempts (universal verifiability) using verification software.⁹⁰ This approach maintains the elements of “end-to-end verifiability”, while increasing the rigour around system integrity via public and expert scrutiny, through ‘bug bounties’ and standing academic and industry advisory groups.
111. Since July 2021, the verifiability components and operations of the Swiss internet voting system have been subject to independent examination by experts in academia and industry concerning the cryptographic protocol, software, infrastructure and operations, including intrusion testing.
112. Reviews in 2023 have raised a number of ongoing issues, including the rigour of manual checks by auditors in the verifiability system, and the ability to detect cyber attack vulnerabilities on electors’ private devices.⁹¹ These reviews contribute to a rectification program by the solution operator, Swiss Post⁹² and ongoing measures required by national and regional governments.⁹³
113. The effectiveness of verifiability features is a key element of both operational accuracy for the election management body and trust building in the electorate. Trust in election systems is crucial for ensuring electors and parties accept the outcome as legitimate.
114. As both voting and counting for internet voting are conducted via electronic devices and servers over data networks (including the internet), there is less information for citizens, auditors and scrutineers to readily observe compared to paper voting at a voting centre.⁹⁴ Similar to postal voting, for example, there is also no ability for election officials to observe if an elector has been subject to coercion.⁹⁵

⁸⁶ [Submission 20](#), ScytI Australia, 14 September 2023, 2; NSW Electoral Commission, [iVote refresh project for the 2019 NSW State election](#), Sydney, February 2019, 20-24.

⁸⁷ Swiss Post, [Protocol of the Swiss Post Voting System: Computational Proof of Complete Verifiability and Privacy](#), Version 1.1.0 Bern, 2022, 27.

⁸⁸ [Federal Chancellery Ordinance on Electronic Voting 2022](#) (Switzerland), art 5.1.

⁸⁹ A mailed “return code” system is not feasible in New South Wales under current electoral legislation due to relatively short pre-election timeframes: See finding at paragraph [353](#)

⁹⁰ Swiss Post, [E-voting: Electronic vote casting for Switzerland](#), Bern, Retrieved 28 September 2023 at <https://www.post.ch/en/about-us/profile/swiss-post-and-politics/swiss-post-in-the-digital-world/e-voting-electronic-vote-casting-for-switzerland>.

⁹¹ Thomas Haines, Olivier Pereira and Vanessa Teague, [Remarks on Selected Elements of the Swiss Post e-Voting System Versions 1.2.3, 1.3, and 1.3.1: Final Version](#), 31 July 2023, 5-6; SCRT Information Security, [Examination of the Swiss Internet Voting System](#), Morges (Switzerland), 16 June 2023, 18; also see Thomas Haines, Olivier Pereira and Vanessa Teague, [Examination Report on the Swiss Post e-Voting System](#), 20 September, 2022, 2.

⁹² Swiss Post, [Response to follow-up examination reports launched by the federal government](#), 7 September 2023.

⁹³ Federal Chancellery of Switzerland, [Vote électronique: Catalogue of measures by the Confederation and cantons](#), 4 August 2023.

⁹⁴ Directorate-General for Justice and Consumers, [Study on the Benefits and Drawbacks of Remote Voting](#), European Union, (Final Report), 2018, 101-2.

⁹⁵ Chantal Enguehard, [‘Transparency in Electronic Voting: the Great Challenge’](#), *IPSA International Political Science Association RC 10 on Electronic Democracy*, Conference on “E-democracy – State of the art and future agenda” Stellenbosch, South Africa, 2008, 8.

115. As the proportion of electors using internet voting increases in an electorate, there are risks from this increased scale of usage, for example:

- **Technical failure due to system capacity stress.** This occurred during the 2021 NSW Local Government elections, where larger-than-anticipated usage caused a delay in the sending out of credentials to enable access to the iVote system. The practical effect of this was that a significant number of electors were prevented from accessing the iVote internet voting system to cast their vote.
- **Errors or interruptions that harm the integrity of the overall election.** If electors are unable to vote or their votes are “lost” because of a technical error, the election outcome may be challenged if the affected votes could have delivered a different election outcome.
- **Larger target for malicious outsider attacks:** Systems with advanced information technology present risks of a larger potential attack surface.⁹⁶ The incentive for malicious third parties to intervene in elections also increases as the cohort size increases, given the greater effect an attack would have on the election outcome. With internet voting, this is further exacerbated by the fact that many elements of the voting process, including an elector’s personal voting device, use the internet to transmit data and data storage servers are outside the control of the election management body. This increases the vulnerability of the system to cyber attacks, such as denial of service attacks and disinformation (including false links on social media).⁹⁷

116. Technical failure of internet voting draws a high level of public interest. The performance issues with iVote at the 2019 NSW State election are estimated to have impacted between 35,000 and 45,000 people,⁹⁸ and generated significant media attention.⁹⁹ Similarly, at the 2021 NSW Local Government elections, a delay in the system sending out elector credentials meant many electors did not receive the necessary information in time to vote online before 6pm on election day.¹⁰⁰ The lost opportunity of electors to use iVote resulted in three elections being declared void by the Supreme Court of New South Wales and the elections held again.¹⁰¹

117. Technical failure also can delay election results. This occurred in Ontario’s 2018 municipal elections, where technical issues with online voting platforms meant that more than 50 municipalities needed to extend their voting hours.¹⁰²

118. Such failures have both real impacts (disenfranchising electors and invalidating election results) and reputational impacts (raising questions about the effectiveness of an electoral management body and election integrity).

119. A mitigation measure for these risks is to contain internet voting eligibility to a small cohort of electors to limit the impact on any technical failure on the wider election. This approach was recommended initially in New South Wales in 2010, when the iVote proposal was designed for electors who were blind or had low vision, lived with disability or were more than 20km from a voting centre in NSW on election day.¹⁰³

⁹⁶ Samuel Agesi et al [“What Will Make Me Trust or Not Trust Will Depend Upon How Secure the Technology Is”: Factors Influencing Trust Perceptions of the Use of Election Technologies](#), proceedings of Seventh International Joint Conference on Electronic Voting, E-Vote-ID 2022, 4-7 October 2022, 1

⁹⁷ Sunoo Park et al, [‘Going from bad to worse: from Internet voting to blockchain voting’](#) *Journal of Cybersecurity*, 7, (1), Oxford Academic, Kettering: UK, 2021, 5.

⁹⁸ NSW Electoral Commission, [Report on the conduct of the 2019 NSW State Election](#), Sydney, 2019, 78.

⁹⁹ Ry Crozier, [NSW iVote registration goes down on election eve](#), *IT News*, 22 March 2019; Josephine Tovey, [NSW election: technical problems down online voting and disrupt pre-poll booths](#), *The Guardian*, 13 March 2019.

¹⁰⁰ NSW Electoral Commission, [Report on the conduct of the 2021 Local Government Elections – Part One](#), Sydney, 2019, 8, 13; [NSW Electoral Commission apologises after iVote system inaccessible on election day](#), *IT News*, 5 December 2021.

¹⁰¹ [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409](#).

¹⁰² Waqas Chughtai, [Online voting is growing in Canada, raising calls for clear standards](#), CBC, 21 October 2022.

¹⁰³ NSW Electoral Commission, [Report on the feasibility of providing ‘iVote’ remote electronic voting system](#), Parliament of NSW, Sydney, 23 July 2010.

120. Western Australia and the ACT also limited the classes of eligible electors at elections when internet voting was used in 2017 and 2020, respectively.
121. Switzerland has taken an approach of capping the number of general electors who may use internet voting. The caps are set at 10 per cent nationally and 30 per cent in any canton (regional) electorate.¹⁰⁴
122. While there was limited discussion of this issue in submissions received by this review, Vision Australia noted that they did not support a limitation on the number of electors using a particular system:
- “We do not support the use of legislated caps or proportions of electors who can use a particular system because they are likely to become out-of-date quickly as systems evolve, but we do believe that it is essential for voting systems to be adequately resourced by government so that they can continue to be developed and maintained.”¹⁰⁵
123. At a geo-political level, internet voting faces challenges. Interference in elections has been documented by the United States and the European Commission in the past decade, with technology providing a target for adversaries seeking to affect the outcome of an election.¹⁰⁶ These operational risks provide one foundation for the additional risk layer of misinformation and disinformation that damages democratic culture and trust.
124. All voting channels are potentially vulnerable to malicious interference.¹⁰⁷ With postal vote ballots, an adversary could theoretically gain physical access to a mailed ballot, change the contents, and reinsert it into the mail,¹⁰⁸ as there is a break in the chain of ballot custody by election officials.¹⁰⁹ The resources and logistics required to intercept a material number of postal ballots mean that any such interference is unlikely to materially affect an election outcome undetected. In contrast, an internet voting system could hypothetically allow an attack on a much larger number of votes with less effort, given an electronic attack can be conducted from anywhere in world.¹¹⁰ Furthermore, when information is transferred to and stored in central servers, accessing and manipulating a larger number of votes may be possible.¹¹¹
125. In the United States, security experts have identified weaknesses in internet voting platforms (such as OmniBallot email voting¹¹² and Virginia’s mobile app)¹¹³ and cautioned against the widespread introduction of internet voting.¹¹⁴

¹⁰⁴ Swiss Federal Chancellery, ‘[E-voting: New legislation comes into force](#)’ (Media Release), 25 May 2022.

¹⁰⁵ [Submission 1](#), Vision Australia, 10 January 2023, 12.

¹⁰⁶ National Intelligence Council, [Foreign Threats to the 2020 US Federal Elections](#), Intelligence Community Assessment, Washington, 10 March 2021, 1-6; The Institution of Engineering and Technology, [Internet voting in the UK](#), London, 2020, 10.

¹⁰⁷ Sunoo Park et al, ‘[Going from bad to worse: from Internet voting to blockchain voting](#)’ *Journal of Cybersecurity*, 7, (1), Oxford Academic, Kettering: UK, 2021, 5.

¹⁰⁸ Sunoo Park et al, ‘[Going from bad to worse: from Internet voting to blockchain voting](#)’ *Journal of Cybersecurity*, 7, (1), Oxford Academic, Kettering: UK, 2021, 6.

¹⁰⁹ Narelle Miragliotta, [Remote Voting Under COVID-19](#), Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, (Working Paper 72), September 2020, 9.

¹¹⁰ Sunoo Park et al, ‘[Going from bad to worse: from Internet voting to blockchain voting](#)’ *Journal of Cybersecurity*, 7, (1), Oxford Academic, Kettering: UK, 2021, 1; Directorate-General for Justice and Consumers, [Study on the Benefits and Drawbacks of Remote Voting](#), European Union, (Final Report), 2018, 102.

¹¹¹ The Carter Center, [Summary of Proceedings: Automated Voting and Election Observation](#), Atlanta: United States, 17-18 March 2005, 3.

¹¹² Nicole Casal Moore, [New remote voting risks and solutions identified](#), *Phys Org*, 10 June 2020.

¹¹³ Michael Specter et al, ‘[The Ballot is Busted Before The Blockchain: A Security Analysis of Voatz, the First Internet Voting Application Used in U.S Federal Elections](#)’, *Proceedings of the 29th USENIX Conference on Security Symposium* 1535, 2020.

¹¹⁴ Michael Specter et al, ‘[The Ballot is Busted Before The Blockchain: A Security Analysis of Voatz, the First Internet Voting Application Used in U.S Federal Elections](#)’, *Proceedings of the 29th USENIX Conference on Security Symposium* 1548, 2020.

126. In 2020, 70 members of the American Association for the Advancement of Science wrote to United States Governors and Secretaries of State warning that internet voting is not a secure system for use in elections now or the foreseeable future.¹¹⁵ The letter referred to persistent vulnerabilities such as “malware and denial of service attacks, voter authentication, ballot protection and anonymisation” and how disputed ballots are handled.¹¹⁶ It also noted that blockchain systems do not address security concerns of internet voting and can actually add further vulnerability points of attack.¹¹⁷
127. In 2020, the United States Department of Homeland Security also criticised internet voting (including both email or web portal voting) due to security concerns and risks to the integrity of elections.¹¹⁸
128. A 2020 paper on internet voting in the UK by industry and government experts concluded:
- “technology is not now – or in the near future – ready to address the range of cybersecurity threats that could undermine an internet voting system. Internet voting requires further technological advances in the areas of platform security, digital identity management, usability and designing systems that provide voters with the ability to verify the result of the election.”¹¹⁹
129. Electoral management bodies worldwide face greater levels of misinformation and disinformation around elections with the rise of social media, greater technical complexity of digital systems and an increasing threat of malicious interference.¹²⁰ Disinformation that coincides with technical failure of election infrastructure – including from cyber attack – can amplify disruptions of electoral processes and public distrust of election results.¹²¹
130. The United States government’s Cybersecurity and Infrastructure Security agency (CISA) asserts that foreign state and non-state actors are leveraging information activities as part of broad campaigns to sow discord, manipulate public discourse and discredit the electoral system to undermine pillars of democracy.
131. In CISA’s view, this interference aims to:
- a) dissuade electors from participating by suggesting their votes do not matter or through content that misleads them about the election process;
 - b) impact candidate selection through, among other activities, pushing fabricated and favourable content about preferred candidates, and fabricated or disparaging content about disfavoured candidates; and
 - c) damage the public perception of a fair and free election by pushing false or misleading content regarding election processes and results.¹²²

¹¹⁵ American Association for the Advancement of Science, [Letter to Governors and Secretaries of State on the insecurity of online voting](#), 9 April 2020.

¹¹⁶ American Association for the Advancement of Science, [Letter to Governors and Secretaries of State on the insecurity of online voting](#), 9 April 2020.

¹¹⁷ American Association for the Advancement of Science, [Letter to Governors and Secretaries of State on the insecurity of online voting](#), 9 April 2020.

¹¹⁸ Kim Zetter, [US government plans to urge states to resist ‘high-risk’ internet voting](#), *The Guardian*, 9 May 2020.

¹¹⁹ The Institution of Engineering and Technology, [Internet voting in the UK](#), London, 2020, 5.

¹²⁰ Tom Sear, [‘If it ain’t broke, don’t fix it: Australia should stay away from electronic voting’](#) *The Conversation*, 23 August 2018.

¹²¹ Cybersecurity and Infrastructure Security Agency, [Election Infrastructure Cyber Risk Assessment](#), Department of Homeland Security, Washington, 28 July 2020.

¹²² Cybersecurity and Infrastructure Security Agency, [Election Infrastructure Cyber Risk Assessment](#), Department of Homeland Security, Washington, 28 July 2020.

132. In the recent 2023 Estonian elections, the unsuccessful opposition party questioned the reliability of the internet system technology and results on the election night.¹²³ Although complaints filed by the opposition parties were ultimately dismissed by Estonia’s Supreme Court, it delayed the declaration of the election. The Court acknowledged the need for clearer legislation to address the mistrust caused by difficulties understanding the technical side of the internet e-voting system.¹²⁴
133. Given that internet voting is technically complex with less visual transparency of vote counting than paper-based processes, successfully countering such an assertion can be difficult. Perception and trust of the voting public in the *bona fides* of an election management body are crucial. If enough people believe that the results have been subject to manipulation that an election management body was either unaware of or is hiding, even if this belief is misplaced, that lack of trust can undermine the legitimacy of the outcome.
134. Against this international background, the Australian Government has established a multi-agency body – the Election Integrity Assurance Taskforce (EIAT) – to protect the integrity of Australia’s electoral processes and maintain trust in Australia’s democratic processes. The EIAT has identified a range of risks around elections:
- “Disinformation and misinformation are perpetrated by a range of different actors and groups for various purposes. Online media platforms have identified numerous instances of groups using disinformation and misinformation as a vehicle to interfere with domestic and foreign politics. Foreign governments have tried to use disinformation to influence elections by targeting particular groups of voters. Public relations firms and social media marketing companies have also been hired to use inauthentic behaviour to promote a political agenda without disclosing a connection to candidates or parties.”¹²⁵
135. Online disinformation introduces a risk around internet voting, as an elector voting online is potentially more exposed to misinformation and coercion at the time they are casting their vote.¹²⁶ In contrast, electors in voting centres are given a space that is free from canvassing (with the handing out of how-to-vote material restricted to more than six metres from the entrances in NSW and banned altogether in some other jurisdictions, like New Zealand) and provided with booths within which they can complete their ballot papers in secret.¹²⁷ Election officials are also present to provide impartial information about the requirements of voting and can observe the voting centre environment to ensure it is independent and secret, limiting the risk of undue influence on those casting their vote.

Kiosk voting

Usage and features of kiosk voting

136. Kiosks (also known as electronic voting booths or electronic voting machines) allow an elector to cast their vote via a computer terminal located within a voting centre. The setup usually includes a digital interface device such as a touchscreen connected to a computer server via a local network and is not connected to the internet or other over-the-air network.
137. Voting information typically is stored on dual hard drives (master and back-up) which can be securely stored and transported to secure locations to download data and compile results.

¹²³ Eesti Rahvusringhääling (Estonian National Broadcasting Company), [E-voting not serious](#), Tallinn, 6 March 2023.

¹²⁴ Eesti Rahvusringhääling (Estonian National Broadcasting Company), [Supreme Court dismisses all election complaints](#), Tallinn, 31 March 2023.






¹²⁵ Electoral Integrity Assurance Taskforce, [Disinformation and Misinformation](#), Factsheet, Australian Government, Retrieved 11 July 2023.

¹²⁶ Chris Culnane, [Submission to the Victorian Electoral Matters Committee Inquiry into Electronic Voting](#), 2016, 2.

¹²⁷ NSW Electoral Commission, [Regulation of electoral material and election conduct](#), Sydney.

138. Although kiosks can be configured to assist voters who are blind and have low vision and reduce ballot paper informality, they do not increase accessibility for voters that have difficulty attending a voting centre due to mobility issues.¹²⁸
139. Some kiosk systems are equipped with a Voter Verifiable Paper Audit Trail (VVPAT), where a paper record (visible to the elector for a short period) is preserved in a secure box attached to the printer and may be reviewed by election officials for an audit or recount.¹²⁹
140. Kiosk voting has replaced paper and pencil ballots in two highly populous nations, India and Brazil, with the same machine systems being deployed in both national and regional elections.
141. In 2016, the NSW Joint Standing Committee on Electoral Matters (JSCEM) recommended a limited trial of kiosks in electorates where there was confidence in an expected result and consulting with electoral authorities from other jurisdictions regarding possible pooling and sharing of resources.¹³⁰

Table 3: Steps involved in casting a vote using a kiosk

Step	Description
Apply 	The eligible elector attends a voting centre and has their name marked off the electoral roll. This can be done manually (like current attendance voting practices) or electronically via the kiosk.
Cast vote 	The elector then casts their vote using the online digital interface which displays the ballot paper on screen. These systems may also provide audio assistance (via headphones) and tactile input options for accessibility.
Verify 	Some systems allow an elector to verify their vote was cast as intended (that is, the system correctly recorded their preferences) by providing an acknowledgement receipt, which can be used to check their vote once cast. The system may also allow the elector to use this same receipt to verify their vote was recorded as cast (correctly registered in the ballot box) after the election results are announced.
Store 	Kiosk systems store vote preferences in a server located in the polling place. Information is not transmitted via public networks (including the internet). Some kiosks (such as those used in California) print physical paper ballot papers (VVPAT) to be included in the ballot box, which provides another means for electors to verify their vote and supports auditing by election officials.
Include in count 	Vote preferences stored in individual voting centres are uploaded (physically or electronically) into the counting system to be included in the count.

¹²⁸ [Submission 23](#), Vision Australia, 18 September 2023, 6-7

¹²⁹ UNSW Institute for Cyber Security, IFCYBER Seminar, 'People's Trust in Technical Controls with Dr Vanessa Teague' (YouTube, 28 March 2022) 00:36:00-00:38:00; Verified Voting, 'Types of Voting Equipment', *Voting Equipment*, Washington.

¹³⁰ Joint Standing Committee on Electoral Matters, [Administration of the 2015 NSW Election and Related Matters](#), Report 2/56, Parliament of NSW, Sydney, 17 November 2016, 20.

142. The ACT is a long-term user of electronic voting terminals, known as the electronic voting and counting system (eVACS). In 2001, eVACS was the first kiosk voting system to be used for a parliamentary election in Australia. The system today uses standard personal computers as voting terminals, linked to a server in each polling location using a secure local area network. No votes are taken or transmitted over a public network such as the internet.¹³¹ These kiosk facilities are provided in ACT early voting centres, some of which also open on election day as ordinary polling places.
143. In the 2020 ACT Legislative Assembly elections, 192,892 people (more than 70 per cent of all ACT electors) voted electronically using the eVACS system.¹³² The 300 units were deployed in 15 early polling centres.¹³³ Each electronic voting booth was equipped with a 58-centimetre touch-screen voting display, QR code reader for the elector's e-voting card and instruction poster.¹³⁴ Electors who voted at the kiosk terminals in 2020 advised it was 'easy to use' (96 per cent satisfaction), fast and efficient (98 per cent) and found the queuing length satisfactory (97 per cent).¹³⁵
144. Brazil introduced kiosks (referred to as electronic voting machines (EVMs)) in 1996 to address accessibility issues due to illiteracy and concerns around ballot box stuffing.¹³⁶ Since 2000, kiosks have been used in place of paper ballots across the entire country, with more than 577,000 kiosks at 460,000 polling stations, and a further 2,228 overseas. There is no early voting or postal voting.¹³⁷ Brazil has adopted biometric identification to identify and mark off electors.¹³⁸
145. In the 2022 Brazilian presidential elections – the result of run-off round between the final two candidates was announced within hours of the close of voting, with the winning candidate taking 50.9 per cent of the 118,552,353 valid votes.¹³⁹ Claims by the unsuccessful candidate of flaws with the electronic voting system were not sustained, however international election monitors noted that disinformation was having a harmful impact on public trust in Brazil:
- “The electronic ballot box in Brazil once again proved its reliability and speed in processing results, overcoming the challenge of handling the largest electoral register in Latin America, with more than 156 million voters. Its operation, which had been smooth in past decades, was unnecessarily mired in controversies that took time and energy away from the institutional framework and provoked friction between branches of government. Despite their unfounded nature, the accusations weakened the population's confidence in its institutions and electoral procedures, eroding important pillars of democratic coexistence.”¹⁴⁰
146. India's kiosks – referred to as electronic voting machines or EVMs – were first deployed in 1989. The current models are designed, developed and manufactured in India by two local public sector companies under technical guidance of the Technical Expert Committee of the Election Commission of India.¹⁴¹

¹³¹ Elections ACT, [Electronic voting and counting \(EVACS\)](https://www.elections.act.gov.au/elections_and_voting/electronic_voting_and_counting), Retrieved 31 October 2023 at https://www.elections.act.gov.au/elections_and_voting/electronic_voting_and_counting.

¹³² Elections ACT, [Report on the Legislative Assembly Election 2020](#), April 2021, 2.

¹³³ Elections ACT, [Report on the Legislative Assembly Election 2020](#), April 2021, 64.

¹³⁴ Elections ACT, [Report on the Legislative Assembly Election 2020](#), April 2021, 35.

¹³⁵ Elections ACT, [Report on the Legislative Assembly Election 2020](#), April 2021, 93.

¹³⁶ AFP, [Five things on Brazil's voting machines](#), France 24, Paris, 1 September 2022.

¹³⁷ Nigel Walker, [Brazil: 2022 Presidential Election](#), House of Commons Library, London, 16 December 2022, 5.

¹³⁸ Wilson Center, [A Conversation with Justice Gilmar Mendes: Building a Modern and Transparent Electoral System in Brazil](#), 7 November 2016, 7.

¹³⁹ Bloomberg, [Brazil Election Live Results](#), New York, 31 October 2022.

¹⁴⁰ Institute for Democracy and Electoral Assistance, [International IDEA statement on the second round of the Brazilian presidential election 2022](#), Press Release, 31 October 2022.

¹⁴¹ [EVMs manufactured by 2 state-run companies, are 'completely non-tamperable': Government in Lok Sabha](#), *The Economic Times*, New Delhi, 24 July 2019.

147. Kiosks are a common form of TAV in the United States, but the voting channel has been politically contentious. For example, claims of election fraud have increased mistrust in elections and electronic voting systems,¹⁴² leading to a general decline in their use. At the 2016 US elections, about 22 per cent of registered voters lived in jurisdictions where direct recording electronic machines (kiosks) were the primary voting channel. By 2022, this had declined to around seven per cent of registered voters.¹⁴³
148. Ireland procured 7,500 kiosks for elections in 2004, however did not deploy them because of system security concerns. The machines were disposed of in 2012.¹⁴⁴

Benefits of kiosk voting

149. As kiosks are located in voting centres to either replace or complement paper and pencil voting, they offer a more secure form of TAV compared with internet voting. Electors cast their vote in a supervised environment, which lessens the potential for coercion.¹⁴⁵ Votes cast using kiosks are recorded and stored on locally owned infrastructure and are not transmitted via public networks such as the internet. This reduces the vulnerability of the system to malicious external attacks.
150. Kiosks may be designed to improve accessibility for disability and literacy. The kiosk terminals in the ACT for electors who are blind or have low vision are equipped with headphones that deliver recorded audio instructions to guide an elector through the ballot paper and a telephone style keypad, allowing an elector with vision impairment to vote independently.¹⁴⁶ Blind Citizens Australia noted that kiosks (with assistive technologies electronic braille displays, audio and visual outputs, printers and scanners) have the potential to significantly improve the accessibility of voting for many people who are blind or have low vision, while providing a greater level of privacy and data security than was available under iVote.¹⁴⁷
151. Kiosks at voting centres, however, do not address accessibility for all electors. Vision Australia's submission notes that while kiosks may have benefits for stakeholders who are blind or have low vision, their benefit may be limited by the additional accessibility hurdles that come with attending a voting centre, including navigating inaccessible venues.¹⁴⁸ Peak bodies for the blind and low vision community, as well as disability organisations, suggest that kiosks should be provided as part of a suite of accessible voting options, to support electors who prefer to vote at voting centres, but require other adjustments or assistance (for example, to support voters with low English language proficiency).¹⁴⁹
152. When compared with paper-based voting options, and like internet voting systems, kiosks can decrease accidental ballot paper informality if configured with prompts. The system used by the ACT provides a warning if the elector is about to cast an informal vote but still allows them to do so in the form of a blank vote if this action is confirmed by the electors. The 2020 ACT elections had a lower rate of informal electronic votes compared with paper voter ballots (0.85 per cent versus 3.21 per cent), resulting in a lower rate of informality overall as most of the population cast their votes via kiosks.¹⁵⁰ In past New South Wales elections, iVote ballots also had higher formality rates compared with paper ballots.

¹⁴² Nicholas Berlinski et al, '[The Effects of Unsubstantiated Claims of Voter Fraud on Confidence in Elections](#)', 16(1) *Journal of Experimental Political Science*, Cambridge University Press, Cambridge, 2021, 34.

¹⁴³ Verified Voting, '[The Verifier – Election Day Equipment – November 2022](#)', Retrieved 31 October 2023 at <https://verifiedvoting.org/verifier/#mode/navigate/map/ppEquip/mapType/normal/year/2022>

¹⁴⁴ Paul Melia and Luke Byrne, '[€54m voting machines scrapped for €9 each](#)', *Independent.ie*, 29 June 2012.

¹⁴⁵ Chris Culnane, '[Submission to the Victorian Electoral Matters Committee Inquiry into Electronic Voting](#)', 2016, 2; Narelle Miragliotta, '[Remote Voting Under COVID-19](#)', Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, (Working Paper 72), September 2020, 4.

¹⁴⁶ Elections ACT, '[Report on the Legislative Assembly Election 2020](#)', April 2021, 35.

¹⁴⁷ [Submission 10](#), Blind Citizens Australia, 13 January 2023, 8.

¹⁴⁸ [Submission 1](#), Vision Australia, 10 January 2023, 8.

¹⁴⁹ [Submission 22](#), Accessibility NSW, 14 September 2023, 1; [Submission 17](#), Council for Intellectual Disability, 31 January 2023, 4. [Submission 10](#), Blind Citizens Australia, 13 January 2023, 8; [Submission 1](#), Vision Australia, 10 January 2023, 8.

¹⁵⁰ Elections ACT, '[Report on the Legislative Assembly Election 2020](#)', April 2021, 1, 74.

153. To achieve equivalence with paper-based voting, electors should have the option to cast an informal vote. In Brazil, where voting also is compulsory, an elector may lodge an informal vote via kiosks. At the 2022 Presidential run-off election, there were 1,769,678 blank and 3,930,765 spoiled ballots, resulting in an informality rate of 4.58 per cent.¹⁵¹ An elector can lodge a spoiled ballot by typing in a non-existent candidate code. The voting machine also has an option to vote blank. Invalid and blank ballots are not tabulated.¹⁵²
154. Results also can be finalised more quickly when votes are cast electronically through kiosks.¹⁵³ At the ACT 2020 election, preferences from all the electronic votes from the three-week early voting period were distributed and available on the ACT Electoral Commission website at 6.20pm, 20 minutes after the close of the polls. A second interim distribution of preferences, which included all electronic early votes and all electronic polling day votes, was published on the website at around 10pm.¹⁵⁴
155. Kiosks in voting centres could provide a viable centralised voting method for out-of-area electors. Out-of-district electors in New South Wales state elections currently are required to complete a paper-based absent declaration vote, which undergoes an additional scrutiny stage by an election official after voting closes and before it is admitted to the count. Providing a kiosk option for these electors could simplify the scrutiny and count process, allowing results to be finalised more quickly than paper-based processes.
156. Kiosks could also provide more effective absent voting options at local government elections where out-of-council area absent voting currently is not currently permitted due to the complexity with the number of ward contests, polls and referenda. This may also serve to reduce the incidence of electors failing to vote in these elections, noting that being outside the local council or ward (including interstate and overseas) was both the key reason for failing to vote and the primary reason for registering for iVote (89 per cent) at the 2021 Local Government elections.
157. Longer term, the public interest in exploring kiosks may continue in response to the ongoing decline of paper production services and products. The COVID-19 pandemic saw many traditionally paper-based processes and products converted to electronic format, reducing demand for paper. As such, the global paper industry is shifting its focus to other products to fill the gap left by the shrinking graphic paper market.¹⁵⁵ Beyond pandemic-related supply issues, the 2023 NSW State election also experienced operational challenges as a result of environmental protection measures that impacted the Australian forestry industry.¹⁵⁶ The Electoral Commission's order for paper suitable for printing ballot papers was only able to be met through importing supplies, after local pulp became unavailable.

¹⁵¹ Nigel Walker, [Brazil: 2022 Presidential Election](#), House of Commons Library, London, 16 December 2022, 12.

¹⁵² Amanda Audi, [Why spoiled ballots are important in Brazil](#), *The Brazilian Report*, Itaguassu, 2 October 2022

¹⁵³ Elections ACT, [Report on the Legislative Assembly Election 2020](#), April 2021, 35; Wilson Center, [A Conversation with Justice Gilmar Mendes: Building a Modern and Transparent Electoral System in Brazil](#), 7 November 2016, 6.

¹⁵⁴ Elections ACT, [Report on the Legislative Assembly Election 2020](#), April 2021, 56.

¹⁵⁵ Peter Berg and Oskar Lingqvist, [Pulp, paper, and packaging in the next decade: Transformational changes](#), McKinsey & Company, 7 August 2019.

¹⁵⁶ [Environment East Gippsland Inc v VicForests \(No 4\) \[2022\] VSC 668 \(4 November 2022\)](#).

Risks of kiosk voting and mitigations

158. Kiosk voting may be perceived as less transparent than paper-based voting because the vote information is entered, transmitted, stored and counted electronically.¹⁵⁷ To address this, process features developed to support public trust include public security tests, cryptographic hardware, source code publication, audits, and ceremonies for digital signing and sealing of systems.¹⁵⁸
159. Some election management bodies deploy the VVPAT (printed paper) back-up system. India has the largest kiosk system with VVPAT, a feature adopted in 2014. There is a small printer connected to each kiosk that allows sighted voters to confirm their selections on a paper record which is displayed behind a transparent screen on the printer. When a vote is first entered and printed, the elector has seven seconds to recast their vote and print another record, before the vote is recorded into the computer memory and the paper record is retained in a secure box.¹⁵⁹
160. In California, all kiosks used after 1 January 2006, must have an accessible voter-verified paper audit trail.¹⁶⁰
161. The kiosks used in Brazil do not currently provide a printout of individual voters' preferences, leading some to criticise their lack of transparency.¹⁶¹ In 2019, a bill was introduced into the National Congress of Brazil to require a paper printout of voters' preferences. This would have created a physical record to be checked at the time of voting, while also serving as a means of auditing – both measures were intended to increase transparency in the current system.¹⁶² The bill did not proceed.
162. Design approaches for end-to-end verifiability seek to provide for an elector to confirm their vote was cast as intended, recorded as cast and counted as recorded. An example of such end-to-end verifiability is Victoria's V-vote system.

¹⁵⁷ Chantal Enguehard, '[Transparency in Electronic Voting: the Great Challenge](#)', *IPSA International Political Science Association RC 10 on Electronic Democracy*, Conference on "E-democracy – State of the art and future agenda", Stellenbosch, South Africa, 2008, 11.

¹⁵⁸ Tribunal Superior Electoral, [Brazilian Electronic Voting Machine: 20 Years in Favor of Democracy](#), Brasilia, 2016.

¹⁵⁹ Shobhit Gupta, [Elections 2023 Explained: What is VVPAT and how does it work?](#), *Hindustan Times*, 19 February 2023.

¹⁶⁰ [California Elections Code](#), s 19250. This provision requires all voters voting on an electronic voting machine to review and verify their ballot choices on this printed paper record, prior to finalizing and casting their ballot. Once the ballot is cast, this paper record of the ballot is retained inside the voting machine as part of the election audit trail to verify the accuracy of the votes recorded. However, this benefit is reduced if the elector does not verify that the ballot paper reflects their intentions.

¹⁶¹ Tiago Jokura, [Brazil's electronic voting machine comes of age](#), *Pequisa*, 306, August 2021

¹⁶² Tiago Jokura, [Brazil's electronic voting machine comes of age](#) *Pequisa*, 306, August 2021.

Victoria's electronic voting booths

In 2006, the Victorian Electoral Commission piloted electronic voting booths for voters who are blind, partially sighted and motor impaired (six locations across Victorian) and in 2010 extended this to those electors who speak a language other than English and voters out of state or overseas (in 101 locations across Victoria, eight interstate and two locations in the United Kingdom). In 2014, the Victorian State Election introduced v-Vote, which was also deployed at 24 early voting centres including six accessibility centres around Victoria and one centre in London. The system involved a common computer tablet (Google Nexus 10) as the interface for capturing the vote. For voters who are blind a tactile latex "telephone keypad" was overlaid on the touchscreen, and headphones provided audio instructions. For sighted voters, it included a screen with the candidate list.

Once the voter was marked off the electoral roll, they received a Candidate List receipt which, when scanned at the kiosk, generated a randomised candidate list. After the elector had cast their vote, a Preferences Receipt was printed, which listed the voters' preferences without the candidate names. As electors cast their votes, information was transmitted to the Victorian Electoral Commission for subsequent decryption and printing on secure systems.

The system provided end-to-end verifiability. When the Candidate List and Preferences Receipt were scanned together, the voter could check whether their vote was cast as intended. The voter could then use the Preferences Receipt to verify their vote had been recorded as cast through a public Web Bulletin Board. The general public could also verify that votes had been counted as recorded as the cryptographic proofs (mixing and decrypting of the encrypted votes) could be publicly verifiable.¹⁶³

In 2017, the Victorian Government indicated its in-principle support for electronic voting, however decided to discontinue the channel. It stated a preference for a national approach and referred the issue to the Council of Australian Governments (COAG).¹⁶⁴

163. Notwithstanding the steps taken by election management bodies around verifiability and trust in the design and operation of kiosk voting systems, there are instances where the risk of kiosks to election integrity have been found unacceptable.
164. Issues of transparency of around Germany's kiosk system effectively ended TAV voting there, where a landmark legal case in 2009 established the requirement that voting systems be understood by the wider community. The Federal Constitutional Court ruled that the use of electronic voting machines at the 2005 elections did not meet the constitutional principle of transparency of elections, which requires that the particular voting machines be safeguarded against potential manipulation or error through procedures understandable to the average citizen without any special knowledge of the subject.¹⁶⁵ That ruling arguably has had a chilling effect on the use of TAV in Germany, with no new large-scale initiatives since that time. Postal ballot rates have been rising, with the 2021 Bundestag elections reaching 47.3 per cent,¹⁶⁶ with an overall participation rate of 76.6 per cent.¹⁶⁷

¹⁶³ Craig Burton et al, '[Verifiable Electronic Voting in Practice: the use of vVote in the Victorian State Election](#)' *IEEE Security & Privacy*, 14(4), 2016, 64-73; Parliament of Victoria – Electoral Matters Committee, [Inquiry into electronic voting](#), 2 May 2017, 14; Victorian Electoral Commission, [Enabling electors every day – Annual Report 2017-18](#), 2018.

¹⁶⁴ Government of Victoria, [Government response to recommendations made to the Government by the Electoral Matters Committee \(EMC\) in its 2017 report, Inquiry into Electronic Voting](#), Melbourne, 2 November 2017, 1

¹⁶⁵ Bundesverfassungsgericht, [Use of voting computers in 2005 Bundestag election unconstitutional](#), Press release 19/2009, 3 March 2009.

¹⁶⁶ Jasmine Fitzpatrick and Paula Jöst, [The High Mass of Democracy – Why Germany Remains Aloof to the Idea of Electronic Voting](#), *Frontiers in Political Science*, Volume 4, Lausanne, 13 July 2022.

¹⁶⁷ Statistisches Bundesamt, [2021 Bundestag Election: greater turnout of young voters](#), Press release 26/2022, 26 January 2022.

165. Having procured a kiosk voting system, named Powervote, for €51 million (\$85 million) for the 2004 European and local elections, Ireland deferred its use following security concerns and public campaigns for a VVPAT feature. A commission of inquiry by a High Court judge found in that the system was feasible with hardware and software modifications (including VVPAT) to protect election security.¹⁶⁸ The government decided to not use the system and deployed paper ballot voting for future elections.¹⁶⁹ The unused hardware was sold to a metals recycling company for €70,000 (\$117,000) in 2012.¹⁷⁰
166. Brazil's universal voting machine system has been in place for 27 years. Ahead of the 2022 presidential election, the United States embassy in Brasilia stated that Brazil's electronic voting machines were "a model for the world",¹⁷¹ while some academic commentators dispute the system's reliability and the integrity of its governance.¹⁷² The unsuccessful presidential candidate in the 2022 election faced trial after the election for criticism of the electronic voting system where, as President, he told foreign diplomats that the machines were prone to being hacked and open to large-scale fraud.¹⁷³ In June 2023, Brazil's Electoral Court ruled that the former President had violated Brazil's election laws by making the claims and ruled him ineligible to run for the office of President until 2030.¹⁷⁴ Between 2007 and 2018, the percentage of Brazilians who saw elections as honest halved following a sustained campaign of disinformation and conspiracy theories about the electronic voting machine system.¹⁷⁵
167. Kiosk voting systems involve significant capital costs, with obsolescence of equipment and software an operational and financial risk. As demonstrated in India and Brazil, kiosk voting systems offer greatest value if implemented at a large scale (to reduce overall election costs by removing the need for a parallel paper voting system) and are used frequently (for example by different levels of federal jurisdictions on different election cycles). Committed costs include initial investment and ongoing maintenance and upgrades of kiosk hardware and software. There are also significant costs associated with technical and physical logistics of the system including delivery, installation, configuration and testing.
168. Ageing voting equipment in the United States, principally kiosk voting machines, requires replacement by 2027 at an estimated cost of US\$580 million (A\$870 million).
- "Like any computerised system, voting machines age into obsolescence. For electronic voting machines purchased since 2000, experts agree that the expected lifespan for the core components is between 10 and 20 years. For most systems, however, it is probably closer to 10 than 20."¹⁷⁶
169. The United States National Conference of State Legislatures (NCSL) advises that the latest computerised machines cost between US\$2,500 and US\$3,000 each, and election management bodies should budget for one machine per 250-300 electors.¹⁷⁷ There are additional costs for software development, maintenance, storage and voting centre training. Implicit in this continuous upgrade cycle of election hardware is the environmental impact of e-waste.

¹⁶⁸ Commission on Electronic Voting on the Secrecy, Accuracy and Testing of the Chosen Electronic Voting System, [Interim Report](#), Dublin, April 2004, 17.

¹⁶⁹ Stephen Collins, [Rise and fall of Irish e-voting: a brief but expensive history](#), *The Irish Times*, 24 April 2009.

¹⁷⁰ Juno McEnroe, [€55m e-voting machines sold for just €70,000](#), *Irish Examiner*, 29 June 2012.

¹⁷¹ Philip Friedrich, [Brazil's Democracy Confronts the Looming Threat of Election Denial](#), Freedom House, Washington, 22 September 2022.

¹⁷² Augusto Zimmermann, [How They Count Votes in Brazil](#), *Quadrant*, Sydney, 10 January 2023.

¹⁷³ Jack Nicas, [Bolsonaro to Face Trial Over Electoral Fraud Claims](#), *The New York Times*, New York, 6 June 2023.

¹⁷⁴ Jack Nicas, [Brazil Bars Bolsonaro From Office for Election-Fraud Claims](#), *The New York Times*, New York, 30 June 2023.

¹⁷⁵ [Brazil's voters worry about the integrity of their elections: The electronic voting system is very fast and quite safe](#), *The Economist*, London, 5 October 2018.

¹⁷⁶ Turquoise Baker and Lawrence Norden, [Voting Machines at Risk in 2022](#), The Brennan Center, Washington, 1 March 2022.

¹⁷⁷ Sarah Breitenbach, [Aging Voting Machines Cost Local, State Governments](#), Pew Trust, Philadelphia, 2 March 2016.

170. The Electoral Commission of India's upgrade program for voting machine included a procurement of 1.4 million units between 2016 and 2019, at a project cost of 2,056 crore (ten million) Indian rupees (\$390 million), excluding taxes and transportation.¹⁷⁸

Telephone voting

Usage and features of telephone voting




171. Telephone voting systems currently can principally function in two different ways:

- a) electors casting their votes through speaking with two or more election officials (operator-assisted telephone voting); and
- b) electors casting their votes through an automated telephone-based system with a numeric keypad input (interactive voice response (IVR) or automated telephone voting).

172. Emerging technology may increase options available such as through voice automation and speech recognition technology, where the elector casts their vote with spoken instructions without the need for an operator or a telephone pad.


173. Telephone voting generally involves the following steps:¹⁷⁹

Table 4: Steps involved in casting a vote using a telephone voting system

Step	Description
Apply 	<p>The eligible elector registers for the service online or via the telephone. Elector details are matched against the electoral roll and the elector is provided with a unique registration number. The elector is usually asked to choose a PIN.</p> <p>Eligibility for TAV is based on self-declaration, where an elector nominates the reason from a defined list.</p>
Cast vote 	<p>The elector casts their vote over the telephone.</p> <p>For operator-assisted, the elector speaks to a different election official to the one that registers them. The election official reads through the voting instructions and ballot paper information and marks the ballot paper based on instructions from voter. There may be a second election official who listens to the conversation to ensure the ballot paper is marked as instructed. Scrutineers may also be present to observe the process but cannot listen into the conversation.</p> <p>For automated telephone voting, using interactive voice response (IVR), the elector calls a number for an automated telephone system. Once the system confirms the registration number and PIN, it reads out the ballot paper. The elector can use the keypad to navigate/scroll through the ballot paper and to make their selection. The system reads out the voter's entry for them to confirm. An automated telephone voting system requires upfront pre-recording and programming of ballot information but no personnel to provide or receive voting information.</p>
Store 	<p>For operator-assisted voting, ballots marked by the election officials are usually sealed and stored in a secure ballot box.</p> <p>For automated telephone voting, information is usually collected by the telephone and stored in local networks and is not usually transmitted through the internet, similar to other channels in the iVote system.</p>

¹⁷⁸ [EVMs manufactured by 2 state-run companies, are 'completely non-tamperable': Government in Lok Sabha](#), *The Economic Times*, New Delhi, 24 July 2019.

¹⁷⁹ Narelle Miragliotta, [Remote Voting Under COVID-19](#), Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, Working Paper 72, September 2020, 12.

Step	Description
<p data-bbox="263 264 405 327">Include in count</p> 	<p data-bbox="427 264 1342 327">For operator-assisted voting, paper ballots are sent to counting centres to be included in the count.</p> <p data-bbox="427 344 1374 465">For automated telephone voting, results are uploaded into the counting system. The IVR system used in 2019 NSW State election was integrated into the iVote system, so that votes were automatically added to the count, alongside other votes taken through iVote’s alternative channels.¹⁸⁰</p>

174. Telephone voting is used in most Australian jurisdictions, although not widely in other countries.
175. New South Wales introduced IVR as part of the iVote offering for the 2011 State General election.¹⁸¹ Operator-assisted telephone voting began later in 2011 at the by-election for the Legislative Assembly seat of Clarence alongside internet voting, and initially was used for the first time at a State General election in 2015.¹⁸² The suspension of iVote for the 2023 State general election required the establishment of a new operator-assisted telephone voting system for electors who were blind or had low vision.
176. The ACT first introduced automated telephone voting using an IVR system for people who are blind, vision impaired and physically disabled electors in 2020.¹⁸³ Eligible electors register with Elections ACT via the telephone and applications closed two hours prior to attendance voting closure, with the voting system being entirely electronic.¹⁸⁴ The vote data is collected via telephone and stored in a controlled environment, where the threat of a cyber-attack or denial-of-service is minimised. The ACT’s IVR solution provider states that a malicious attempt at hacking the system would need to be made via an interruption to the public telephone service.¹⁸⁵
177. In Queensland, COVID-19 pandemic restrictions on human movement led to the introduction of operator-assisted telephone voting for the 2020 elections. The telephone voting channel was available to electors with disability, more than 20km from a voting centre, outside Queensland or affected by COVID-19 isolation requirements.¹⁸⁶ A total of 15,871 electors used the telephone voting channel.¹⁸⁷ This was an elevenfold increase on the number of telephone votes cast at the previous State election in 2017 – and represented 0.53 per cent of total votes cast at the 2020 election.¹⁸⁸ The broader use of operator-assisted telephone voting remains available for future elections in Queensland, including the 2024 State election.

¹⁸⁰ NSW Electoral Commission, [iVote refresh project for the 2019 NSW State election](#), Sydney, February 2019, 27

¹⁸¹ NSW Electoral Commission, [Report on the feasibility of providing ‘iVote’ remote electronic voting system](#), Parliament of NSW, Sydney, 23 July 2010, 12; and NSW Electoral Commission, [Report on the conduct of the NSW State Election 2011](#), Sydney, 2011, 90.

¹⁸² NSW Electoral Commission, [Report on the Conduct of the 2015 State General Election](#), Sydney, 2015, 76

¹⁸³ Elections ACT, [Report on the Legislative Assembly Election 2020](#), Canberra, April 2021, 14.

¹⁸⁴ Elections ACT, [Report on the Legislative Assembly Election 2020](#), Canberra, April 2021, 14, 18.

¹⁸⁵ Software Improvements Pty Ltd, [Telephone Voting Solution: Electoral Commission – Key Security Issues Overview](#), 1 June 2020, 2

¹⁸⁶ [Electoral Act 1992 \(Qld\)](#), s. 121A; and [Electoral Regulation 2013 \(Qld\)](#) cl. 4AA(2).

¹⁸⁷ Electoral Commission of Queensland, [Electronically assisted voting participation](#), Retrieved 25 September 2023 at https://www.ecq.qld.gov.au/data/assets/excel_doc/0018/22356/SGE2020_EAV-participation_Final.xlsx.

¹⁸⁸ Electoral Commission of Queensland, [2020 State General Election: Report on the Election](#), Brisbane, 27 April 2021, 5, 18.

178. At the 2022 South Australian local council elections, the Electoral Commission of South Australia provided operator-assisted telephone voting for electors who were blind or had low vision or were outside the State throughout the three-week voting period. A total of 744 electors voted via the telephone service.¹⁸⁹ The Electoral Commission has since recommended to the South Australian Parliament that it make legislative changes to provide for a telephone voting offering at State elections for overseas electors, interstate electors, remote electors within South Australia and electors with a disability.¹⁹⁰
179. Victoria first offered operator-assisted telephone voting at the 2018 State election. The 2022 State election featured operator-assisted telephone voting for electors who were blind or had low vision and electors living with motor impairment. The Electoral Regulations to provide telephone voting for electors affected by a public health order concerning COVID-19 were not required as no health order was in place. The Regulations were amended, however, to permit eligible flood-affected electors to use telephone voting. The telephone voting channel was open from the Monday before the Saturday election day. It received 5,476 votes, including 3,384 in the early voting period and 2,092 on the election day.¹⁹¹
180. For future State elections, the Victorian Electoral Commission supports widening the eligible electors for telephone voting, as the channel is “easily scalable and relies only on telephone infrastructure”. It has proposed legislative amendments to the Parliament to provide telephone voting to electors who are:
- a) located interstate or overseas at the time of an election
 - b) unwell, infirm, or caring for someone who is unwell or infirm at the time of an election
 - c) experiencing homelessness, family or domestic violence at the time of an election
 - d) neurodivergent, including those who are hypersensitive to the types of stimuli that occur in and around in-person voting centres
 - e) located in the Australian Antarctic Territory at the time of an election¹⁹²
181. Tasmania offered operator-assisted telephone voting at the 2022 Legislative Council elections for electors unable to access a voting centre due to being in isolation or quarantine due to COVID-19, and for electors interstate or overseas. The channel was available for the one-week pre-poll period and on election day,¹⁹³ with 525 electors using the service representing 0.79 per cent of electors.¹⁹⁴
182. The Australian Electoral Commission has provided operator-assisted telephone voting to those electors who are blind or have low vision since 2013.¹⁹⁵ For the 2022 Federal elections, this was extended to include electors who were isolating due to testing positive for COVID-19, which increased numbers significantly.¹⁹⁶

¹⁸⁹ Electoral Commission of South Australia, [Election Report: 2022 South Australian State Election and 2022 Bragg By-election](#), Adelaide, 2023, 56.

¹⁹⁰ Electoral Commission of South Australia, [Election Report: 2022 South Australian State Election and 2022 Bragg By-election](#), Adelaide, 2023, 56-57.

¹⁹¹ Victorian Electoral Commission, [Submission to the Committee's Inquiry into the conduct of the 2022 Victorian State election](#), Electoral Matters Committee, Parliament of Victoria, Melbourne, June 2023, 45.

¹⁹² Victorian Electoral Commission, [Submission to the Committee's Inquiry into the conduct of the 2022 Victorian State election](#), Electoral Matters Committee, Parliament of Victoria, Melbourne, June 2023, 48.

¹⁹³ Tasmanian Electoral Commission, [Annual Report 2021-22](#), Hobart, 23 May 2023, 25.

¹⁹⁴ Tasmanian Electoral Commission, [Annual Report 2021-22](#), Hobart, 23 May 2023, 15, 27.

¹⁹⁵ Damon Muller, '[Telephone voting for coronavirus affecter voters at the 2022 federal election](#)' Research Paper, Parliamentary Library, Parliament of Australia, Canberra, 13 May 2022.

¹⁹⁶ Tom Rogers, [Eligibility for telephone voting formally expanded](#), Australian Electoral Commission (Media release), Canberra, 20 May 2022.

Table 5: Summary of the different telephone voting systems

Option	Voting method	Integrity risk profile	Method of oversight
IVR	Allows an elector to cast a vote without any human interaction required at any stage in the process. Lower accessibility for electors who are not comfortable navigating via keypad.	Equivalent to broader iVote system	Voters can also call back to confirm their vote preferences were recorded as cast.
Operator-assisted (based on the iVote model)	Allows an elector to cast a vote with some human interaction, through speaking preferences to an election official who cannot identify them and who inputs them into iVote system.	Equivalent to broader iVote system, with the support from election official/ operator. The use of one network – as opposed to individual networks for each elector – also reduces the opportunities for malicious interference.	There are two calls – a registration call and a voting call. During the voting call a second election listens to the call and ensures the vote is recorded correctly.
Operator-assisted (based on the 2023 NSW State election model)	Allows an elector to cast vote with some human interaction, through speaking preferences to an election official who cannot identify them and who marks a physical ballot paper.	Lowest risk of three options, as information is transmitted directly between the elector and an election official via a telephone line and votes are physically marked on a paper ballot, so there is minimal or no risk that a vote could be intercepted or modified.	There are two calls – a registration call and a voting call. A second election official listens in on the voting call and confirms that the ballot paper is marked according to an elector's spoken preferences.

Benefits of telephone voting

183. With operator-assisted telephone voting, as information is transmitted directly between the elector and the election management body via a telephone line and votes are marked on a paper ballot by the operator, there is minimal or no risk that a vote that can be intercepted or modified, unlike electronic voting.¹⁹⁷

¹⁹⁷ Narelle Miragliotta, [Remote Voting Under COVID-19](#), Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, Working Paper 72, September 2020, 13.

184. Furthermore, scrutineers are allowed to observe (but not listen to) voting calls to check that the election official is following processes, including the second operator. Having a second operator listening and checking preferences are being captured correctly also reduces the chance of error.
185. While the majority of submission authors indicated a preference for internet voting, Vision Australia's submission made clear that human-assisted telephone voting should be retained as part of a multi-channel approach.¹⁹⁸ The submission notes that operator-assisted telephone voting plays an important role for electors who prefer to speak with a human, rather than use a computer, to cast their vote. This may be of particular importance for electors who have developed vision-impairment later in life and may not be familiar with assistive technology:
- “It is important to emphasise, however, that we do not support the replacement of a human-assisted telephone service with technology assisted voting, including online voting. There will always be a need for practical voting options that accommodate the diversity of the blind and low vision community, including those people who are not comfortable interacting with an online platform and who will find it more convenient to use a human-assisted service, notwithstanding that they will sacrifice some secrecy and verifiability in so doing. Technology assisted voting must always be regarded as an essential but not the only voting option available to people who are blind or have low vision.”¹⁹⁹
186. In a Vision Australia survey of voters who are blind or have low vision, 86 per cent of respondents who used the operator-assisted telephone voting service at the 2022 Federal election reported a positive experience when casting their vote.²⁰⁰

Risks of telephone voting and mitigations

187. The chief criticism directed at operator-assisted telephone voting by advocates for electors who are blind or have low vision is that it does not allow the casting of a secret and independent vote, as it requires an elector to speak their preferences to an election official. This was the case with the system used at the 2023 NSW State election and recent elections in other Australian jurisdictions.
188. From the perspective of electoral management bodies, the operator-assisted system retains an elector's anonymity during voting, where the processes of elector registration and vote taking are split between two election officials, with independent oversight by a third official to ensure an elector's identity remains unknown to those who know the vote preferences.
189. The Vision Australia submission described their concerns with this system, citing the survey after the 2022 Federal Election. The submission noted that although 75 per cent of respondents thought this system would retain the secrecy of their vote, a threshold of 25 per cent of voters who did not was too high to accept.²⁰¹ They also described situations where it may be more difficult to keep an elector's vote secret:

“One of the constraints on the uptake of human-assisted telephone voting is that it is not secret, in the sense that in order to use it a voter has to disclose their voting preferences to another person. While there are separate registration and voter recording processes that minimise the risk of identifying individual voters, it is nonetheless easy to appreciate situations in which there is a higher risk. For example, if a person who is blind or has low vision is acquainted with call centre staff, or if they live close to the location of the call centre, or if they live in a rural or regional area where there are only a few voters who are blind or have low vision, then they may well have concerns about the secrecy of using the service.”²⁰²

¹⁹⁸ [Submission 1](#), Vision Australia, 10 January 2023, 4.

¹⁹⁹ [Submission 1](#), Vision Australia, 10 January 2023, 5.

²⁰⁰ Vision Australia, [Submission to the Joint Standing Committee on Electoral Matters Inquiry into the 2022 Federal Election](#), Parliament of Australia, Canberra, 4.

²⁰¹ [Submission 1](#), Vision Australia, 10 January 2023, 4.

²⁰² [Submission 1](#), Vision Australia, 10 January 2023, 4.

190. Blind Citizens Australia (whose initial submission was endorsed by The Australian Communications Consumer Action Network, Guide Dogs Australia and People with Disability Australia) identified similar concerns around elector identity. In response to this, system developers could consider voice masking technology as it can provide anonymity. The Blind Citizens Australia submission also referred to the inability for electors to verify their vote has been recorded as they intended, unlike in TAV systems like iVote.²⁰³
191. Operator-assisted telephone service involves at least three election officials for each vote – one to issue a unique identifier in an initial call, one to record the vote in a second call and the third person to listen into the voting call to verify that the election official has accurately recorded the elector's preferences.²⁰⁴ The average call time for the 2023 NSW State general election was approximately five minutes. At the 2019 State general election, 30 operators were assigned to take 2,652 votes. In the 2021 Local Government elections, up to 100 operators were employed to take 9,164 votes.
192. The channel can be costly as it requires significant human resources to take individual elector calls. Given challenges with its scalability, telephone voting is likely to remain part of a multi-channel approach to TAV.
193. IVR (automated) telephone voting can also involve significant costs, although these generally are incurred during the establishment of the system through procurement, programming and testing. The complexity of this programming is considerable, as it requires all ballot papers to be entered into the system and names recorded for each candidate with the correct pronunciation. Each ballot paper then needs to be logic and accuracy tested, all within a very short timeframe – in the nine calendar days between the ballot paper draw and start of early voting. This is a logistical challenge for New South Wales state general elections. For example, at the 2019 election there were 568 candidates across the 93 Legislative Assembly districts and 346 candidates, with 20 groups on the Legislative Council ballot paper.²⁰⁵ At the 2021 Local Government elections, IVR was not offered to electors due to the high number of candidate numbers over multiple council areas and wards.
194. However, once an automated telephone system is programmed and tested, access to it can be provided to a large cohort, with minimal additional costs. The cost effectiveness of automated telephone voting is therefore greatest when large numbers of electors use this service.
195. In New South Wales, IVR has historically had a very low uptake by electors, being used by 2,180 electors (of which 68 were electors who are blind or have low vision) as part of the iVote offering at the 2019 State general election. At the 2015 State General election, IVR was used by 209 blind, low vision and low-literacy electors and in 2011 by 218 electors from the same elector classes.²⁰⁶
196. Risks of technical failure of telephone voting are not as extensively examined by analysts as internet or kiosk voting, due to its small footprint and scale. The technical risks for IVR are more similar to those for internet voting as they may rely on public networks for transmission of voting instructions (for example, voice over internet protocol – VOIP – devices) and interface with tallying systems. The iVote IVR solution encrypted an elector's ballot paper and generated the iVote receipt in the same way as for votes cast over the internet, before holding the vote in the iVote voting system for decryption and importation into the election count system²⁰⁷ Operator-assisted voting may be vulnerable to surge demand, which could lead to registered eligible electors being prevented from casting a vote.

²⁰³ [Submission 10](#), Blind Citizens Australia, 13 January 2023, 8.

²⁰⁴ Narelle Miragliotta, [Remote Voting Under COVID-19](#), Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, Working Paper 72, September 2020, 12.

²⁰⁵ To date, the logistical challenge of establishing an automated telephone voting system for local government elections has been too great, given the thousands of candidates across the State's local government areas and wards.

²⁰⁶ NSW Electoral Commission, [Report on the conduct of the 2019 NSW State Election](#), Sydney, 2019, 77

²⁰⁷ NSW Electoral Commission, [iVote refresh project for the 2019 NSW State election](#), Sydney, February 2019, 27

197. To mitigate the risks to the validity of the election from any performance issues arising from increased demand of operator-assisted telephone voting, the [Commonwealth Electoral \(COVID Enfranchisement\) Regulations 2022](#) were amended to provide the following savings provision:

Any failure to provide a telephone voting method in accordance with this Part does not invalidate the result of a general election, Senate election or by-election.²⁰⁸

198. It is noted that the drafting of this provision appears to focus on a potential failure by the AEC to provide eligible electors with this voting channel, not on saving an election result in which votes have been lost or interfered with.

199. A savings provision was also included for operator-assisted telephone voting at the NSW 2023 State general election:

An election is taken not to have failed, and the results of an election are not invalid, merely because telephone voting permitted by this clause was not available during a period when telephone voting was permitted under this clause.²⁰⁹

²⁰⁸ [Commonwealth Electoral \(COVID Enfranchisement\) Regulations 2022](#), cl 7(4).

²⁰⁹ [Electoral Act 2017](#), Sch 7 Pt 4 s 14(6).

Potential eligible classes for TAV in NSW

Context and background

200. This review assesses the feasibility of using TAV in circumstances where maintaining the integrity of elections and democratic practice are paramount. While attendance and paper-based voting are used by the majority of electors in New South Wales, TAV provides an alternative when these voting channels are difficult to access for electors.
201. This review considers the need for TAV by eligible electors, as opposed to opportunities for convenience. It estimates the cohort size and demands of each elector class that are eligible for TAV as provided for in the Electoral Act.
202. Attendance voting remains the most utilised voting channel in New South Wales, with around 90 per cent of electors voting in person, either on election day or during the early voting period (see Figure 1).²¹⁰
203. Over the past three state general elections, there has been a trend towards early voting, with an increase of 59 per cent (641,910 to 1,020,780) from the 2015 NSW State election to the 2019 NSW State election,²¹¹ and 53 per cent (1,020,780 to 1,567,515) from 2019 to the 2023 NSW State election. The increase from 2015 to 2023 (641,910 to 1,567,515) is 144 per cent.
204. Although attendance voting is used by a significant majority of electors, approximately 10 per cent of voters use non-attendance voting channels (split mainly between postal vote and, formerly, iVote).
205. Postal voting reduced in popularity following the introduction of iVote in 2011, as shown in Figure 1.²¹² At the 2023 NSW State election, where iVote was not used, rates of postal voting were again higher, with 540,208 postal vote applications received and an increase of 118 per cent from the 2019 election. Postal voting in other Australian State elections has increased during the same period (coinciding with the COVID-19 pandemic), with rises in Queensland (2020) of 145 per cent,²¹³ Western Australia (2021) of 85 per cent²¹⁴ and South Australia (2022) of 67 per cent.²¹⁵

²¹⁰ NSW Electoral Commission, [Report on the conduct of the 2019 NSW State election](#), Sydney, 2019, 19.

²¹¹ NSW Electoral Commission, [Report on the conduct of the 2019 NSW State election](#), Sydney, 2019, 19.

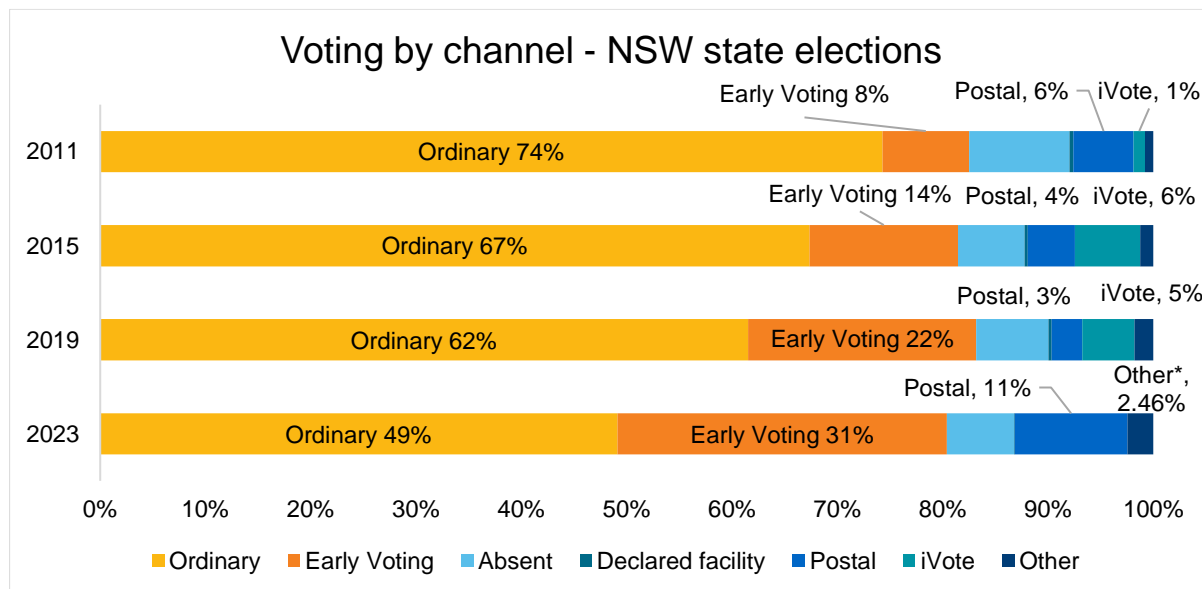
²¹² NSW Electoral Commission, [Report on the conduct of the 2019 NSW State election](#), Sydney, 2019, 19.

²¹³ Electoral Commission of Queensland, [2020 State General Election: Report on the Election](#), Brisbane, 2021, 14.

²¹⁴ Western Australian Electoral Commission, [2021 State General Election, Election Report](#), Perth, 2021, 2.

²¹⁵ Electoral Commission of South Australia, [Election Report, 2022 State Election](#), Adelaide, 2023, 52.

Figure 1: Voting channels used by electors at most recent state general elections (2011, 2015, 2019, 2023*)



Source table for figure 1: Voting channels used by electors at most recent state general elections (2011, 2015, 2019 and 2023)

Votes by channel (per cent)	2023	2019	2015	2011
Postal	11	3	4	6
iVote	0	5	6	1
Early Voting	31	22	14	8
Absent	6	7	6	10
Declared facility	0	0.3	0.3	0.3
Ordinary	49	62	67	74
Other*	2.46	2	1	1

* For 2023, telephone voting (830 votes – 0.02 per cent) have been included in the “Other” category. Other also includes enrolment, provisional and silent voters.

206. The risk to the integrity of an election from the technical failure of a TAV system becomes greater as the size of the TAV user cohort increases. The feasibility of internet voting – and other forms of TAV – therefore depends in part on its scale. Knowing the size of eligible elector classes also supports electoral authorities to plan capacity in IT systems to support TAV.

207. Currently, section 152 of the Electoral Act sets out eligible elector classes for TAV as follows:

- a) the elector has a disability (within the meaning of the *Anti-Discrimination Act 1977*) and because of that disability he or she has difficulty voting at a voting centre or is unable to vote without assistance,
- b) the elector is illiterate and because of that he or she is unable to vote without assistance,
- c) the elector’s residence is not within 20 kilometres, by the nearest practicable route, of a voting centre,
- d) the elector is a silent elector,

- e) the elector will not throughout the hours of voting on election day be within New South Wales,
- f) the elector is a registered early voter (technology assisted voting),
- g) in relation to a by-election—the elector will not throughout the hours of voting on election day be within the electoral district concerned,
- h) the elector meets such other eligibility requirements as may be prescribed by the regulations.²¹⁶
208. This review estimates the size of each of potential cohort and predicted usage of any future TAV offering by each class, based on previous iVote usage and data from the Australian Bureau of Statistics (ABS), advocacy organisations and NSW Electoral Commission geospatial data.
209. The estimated number of users of a future TAV solution is lower than the number of electors who may be eligible because some eligible electors will choose other channels. The estimates are based on past usage of iVote as a proportion of the estimated eligible class and so may not hold true in the event of major environmental change. Such change might include lower cost and more user-friendly personal technology options, as well as demographic shifts that mean a future eligible user group contains a larger number of older voters who are experienced users of digital services compared with voters in 2011 when iVote was first introduced.
210. If future demand for TAV at an election did prove much higher than the following estimates recommended as the basis for a solution design, TAV may need to be withdrawn as a voting channel, entirely or after a certain time during the voting period, because of the integrity risks for that election arising from that increased volume.
211. It is challenging to predict future usage given the various factors that can influence demand. In the 11 years when iVote was provided at New South Wales elections (2011 to 2021), there was growth in usage across all eligible elector classes (refer to Table 6, Table 7, Table 8 and Table 9). There are several factors that could have contributed to this including: familiarity with the platform in the electorate, increased availability of electronic devices, population growth,²¹⁷ an aging population²¹⁸ resulting in increased disability (including blindness and low vision) and more digitally literate electors.
212. The COVID-19 pandemic's impact on the acceleration of digital adoption²¹⁹ and the projected net shift in migration towards regional areas from capital cities,²²⁰ may also affect elector class sizes and TAV demand. In addition, the shortening of the early voting period enacted in 2022 for the 2023 State election (from 13 days to seven days) may have increased the attractiveness of internet voting as an alternative voting channel for any eligible electors. Adding to these complex factors is the requirement for electors to self-nominate their eligibility when using iVote.

Table 6: iVote use by eligible elector class 2011 NSW State election

Eligibility criteria	Number of iVotes (internet and IVR) cast
Blind/low vision/low literacy	668
Disability	1,296
20km from a voting centre	1,643
Outside NSW on (interstate and overseas)	43,257
Total	46,864

²¹⁶ *Electoral Act 2017*, s 152.

²¹⁷ NSW Department of Planning and Environment, [Population Projections](#), Sydney, 2022.

²¹⁸ Australian Institute of Health and Welfare, [Older Australians](#), Canberra, 30 November 2021.

²¹⁹ McKinsey & Company, [How COVID-19 has pushed companies over the technology tipping point—and transformed business forever](#), New York, 5 October 2022.

²²⁰ Australian Government – Centre for Population, [Migration between Cities and Regions: A quick guide to COVID-19 impacts](#), Canberra, September 2021.

Table 7: iVote use by eligible elector class **2015** NSW State election

Eligibility criteria	Number of iVotes (internet and IVR) cast
Blind/low vision/low literacy	4,818
Disability	12,714
20km from a voting centre	8,407
Outside NSW (interstate and overseas)	257,730
Total	283,669

Table 8: iVote use by eligible elector class **2019** NSW State election

Eligibility criteria	Number of iVotes (internet and IVR) cast
Blind/low vision	1,174
Reading disability	2,077
Disability	12,773
20km from a voting centre	7,381
Outside NSW (interstate)	160,025
Outside NSW (overseas)	47,977
Silent elector	2,994
Total	234,401

Table 9: iVote use by eligible classes at the **2021** NSW Local Government elections

Eligibility criteria	Number of internet and telephone (operator-assisted) votes cast Telephone (interactive voice response) not available
Blind/low vision	2,382
Other Disability	35,252
Literacy	4,783
20km from a voting centre	10,622
No Postal Pack	11,048
Outside Council Area/Ward (including interstate and overseas)	601,553
Silent elector	5,954
Total	671,594

Electors who are blind or have low vision

213. At the 2019 NSW State general election, 1,174 iVote electors identified as being blind or having low vision. This figure increased to 2,382 at the 2021 Local Government elections. At the 2023 State general election, 830 electors identified as being blind or having low vision to vote via the operator-assisted telephone voting service (as the sole eligible cohort).
214. Vision Australia estimates that there are approximately 120,000 people in New South Wales who are blind or have low vision.²²¹ Nationwide, Blind Citizens Australia says there currently are more than 500,000 people who are blind or vision impaired, with estimates that this will rise to 564,000 by 2030.²²² Citing research conducted by Vision Initiative, Blind Citizens Australia note that around 80 per cent of vision loss in Australia is caused by conditions that become more common as people age.²²³
215. It is estimated that up to 4,000 eligible electors in this class would use an internet voting offering and up to 1,000 would use operator-assisted telephone voting if it were available to this class of electors in 2027. This estimate of 4,000 internet users in 2027 is well above the number of iVote users in this eligible elector class at the 2021 Local Government elections. The estimate takes account of the growth trajectory since 2011. There is also an expectation that, if blind and low vision is the only available eligible elector class in 2027, some electors previously from the general disability class would be able to instead self-nominate for this class.

Electors with disability

216. Eligibility for this class under the Electoral Act is for an elector with disability within the meaning of the *Anti-Discrimination Act 1977* and, because of that disability, has difficulty voting at a voting centre or is unable to vote without assistance.²²⁴
217. At the 2011 NSW State general election, 668 iVote electors identified as being blind or having low vision and 1,296 identified as with disability – a total of 1,964 electors. At the 2019 State general election, 16,024 electors registered for iVote under this eligibility class (identified as 1,174 blind or low vision, 2,077 reading disability and 12,773 disability). There was a significant increase in the number of electors identifying in this class at the 2021 Local Government elections, at 35,252 electors.
218. At 30 June 2022, the Australian population was 25,978,935 with the New South Wales population at 8,153,600 (31.4 per cent of the national population).²²⁵ Applying that ratio to national statistics for people with disability would indicate there are about 1.38 million people in New South Wales with disability, including around 440,000 with a profound disability. This is consistent with the ABS 2021 estimate of 464,712 people with disability in New South Wales who require assistance with “core activity”.²²⁶ ABS defines core activity as self-care, communication, and mobility due to disability, long-term health conditions or the effects of old age.
219. Subject to the general qualification above, it is estimated that approximately 25,000 eligible electors in this class would use an internet voting offering in the medium term (2027 to 2031) if available. This estimate takes into account the growth trajectory established between 2011 and 2019, as well as the expectation a majority of electors in the class for the 2021 election (during pandemic conditions) would choose to use the iVote channel again.

²²¹ [Submission 1](#), Vision Australia, 10 January 2023, 9.

²²² [Submission 10](#), Blind Citizens Australia, 13 January 2023, 3.

²²³ Vision2020 Australia, “[Eye health in Australia](http://www.visioninitiative.org.au/common-eye-conditions/eye-health-in-australia)”, Retrieved 5 October 2023 at <http://www.visioninitiative.org.au/common-eye-conditions/eye-health-in-australia>.

²²⁴ *Electoral Act 2017*, s152(a).

²²⁵ Australian Bureau of Statistics. [National, state and territory population](#) Canberra, September 2022.

²²⁶ Australian Bureau of Statistics. [Disability and carers: Census](#) Canberra, 2021.

Electors more than 20km from a voting centre in New South Wales

220. At the 2019 NSW State general election, 7,381 electors voted by iVote under this eligibility class. This increased to 10,622 at the 2021 Local Government elections. In 2023, geospatial analysis puts the total number of electors that are 20km or more from a voting centre at 46,925. The majority of these electors cast their vote via postal vote.
221. Based on the growth trajectory from previous iVote usage, and subject to the general qualification above, it is estimated that approximately 15,000 eligible electors in this class would use an internet voting offering in the medium term (2027 to 2031) if available.
222. Recent arrangements to improve participation rates include the NSW Electoral Commission sending all postal vote packs within Australia via priority class mail under an extended statutory deadline of 13 days after the close of voting (compared to four days previously).²²⁷ However, any future decline of mail services may make it more challenging for these electors to receive and cast a valid postal ballot even within the extended prescribed time frames. A recent review into New Zealand's electoral system found that the gradual decline in postal voting requires more consideration around scalable and sustainable voting methods for people who cannot vote in person.²²⁸

Electors outside New South Wales (interstate)

223. Being interstate on an election day is a valid excuse for failing to vote (a "sufficient reason"). The provision of voting facilities outside New South Wales is therefore a measure to support voter participation.
224. Statistics from the 2016 ABS Census suggests that about 75,000 New South Wales electors were temporarily staying overnight in another state or territory on census night.²²⁹ This may only be a partial indication of the actual number of electors away on an election day. At the 2019 State general election, 160,025 electors voted by iVote under this eligibility class. Figures from the 2021 Local Government elections are less applicable as eligibility was extended, due to there being no absentee voting in person, to any elector outside their council ward or area, with their specific location (that is, interstate or overseas) not recorded.
225. Noting the limited data on interstate iVote usage, and subject to the general qualification above, it is estimated that approximately 90,000 eligible electors in this class would use an internet voting offering in the medium term if available. In light of the ABS data (75,000 New South Wales residents outside New South Wales on census night), some of the 160,025 electors who used iVote under this criterion may have incorrectly claimed to be eligible. Any actual usage in 2027, if available for this cohort, could be higher than 90,000 on that basis.
226. New South Wales electors temporarily interstate may also apply for a postal vote or attend a voting centre in any Australian state or territory capital city, a service provided under a reciprocal arrangement between electoral commissions. At the 2023 NSW State election, 7,338 votes were cast under the reciprocal arrangement at electoral commission offices in Australia and New Zealand.

²²⁷ *Electoral Act 2017*, s 149(1)(b).

²²⁸ Independent Electoral Review, [Interim Report: Our draft recommendations for a Fairer, Clearer and More Accessible Electoral System](#), Wellington: New Zealand, 2023, 155-6.

²²⁹ Australian Bureau of Statistics, [2016 Census of Population and Housing, Place of Usual Residence on Census night, New South Wales](#), G03 (2021 Census data does not reflect usual interstate movement data due to COVID-19 travel restrictions in place at the Census date).

Electors outside of New South Wales (outside Australia)

227. There are two key groups in this cohort: electors who are resident overseas and electors who are overseas on holidays or for another short-term reason.
228. At the 2019 NSW State election, 47,977 electors used iVote on the basis of being overseas. ABS data indicates that during the period around that election (February and March 2019) approximately 100,000 New South Wales resident electors would have been travelling overseas on election day.
229. Separately, an Australian citizen residing overseas – as opposed to being on holiday or away from their residence in Australia for a short period – is eligible to vote in Commonwealth, state and local government elections if they are enrolled as an Eligible Overseas Elector (EOE).²³⁰ Currently, there are 37,890 EOE's from all states and territories. There currently are 14,031 EOE's registered in New South Wales electorates who are eligible to vote at NSW state and local government elections. More than three quarters of the New South Wales EOE's are registered as General Postal Voters (an eligible person who has pre-registered to automatically receive their ballot papers in the mail after an election has been announced).
230. Subject to the general qualification above, it is estimated that approximately 60,000 eligible electors in this class would use an internet voting if available. This would be an option for the estimated 100,000 New South Wales resident electors travelling overseas at election time plus around 14,000 EOE's. It represents an increase on the 2019 overseas iVote figure of 47,977, although take-up would be influenced by the availability of in-person and postal voting channels at Australian diplomatic missions or other facilities.
231. As iVote was not available at the 2023 NSW State election, to be able to vote New South Wales resident electors who were temporarily overseas – and not registered as EOE – had to make an application (either online or by post) for a postal vote. The NSW Electoral Commission introduced additional measures to increase the options for both groups of overseas electors to vote by post including:
- a) supporting a legislated extension of the deadline before which postal vote packs must be returned
 - b) couriers of postal vote packs to maximise the time electors had to complete and return postal votes
 - c) providing an option to deliver completed postal vote envelopes to selected Australian missions in overseas locations where higher numbers of New South Wales residents are known to be located.
232. For the 2023 NSW State election, 20,418 postal vote packs were dispatched by courier to electors who applied from overseas. By the close of the legislated date for postal returns, 5,706 (28 per cent) had been returned by mail or to drop-off points in nine locations: Hong Kong, London, New York, Ottawa, Paris, Rome, Singapore, The Hague and Berlin. Of the 5,706 returned postal votes, 4,398 were delivered to the NSW Electoral Commission by mail services and 1,308 were drop-off returns. This return rate was higher than for previous elections – for example in SGE 2015 out of 5,856 postal packs sent to overseas electors only 1,062 were returned and only 129 of those were able to be included in the count. At the SGE 2019, out of 13,036 postal vote packs sent to overseas electors only 3,772 were returned and only 252 of those were able to be included in the count. The higher return rate for 2023 is attributable to the previously mentioned courier services (used for the first time) and the longer legislative period permitted for the receipt of returned postal votes by the Electoral Commission (four days after election day compared with 12 days in 2023).

²³⁰ An EOE must register for this status before leaving Australia (or within two years of leaving Australia) and intends to resume residing in Australia within six years of leaving. Extensions of one year are available provided the EOE certifies they intend to resume residing in Australia. See [Commonwealth Electoral Act 1918](#), s 94.

233. In summary, although internet voting may provide an additional convenient option for this cohort, there are a number of factors that needed to be weighed against this convenience:

- a) the size of this elector class increases the risks to election validity from potential performance failure
- b) including this class would introduce specific integrity risks around determining eligibility, given it would not be practicable to require any proof that electors were overseas on election day (such as geolocation or passport records)
- c) unlike many other elections, electors can generally plan ahead to vote at New South Wales general elections as these are scheduled for the third Saturday of March every four years
- d) additional measures introduced for 2023 NSW State election postal voting (noted above) provided an increased level of participation for a proportion of New South Wales electors who were overseas during the voting period.

234. There has been use of hybrid internet/postal voting in Australia, New Zealand and the United States for overseas electors. An enrolled New Zealand elector overseas may print a ballot paper from the internet then return the completed ballot paper to the Electoral Commission of New Zealand.²³¹ For New Zealand overseas electors participating in the October 2023 General election, completed ballots may be scanned and uploaded online.²³² Some United States jurisdictions similarly have systems where ballots are posted then returned by email, uploaded to a website or sent by facsimile to the relevant election management body.²³³

235. Victoria used an internet/postal hybrid at the 2022 State General Election for overseas and interstate electors. Some 12,716 voters outside of Victoria applied online to receive ballot material by email. Once received the ballot material could be printed and the completed ballot posted back to Victorian Electoral Commission. With only four per cent of eligible overseas electors applying to use this hybrid channel, the Commission stated that it partially reflected the inadequacy of the legislation enabling voting for overseas electors.²³⁴

236. Overall, Australian state and territory jurisdictions recognise the rising challenge for electors overseas due to the constraints for attendance voting and postal services and, accordingly, a number of jurisdictions are using or proposing operator-assisted telephone voting for this class. Queensland and Tasmania already have the arrangements in place. The Electoral Commission of South Australia states:

“Electoral commissions around Australia recognise that long distance postal voting has increasingly become unfeasible and is failing to meet the needs of the large numbers of Australians travelling or residing overseas. ECSA shares the view of other commissions that a viable electronic solution is needed to replace long distance postal voting, not only for overseas electors but for those in similar circumstances in non-metropolitan interstate locations.”²³⁵

²³¹ Electoral Commission of New Zealand, [How to Vote from Overseas](https://vote.nz/overseas/vote-from-overseas/vote-from-overseas/), Factsheet, Wellington, Retrieved 18 September 2023 at <https://vote.nz/overseas/vote-from-overseas/vote-from-overseas/> .

²³² Electoral Commission of New Zealand, [Downloading your voting papers](https://vote.nz/overseas/vote-from-overseas/downloading-your-voting-papers/), Factsheet, Wellington, Retrieved 18 September 2023 at <https://vote.nz/overseas/vote-from-overseas/downloading-your-voting-papers/> .

²³³ State Department, [Absentee Voting Information for U.S. Citizens Abroad](https://travel.state.gov/content/travel/en/international-travel/while-abroad/voting.html), Factsheet, Washington, Retrieved 18 September 2023 at <https://travel.state.gov/content/travel/en/international-travel/while-abroad/voting.html> .

²³⁴ Victorian Electoral Commission, [Submission to the Electoral Matters Committee inquiry into the conduct of the 2022 Victorian State election](#), Submission 59, Parliament of Victoria, 16 June 2023, 45.

²³⁵ Electoral Commission of South Australia, [Election Report: 2018 South Australian State Election](#), Adelaide, 2019, 52.

237. The Victorian Electoral Commission advocates for TAV to be extended to interstate and overseas electors to remove the uncertainty of postal services, which will increase in future elections.²³⁶ Similar to the Electoral Commission of South Australia,²³⁷ the Victorian Electoral Commission has recommended operator-assisted telephone voting to be the TAV channel for these electors.²³⁸

- a) “While operator-assisted telephone voting has a significant resource overhead when compared to internet voting, it is easily scalable and well established as a process across all electoral commissions. It can be deployed on readily available software at a minimal cost. It is a voting channel able to be scrutinised throughout the event and does not rely on technology in any way to accept the vote other than to take the call (and base call centre telephony which is known to be robust).”²³⁹

238. The Australian Electoral Commission announced in May 2023 that in-person voting for overseas electors again will be provided at most of Australia’s diplomatic missions for the 2023 Voice to Parliament referendum.²⁴⁰ The NSW Electoral Commission will consult with DFAT ahead of the 2027 State election to determine whether this in-person voting option can also be made available for Australians overseas who are eligible to vote in that election.

Silent electors

239. There are 39,119 silent electors registered in New South Wales. At the 2019 NSW State general election, 2,994 electors voted by iVote under this eligibility class. This increased to 5,954 electors at the 2021 Local Government elections. Under the Electoral Act, silent electors are eligible to apply to vote by postal vote, which currently provides the most popular voting channel for electors in this class.

240. Based on the trajectory established in previous iVote usage, and subject to the general qualification above, it is estimated that approximately 9,000 eligible electors in this class would use an internet voting offering in the medium term (2027 to 2031) if available.

²³⁶ [Submission 19](#), Victorian Electoral Commission, 11 September 2023, 2.

²³⁷ Electoral Commission of South Australia, [Election Report: 2022 South Australian State Election and 2022 Bragg By-election](#), Adelaide, 2023, 56-57.

²³⁸ Victorian Electoral Commission, [Submission to the Electoral Matters Committee inquiry into the conduct of the 2022 Victorian State election](#), Submission 59, Parliament of Victoria, 16 June 2023, 48

²³⁹ [Submission 19](#), Victorian Electoral Commission, 11 September 2023, 2.

²⁴⁰ Australian Electoral Commission, [Overseas voting services to increase for the 2023 referendum](#) Canberra, 22 May 2023.

System design and policy considerations for future TAV in New South Wales

Democratic context

241. Consideration of TAV in NSW must be undertaken against the background of the long-established voting practices designed around written, paper ballots. The paper ballot voting system continues to provide the strongest foundation for conducting secure and accurate elections.
242. As the US-based Brennan Center for Justice has noted, when preferences are recorded on paper, voters can easily verify that their ballot accurately reflects their choices before submitting it.²⁴¹ Rigorous chain of custody processes also limit the ability for an elector's vote to be manipulated after it has been submitted into the count. At the counting stage, the presence of scrutineers who can observe the physical ballots being counted adds additional transparency to the process.²⁴²
243. It is recognised that there are accessibility issues arising from paper ballots. Vision Australia states that, for electors who are blind or have low vision, paper ballots represent the least trusted and least accessible form of voting.
- “Printed paper ballots are not only an insurmountable discriminatory barrier to equal participation in the electoral process, but also a potential site for voter manipulation.”²⁴³
244. Adjustments for these – and other – accessibility needs at elections are essential. In turning to TAV for ways to improve accessibility there is, however, a requirement for electoral management bodies to balance integrity risks from these channels. As articulated by Vision Australia, “It is important...that technology assisted voting, including remote internet voting, is offered to people whom it is a necessity rather than a convenience.”²⁴⁴
245. TAV uses complex digital systems to verify votes which could be affected quickly and at scale through error or interference:
- “A remote programmer changing a line of code could in-principle change millions of electronic ballots in milliseconds, whereas changing millions of paper ballots requires physical access and one-by-one handling.”²⁴⁵
- The mitigating steps to manage these risks for TAV are not required for paper-based voting.
246. Cyberattacks now represent one of the most serious threats to society, ranking in the top ten risks for likelihood and impact.²⁴⁶ There also has been an increase in the misinformation and disinformation around elections with the rise of social media, greater technical complexity of digital systems and a heightened risk of malicious interference, all contributing to a vastly different operating environment.
247. A risk common to all TAV systems is technical failure (for example, due to outages or other performance issues or malicious actor attack) and its potential impact on the integrity of an election outcome. Such a failure may have widespread impacts, particularly if it introduces uncertainty around all votes cast using a particular TAV channel. These risks require management via complex controls. It is essential that any TAV systems are secure by design and are operated under robust risk-management practices.

²⁴¹ Derek Tisler and Turquoise Baker, ‘[Paper Ballots Helped Secure the 2020 Election — What Will 2022 Look Like?](#)’ Brennan Center for Justice, New York, 10 May 2022.

²⁴² Rodney Smith et al, ‘[Implications of Changes to Voting Channels in Australia: A Research Report Commissioned by the Electoral Regulation Research Network](#)’, Sydney, December 2018, 31.

²⁴³ [Submission 23](#), Vision Australia, 18 September 2023, 7.

²⁴⁴ [Submission 23](#), Vision Australia, 18 September 2023, 8.

²⁴⁵ Sunoo Park et al, ‘[Going from bad to worse: from Internet voting to blockchain voting](#)’ Journal of Cybersecurity, 7, (1), Oxford Academic, Kettering: UK, 2021, 3

²⁴⁶ The Institution of Engineering and Technology, [Internet voting in the UK](#), London, 2020, 10.

248. In the past decade it has become common in Australia and other advanced economies for corporate elections – for example for public companies, trade unions and governing boards of educational institutions – to use online voting systems hosted by specialist service providers. A survey of Australian company annual general meetings in 2022 indicated that 86 per cent of voting at shareholder meetings was conducted online, with 14 per cent being conducted using paper.²⁴⁷ The design and utility of these voting systems may be suitable and convenient for environments such as companies and other organisations where the secret ballot is not required.²⁴⁸
249. Voting in elections for parliaments and local councils in Australia must meet higher standards because it is through these elections that citizens choose who has the power to make the laws by which they are governed. Voting in these elections in New South Wales is also compulsory.
250. The design of any future TAV platform must be consistent, therefore, with high standards that reflect the key policy requirements of the voting process in the Electoral Act. In summary, these requirements are:
- **Fairness** – which includes facilitating the exercise of a voter’s right to participate freely in the electoral process.
 - **Integrity** – maintaining an electoral system characterised by accessibility, integrity and fairness.
 - **Compulsory** – a legal requirement for all eligible electors to enrol and vote.
 - **Transparency** – an election process that is open to scrutiny and processes designed to support transparency.
 - **Secret and independent** – a central tenet in the Australian electoral system that requires a voter to be allowed to cast a vote, free from duress or coercion, with their identity and the contents of their vote remaining anonymous.

System design principles

251. TAV solutions require the highest standards of governance, technical and operational reliability. Established industry standards and a strong regulatory framework are integral to the success of TAV. Codifying system requirements in a publicly accessible format provides a foundation for accountability, while also improving transparency for election management bodies and service providers.
252. The risks from a lack of uniform standards were demonstrated at Ontario’s 2018 municipal elections where 49 out of 177 internet voting systems experienced significant technical failure. In these elections, each individual municipality was responsible for designing and implementing internet voting, without specified principles, performance benchmarks or security protocols.²⁴⁹
253. The Estonian Supreme Court, in response to complaints of the e-voting system in 2023, noted that to address complaints and ensure public confidence in elections, “the essential rules on electronic voting should be more specifically contained in the law or at least in a government decree.”²⁵⁰

²⁴⁷ Computershare Limited, [2023 AGM Intelligence Report](#), Sydney, 2023.

²⁴⁸ The Institution of Engineering and Technology, [Internet voting in the UK](#), London, 2020, 5.

²⁴⁹ Helen Hayes et al, ‘[The Effect of Exogenous Shocks on the Administration of Online Voting Evidence from Ontario, Canada](#)’, *International Joint Conference on Electronic Voting*, 2022, 72.

²⁵⁰ *Eesti Rahvuringhääling*, [Supreme Court dismisses all election complaints](#), Tallinn, 31 March 2023.

254. Switzerland has adopted a prescriptive approach to governance for sub-national internet voting systems. Technical requirements (such as complete verifiability), auditing requirements and caps on usage are stipulated by the Federal Chancellery in the Ordinance on Electronic Voting (OEV) 2022.²⁵¹ The OEV specifies the universal requirements that must be followed by every canton when implementing internet voting, however the responsibility of procuring and delivering the system is left to their discretion. The Ordinance was developed through extensive consultation conducted over several years, before being agreed to by the Federal Council in May 2022, and includes the following:
- a) high level principles that a system must meet
 - b) complete verifiability including technical requirements for cryptographic protocols
 - c) minimum requirements to be met in the voting process such as casting a vote, preparation of the ballot and tallying votes in the electronic ballot box
 - d) auditing requirements including what needs to be audited and examination criteria
 - e) disclosure requirements including what needs to be published publicly, how it can be disclosed, and who should be involved
 - f) IT systems security processes, procedures for identifying and reporting security events and quality of source code and documentation
 - g) a list of threats to internet voting and the impact on fundamental principles.
255. It is also important to highlight that the OEV is technology-agnostic, focusing on what needs to be achieved rather than how to achieve it or the specific technology to be used. The Federal Chancellery also established an expert panel consisting of cryptographers, cyber security and mathematicians to endorse technical integrity of a system before implementation.
256. For Australia, the ECANZ *Eleven essential principles for an Australian internet voting service*²⁵² (Appendix 1) reflect the objectives of **enfranchisement**, **integrity** and **privacy** when designing and operating internet voting. In drafting these principles, ECANZ examined the United States Election Assistance Commission's "[Voluntary Voting System Guidelines \(VVSG 2.0\)](#)" and the Council of Europe's [Standards for E-Voting](#) (CM/Rec (2017)5).
257. From an accessibility perspective, standards to apply include Australian Standard [AS EN 301 549](#) concerning functional accessibility requirements applicable to ICT products and services and the latest version of the [Web Content Accessibility Guidelines \(WCAG\)](#) at level AA for voting content on the web.²⁵³
258. To date, the details of how TAV in New South Wales is delivered for each election event are published by the Electoral Commissioner in "approved procedures" under s 155 of the *Electoral Act 2017*. To establish higher levels of trust in TAV, technical requirements around security, auditing processes, threat mapping, the voting process and scrutineering should be documented in detail well ahead of any election at which TAV will be available.

Scrutineering, auditing and disclosure

259. Experience from international jurisdictions has demonstrated the importance of auditing and transparency measures (such as scrutineering and disclosure) in mitigating technical and security risks and increasing trust in elections.²⁵⁴

²⁵¹ [Federal Chancellery Ordinance on Electronic Voting 2022](#) (Switzerland).

²⁵² Electoral Council of Australia and New Zealand, [Eleven essential principles for an Australian internet voting service](#), Canberra, 4 July 2017

²⁵³ [Submission 22](#), Accessibility NSW, 14 September 2023, 1.

²⁵⁴ Rajeev Goré and Vanessa Teague, Joint Standing Committee on Electoral Matters into the 2013 Federal Election, [Submission 114](#), Parliament of the Commonwealth of Australia, 7 March 2014, 6-7.

260. There are two principal ways to audit a TAV system:

- a) **Examine the source code:** This involves an examination of the software prior to its use in an election, including the source code and related system documentation, to ensure it is performing correctly and free from vulnerabilities.²⁵⁵ Many cryptographers argue that making source codes publicly available prior to an election is best practice,²⁵⁶ with some jurisdictions with established internet voting systems, including Estonia and Switzerland, publishing source code.²⁵⁷ For New South Wales, only parts of the iVote source code were published to enable interested parties to review the code.²⁵⁸ Switzerland legislates that the source code, system documentation and relevant technical specifications be published in a way that is easy to read and analyse.²⁵⁹ It also requires the public be provided with an avenue to identify issues and suggest improvements.²⁶⁰ Swiss Post executives consulted during this review emphasised the positive impact that increasing transparency had on their relationship with experts and critics.
- b) **Verify election results:** Election results can also be audited after the election, to confirm the correctness of the result, independent of the voting software, by using universal verifiability (as part of end-to-end verifiability). Universal verifiability uses the data created and produced by the system to check that each vote was included in the election results, via cryptographic mathematical proofs.²⁶¹ Switzerland's approach to universal verifiability (named 'complete verifiability') allows auditors (rather than the public, as occurs with the examination of source code) to verify results.²⁶² The process is as follows:
 - The auditors receive proof that the result has been established correctly; the proof confirms that the result includes all and only the votes cast in conformity with the system and independent verification processes.
 - The auditors evaluate the proof in an observable procedure; to do so, they must use technical aids that are independent of, and isolated from, the rest of the system.²⁶³

261. It may be beneficial for NSW to follow the Swiss approach, where system audits are undertaken by an advisory panel of electoral and technical experts. In addition to post-election audits, this panel could play a role in reviewing or approving any TAV system prior to its implementation, as well as suggesting improvements for the system and processes.

262. There is also scope for the role of scrutineers to be redesigned to be more meaningful in for TAV platforms. Unlike traditional voting channels that provide many opportunities for scrutineers to visually observe the election process, much of the TAV process (especially internet voting) occurs within a computer system, making voting and counting difficult to observe, other than watching election officials interacting with a computer to provide parts of a key to unlock the system, to give it commands and then observing what data may be displayed on a screen.²⁶⁴

²⁵⁵ National Democratic Institute, [Testing, Source Code Review and Certification](#), Washington, 17 December 2013.

²⁵⁶ Ardita Driza Maurer, '[E-voting source code publication: a good practice becomes a legal requirement](#)', *Jusletter IT*, 26, Weblaw AG, Bern, September 2018, 6

²⁵⁷ [Estonian source code](#).

²⁵⁸ NSW Electoral Commission, [iVote code released for review](#), 21 March 2023.

²⁵⁹ [Federal Chancellery Ordinance on Electronic Voting 2022](#) (Switzerland).

²⁶⁰ [Federal Chancellery Ordinance on Electronic Voting 2022](#) (Switzerland).

²⁶¹ Sandra Guasch Castello, [Individual Verifiability in Electronic Voting](#), Requirements of electronic voting, Universitat Politècnica de Catalunya, Barcelona, 2016, 36.

²⁶² [Federal Chancellery Ordinance on Electronic Voting 2022](#) (Switzerland), Art 2, 5.

²⁶³ [Federal Chancellery Ordinance on Electronic Voting 2022](#) (Switzerland), Art 5.

²⁶⁴ Aleksander Essex and Nicole Goodman, '[Protecting Electoral Integrity in the Digital Age: Developing E-Voting Regulations in Canada](#)' *Election Law Journal* 19(2), 2020, 172,174.

263. There is limited international guidance on how to enhance the scrutineer's role in electronic voting beyond being a passive observer. The Carter Center has produced a Handbook for Observing Electronic Voting; however, this is mainly applicable to international observers of kiosk voting.²⁶⁵ Some municipalities in Canada that conduct completely electronic elections (internet and telephone voting) have removed scrutineers altogether. However, similar to iVote scrutineering in NSW, other Canadian municipalities have retained scrutineers, showing them the vote count process before the election, allowing them to test the technology to illustrate a vote cannot be cast twice, and including them as part of the tabulation process.²⁶⁶
264. Existing legislation and procedures in NSW provide that ballots cast by TAV must be able to be printed for the purpose of scrutiny.²⁶⁷ Given the small-scale internet solution proposed for 2027, this step could be undertaken as an integrity enhancement measure, with printed TAV votes counted alongside other paper ballots cast at voting centres or by postal voting. Updated procedures may be required to protect voter privacy in electorates with small numbers of TAV electors if the printed form of the ballot is distinguishable by a scrutineer. The value of this measure of back-up printing of ballot papers is borne out by VVPAT in kiosk systems, principally in India and in some jurisdictions in the United States.

Digital identity verification for internet voting

265. Australian governments have recently decided to explore a national digital identity system to improve federated services and cross-border credentials. Requiring electors to provide digital identity to use TAV platforms could strengthen both the integrity of and trust in those platforms. It may provide greater assurance around the identity of an elector and limits the risk of system infiltration by bots or malicious third parties.
266. There is a clear relationship between operational TAV platforms and established national identity systems, such as in Brazil and Estonia.²⁶⁸ A review of internet voting in Estonia in 2022 noted that their developed national digital infrastructure was “a major enabling condition and a key to understanding Estonian exceptionalism in the realm of Internet voting”.²⁶⁹
267. Integrating existing digital identity documents (such as a future ServiceNSW identity, or Commonwealth platform such as MyGovID) could also simplify the registration process for electors.²⁷⁰ As the submission from ScytI notes, the integration of digital identity with any electronic voting system “increases the available channels of authentication”.²⁷¹ However, integration of existing identity schemes in Australia remains challenging, noting a 2019 review of Australia's current system found a “large number of weaknesses and deficiencies”, concluding it was not fit for a future of online transactions.²⁷² Vision Australia expresses concerns about the ease-of-use of MyGovID.

“MyGovID has proven to be a confusing, inaccessible and inconvenient credential, and it is our impression that it has very limited uptake in the blind and low vision community, if only because many people do not have a compatible smartphone to install it.”²⁷³

²⁶⁵ The Carter Center, [The Carter Center Handbook on Observing Electronic Voting](#), January 2012.

²⁶⁶ Aleksander Essex and Nicole Goodman, ‘[Protecting Electoral Integrity in the Digital Age: Developing E-Voting Regulations in Canada](#)’ *Election Law Journal* 19(2), 2020, 174.

²⁶⁷ Electoral Act 2017, s155(2)(g); NSW Electoral Commission, [Technology Assisted Voting – Approved procedures for NSW State elections](#), 12(1)(c), Sydney, 7 February 2019

²⁶⁸ Joint Standing Committee on Electoral Matters, Parliament of Australia, [Inquiry into the conduct of the 2013 federal election: An assessment of electronic voting options](#) (Second Interim Report), November 2014, 44.

²⁶⁹ Piret Ehin et al, ‘[Internet voting in Estonia 2005-2019: Evidence from eleven elections](#)’, *Government Information Quarterly* 39(4), 2022, 1, 4.

²⁷⁰ [Submission 3](#), Mr Ian Brightwell, 11 January 2023, 6.

²⁷¹ [Submission 8](#), ScytI Australia, 13 January 2023, 5.

²⁷² Roger Wilkins and David Lacey, [The Review of National Arrangements for the Protection and Management of Identity Information](#), March 2019, 6.

²⁷³ [Submission 23](#), Vision Australia, 18 September 2023, 8

268. The key argument against requiring identity documents for voting is the disenfranchising effect their use can have on certain elector cohorts.²⁷⁴ This view holds that the ability for electors in all Australian jurisdictions to vote without providing identity documents (with the exception of certain declaration votes) is a cornerstone of the universal franchise, underpinned by the fundamental right to a secret and independent vote.
269. Attempts to introduce voter identification laws more broadly have been met with criticism, given the disproportionate impact these laws may have on particular electors, such as electors of Aboriginal or Torres Strait Islander background or people experiencing homelessness, who may be less likely to have formal identification documents.²⁷⁵ The NSW Joint Standing Committee on Electoral Matters has also found that there should be no legislative change to require voters to produce proof of identity to vote in New South Wales.²⁷⁶ The submission from the Council of Intellectual Disability emphasised this point, noting that that many people with intellectual disability often do not have identification and would be an “unnecessary step that is likely to exclude some people with intellectual disability”.²⁷⁷

Pre-registration, registration and voting periods

270. Requiring electors to register for TAV is an effective way to support integrity and technical planning ahead of the election period. Registration assists in managing capacity and risk of system issues, as noted by ScytI in its submission to this review.²⁷⁸
271. Extending the existing pre-registration General Postal Vote (GPV) arrangement – where an eligible elector has a standing status that rolls over from election to election – to TAV eligible electors would strengthen and simplify the registration requirement. Section 37 of the [Electoral Act](#) provides for the pre-registration of a registered early voter (technology assisted voting). To implement this option, there would need to be funding for the design and integration of a robust registration process into the Electoral Commission systems, including any new internet voting platform.
272. Even at small scale, registration via an eligibility declaration by eligible electors is required to support integrity and technical planning ahead of the election period. A future internet or telephone voting system should provide for the same registration opening date as postal vote applications, that is from the January before the March election. Once registered, an elector should be able to cast their vote online or by telephone during the one-week early voting period – that is from the Saturday to Friday before election day.
273. Requiring TAV voting before election day allows resources to focus on attendance voting channels on election day. The absence of this buffer in the 2021 Local Government elections (as electors could register for iVote until 1 pm on election day) meant that many electors did not receive their login credentials before the close of voting, due to system error exacerbated by a large number of election day registrations.
274. Any risk that eligible electors miss the chance to vote by waiting until election day to register should be mitigated by clear communication and co-designing registration processes with relevant stakeholders.

²⁷⁴ Rodney Smith, [Multiple Voting and Voter Identification: A research report prepared for the New South Wales Electoral Commission](#), February 2014, 20.

²⁷⁵ Paul Karp, [Proposed voter ID laws ‘real threat’ to rights of Indigenous Australians and people without homes](#), *The Guardian*, 27 October 2021.

²⁷⁶ Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2019 NSW State Election](#) (Final Report), October 2020, 34.

²⁷⁷ [Submission 17](#), Council for Intellectual Disability, 31 January 2023, 6.

²⁷⁸ [Submission 8](#), ScytI Australia, 13 January 2023, 4.

275. If NSW were to require strict pre-registration as the sole path to TAV (that is an eligible elector must register before the election period) it may impact eligible electors who experience an emergency or where postal packs have not arrived by election day. At the 2015 NSW State election for example, 6.42 per cent of electors who applied for a postal pack voted instead through iVote, suggesting that internet voting may have provided a proportion of those electors a useful “backup” option if their postal pack did not arrive in time.
276. Studies of US online systems have also shown that introducing registration can affect voter turnout,²⁷⁹ and may disproportionately burden disadvantaged electors.²⁸⁰ While concerns about voter turnout are less pressing in the context of compulsory voting in NSW, any proposed risk mitigation strategy should not impose unnecessary burdens on electors. Vision Australia raised concerns about this issue, noting:
- “We would only very reluctantly agree to any suggestion that registration not be available on election day. Some respondents to our survey of voter experiences in the 2022 Federal election said that they only found out about the availability of the Blind and Low Vision Telephone Voting Service on election day itself, while others noted the difficulty of taking time out from their job to register during business hours. It would not be an acceptable outcome if a person who is blind or has low vision were to be denied the opportunity to vote because they became aware of their options only after the registration period had closed and while the rest of the community was still able to vote”.²⁸¹
277. Vision Australia also noted that registration was not required for any other voting channel, asserting that any system implemented should be done bearing in mind the maximum degree of amenity and convenience for voters who are blind or have low vision. It also stated that “the blind and low vision community has an understandable expectation that any reduction of the pre-registration period would be offset by clear and tangible benefits in other areas of the voting process”.²⁸²
278. On the issue of registration for TAV in general, the Physical Disability Council of NSW recommended that the registration process be simplified, particularly for electors with a physical disability.²⁸³

Verification of eligibility of elector class

279. Verification of eligibility as a precondition to using TAV allows electoral management bodies to limit system usage to specific cohorts. This can better align resources and staffing with estimated elector usage and reduce the likelihood of system error due to excessive demand. Stakeholders do not support verification of eligibility. While it is preferred to not require evidence of eligibility, it may be necessary to have an audit mechanism in case numbers of users exceed expectations.

²⁷⁹ Stephen Ansolabehere and David M. Konisky, [‘The Introduction of Voter Registration and Its Effect on Turnout’](#), *Political Analysis* 14(1), 2006, 83; Kelly Beadle, Peter de Guzman and Alberto Medina, [‘The Impact of Voting Laws on Youth Turnout and Registration’](#), *Center for Information & Research on Civic Learning and Engagement*, 17 March 2022.

²⁸⁰ Rachana Bhatt et al, [‘Registration costs and voter turnout’](#), *Journal of Economic Behavior and Organization*, 176, Elsevier, Amsterdam, 2020, 91.

²⁸¹ [Submission 1](#), Vision Australia, 10 January 2023, 9.

²⁸² [Submission 1](#), Vision Australia, 10 January 2023, 9.

²⁸³ [Submission 2](#), Physical Disability Council, 10 January 2023, 1.

280. There are privacy and other policy considerations that mitigate against asking an elector to provide medical evidence to prove their eligibility on the basis of low vision or disability. Consultation with key stakeholders made it clear that many electors who may require adjustments do not wish to have to prove their eligibility and may not want to identify as having a disability. Submissions from blind and low vision organisations, as well as disability peak bodies were unanimously against verifying eligibility for these reasons:

Vision Australia – “We regard any attempt to verify whether a person is blind or has low vision as logistically impossible and philosophically unconscionable”.²⁸⁴

NSW Ageing and Disability Commissioner – “We would not support measures for the NSW Electoral Commissioner to ‘verify eligibility of persons claiming to fall within a technology assisted voting elector class with external agencies or organisations’. While we appreciate that some people may incorrectly claim eligibility in order to use TAV, we do not consider that this risk would justify intrusive measures that impact on a person with disability’s privacy, or require them to have to take additional steps to provide evidence of their eligibility.”²⁸⁵

Council for Intellectual Disability – “There shouldn’t be criteria for using technology to vote, anyone should be able to use technology if it helps them vote”.²⁸⁶

281. Separate to privacy considerations concerning the collection of health data by an electoral commission, verification of elector eligibility raises some practical issues. For overseas and interstate voters, using an elector’s IP address or geolocation data to confirm their location may be technically difficult in practice, as shared landline devices and virtual private networks can lead to inaccuracies. Geolocation would also not be useful for electors who vote or register early, as an elector only needs to be outside of NSW on election day to be eligible for TAV. Historically, the out-of-state cohort has been, by far, the largest of all iVote eligible electors and there should be safeguards to allow the Electoral Commissioner to monitor whether it is appropriate to offer TAV voting for this group.

282. Currently, verification of eligibility for alternative voting channels (such as early voting, postal vote or iVote) is based on a self-declaration (noting electors who are 20km from a voting centre are verified by their enrolled address) from the criteria contained within the Electoral Act.²⁸⁷ However, an analysis of anticipated versus actual usage of these channels suggests that some electors may be choosing to use these channels, regardless of their eligibility.²⁸⁸ For example, at the 2019 NSW State election, 160,025 electors registered for iVote on the basis they were interstate on election day.²⁸⁹ However, statistics from the 2016 ABS Census suggests that only about 75,000 NSW electors would be interstate on any given day.²⁹⁰

283. The NSW Joint Standing Committee on Electoral Matters has described this phenomenon as “convenience voting”, noting that “many people are disregarding eligibility requirements to vote early in NSW and are voting at early voting centres for reasons of convenience”.²⁹¹ This was seen at the 2021 Local Government elections, where 56 per cent of electors who did not receive their iVote login credentials found other channels to vote and a majority of these electors voted by in-person ordinary voting at a polling place in their area or ward (53.41 per cent).²⁹²

²⁸⁴ [Submission 1](#), Vision Australia, 10 January 2023, 9.

²⁸⁵ [Submission 13](#), NSW Ageing and Disability Commissioner, 20 January 2023, 2.

²⁸⁶ [Submission 17](#), Council for Intellectual Disability, 31 January 2023, 4.

²⁸⁷ *Electoral Act 2017*, ss 6, 152.

²⁸⁸ Narelle Miragliotta, [Remote Voting Under COVID-19](#), Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, (Working Paper 72), September 2020, 7.

²⁸⁹ NSW Electoral Commission, [Report on the conduct of the 2019 NSW State election](#), Sydney, 2019, 61.

²⁹⁰ Australian Bureau of Statistics, [2016 Census of Population and Housing, Place of Usual Residence on Census night, New South Wales](#), G03(2021 Census data does not reflect usual interstate movement data due to COVID-19 travel restrictions in place at the Census date).

²⁹¹ Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2019 NSW State Election](#) (Final Report), October 2020, 3.

²⁹² NSW Electoral Commission, [Submission 14](#), Inquiry into the conduct of elections in New South Wales, NSW Legislative Council Select Committee on the Conduct of Elections in New South Wales, 55, Sydney, 2022.

Budget and finance

284. At any size, an internet voting system is a complex undertaking requiring significant budget commitment. Establishing a new internet voting system would require an initial upfront capital investment for the implementation of the system, along with ongoing upgrade and maintenance costs, which are relatively fixed regardless of elector cohort size.²⁹³ Nonetheless, the cost of the system would rise if elector cohorts size expanded to meet additional technical and security requirements arising from increased risk.
285. Information technology costs have risen sharply in the past two years due, in part, to supply chain and labour disruptions from the COVID-19 pandemic. Producer Price Index (PPI) data, which tracks prices paid to the producers of goods and services, reveals a steep year-on-year price rise for host computers and servers – a 21 per cent increase over pricing levels in June 2021.²⁹⁴
286. Internet voting can become more cost-effective with large-scale implementation²⁹⁵ when compared with other voting channels, such as attendance and postal voting where costs increase proportionate to use. However, it would take several election cycles for internet voting to achieve cost savings as there is significant new procurement, training, public awareness campaigning and security involved with the establishment of such a system.²⁹⁶ Over time “higher volumes of elections and referenda wouldn’t have as high an incremental cost over and above the sunk cost of maintaining the online infrastructure”.²⁹⁷
287. Although there are potential benefits from cost efficiencies when internet voting is offered at scale, these benefits must be weighed against the increased risks associated with larger-scale operations.
288. Kiosks are not a familiar voting channel in Australia, apart from the ACT which has a highly concentrated population in a relatively small geographic area that makes it uniquely suitable for the format. Given the significant upfront and ongoing costs and the infrequency of elections, it may not be feasible for New South Wales to implement a large-scale solution as a standalone jurisdiction. Further economies of scale could be achieved through a national solution – for example through more cost-effective leasing agreements or infrastructure procurement. It would also allow for national consistency of technology standards, processes and elector experience.
289. While the capital, operational and maintenance costs for introducing a standalone New South Wales system currently are unlikely to be viable, limited scale trials could be considered. As part of its inquiry into the *Administration of the 2015 NSW State general election*, the NSW Joint Standing Committee on Electoral Matters previously recommended that the NSW Electoral Commission trial electronic voting via kiosks in voting centres.²⁹⁸ In recommending this, the committee acknowledged that the integrity and security of any kiosk system must be ensured before their widespread deployment and that the best way to ensure this would be a limited trial in electorates where there is confidence in an expected result. The Committee also suggested consulting with electoral authorities from other jurisdictions regarding possible pooling and sharing of resources.

²⁹³ See Narelle Miragliotta, [Remote Voting Under COVID-19](#), Electoral Regulation Research Network/Democratic Audit Of Australia Joint Working Paper Series, (Working Paper 72), September 2020, 15.

²⁹⁴ John Moore, [Technology costs rise as inflation hits hardware, services](#), *TechTarget*, Newton: United States, 21 July 2022.

²⁹⁵ Robert Krimmer et al ‘[New methodology for calculating cost-efficiency of different ways of voting: is internet voting cheaper?](#)’ 41(1) *Public Money & Management* 17, 2021, 22; Robert Krimmer et al, ‘[How Much Does an e-Vote Cost? Cost Comparison per Vote in Multichannel Elections in Estonia](#)’, International Joint Conference on Electronic Voting, 2018, 1.

²⁹⁶ Meredith Applegate et al, [Considerations on Internet Voting: An Overview for Electoral Decision-Makers](#), International Foundation for Electoral Systems, Arlington: United States, April 2020, 1.

²⁹⁷ The Institution of Engineering and Technology, [Internet voting in the UK](#), London, 2020, 8.

²⁹⁸ Joint Standing Committee on Electoral Matters, [Administration of the 2015 NSW Election and Related Matters](#), Report 2/56, Parliament of NSW, Sydney, 17 November 2016, 20.

290. Operator-assisted telephone voting remains feasible and necessary to support electors who are blind or have low vision. IVR could also be considered as an alternative or complementary channel to support accessibility to voting, noting the emergence of voice automation and speech recognition technology. The degree of risk and accessibility varies depending on the specific option made available.

291. The COVID-19 pandemic accelerated the development of operator-assisted telephone voting in a number of Australian states, which now are advocating for a widening of the eligibility criteria from blind, low vision, disability and pandemic-affected electors to interstate and international electors.

Policy and legislation

Savings provisions

292. It is open to the NSW Parliament to enact legislation to protect the public interest by eliminating or mitigating the greater levels of risk that arises from TAV, compared to paper-based voting. Providing a savings provision, for example, can limit when technical failures or interruptions associated with any re-introduction of online voting are grounds for invalidating the result of an election.

293. Both Commonwealth and NSW legislation have included specific savings provisions, following a broader roll-out of operator-assisted telephone voting during the 2022 Federal election for COVID-19 impacted electors. For the 2023 NSW State general election, for example, cl 14(6) of Part 4, Schedule 7 to the *Electoral Act 2017* (NSW) provided:

An election is taken not to have failed, and the results of an election are not invalid, merely because telephone voting permitted by this clause was not available during a period when telephone voting was permitted under this clause.

294. It is not clear, however, whether provisions in such terms protect an election if the number of registered voters prevented from accessing TAV was considered by a court to be statistically significant for a result.

295. In its submission to this inquiry, the Law Society of New South Wales suggested also setting out the exceptions for when the failure of a TAV system *has* invalidated the results of an election:

- An election is taken not to have failed, and the results of an election are not invalid, merely because online voting permitted by this clause was not operable during a period when online voting was permitted under this clause, unless:
 - a) as a result of the inoperability eligible voters were prevented from voting throughout the voting period; and
 - b) a recount by the Electoral Commissioner has determined that an alternative result may have resulted if the eligible voters had been able to vote online throughout the voting period; and
 - c) as a result, the result of the election was likely to be affected.

296. Under none of these existing or proposed formulations, however, would an election appear to be saved if eligible electors used online voting but their votes were not included in the count correctly or at all (that is, the data was lost or corrupted), due to either poor system performance or malicious interference. These provisions appear to deal only with circumstances in which a TAV system is not made available for voting, which is only a small segment of the risk profile for internet voting. Before internet or kiosk voting could be deployed at future elections in NSW, therefore, it should be clarified in what broader circumstances (if any) an election remains valid. Such scenarios may arise in the following circumstances:
- a) TAV is not made available by the Electoral Commissioner to all or some registered eligible electors, including where the Commissioner determines that the security environment at the time of the election period poses a risk to the integrity of the election that makes the voting channel inappropriate to offer at all or for a period of time;
 - b) TAV systems experience a performance issue (whatever the cause) that results in some or all registered eligible electors not being able to cast a vote in that channel; and
 - c) TAV systems experience a performance issue (whatever the cause) that results in some or all votes already cast not being able to be verified and/or counted.
297. It is appropriate to consider savings provisions to respond to these broader scenarios given the consequences for the NSW community of re-running elections, from small local contests through to a state-wide Legislative Council election. It must be acknowledged, however, that it is more difficult to make the case for legislation to save an election in the event of a security breach or technical failure that has compromised the integrity of votes actually cast using TAV. It is also more difficult to identify the public interest in saving an election when a large proportion of the total electors have been impacted. In such cases, there is a strong argument that it would be appropriate to continue to apply the usual materiality tests to determine validity, despite the risk of a material irregularity risks for TAV being higher than for paper-based voting.
298. All these scenarios require further policy consideration before online voting is offered again. To deem an election to be valid when online votes have been lost or corrupted is more significant legislative and policy intervention than validating an election in which a particular voting channel was unavailable. Consideration would need to be given whether the TAV levels of risk justify differential treatment of electronic and paper ballots.
299. In any TAV scenario, it seems preferable that a savings provision should only apply where there are a small number of electors impacted. If future eligibility to use TAV was expansive (as it was previously for iVote with multiple eligible elector classes), any savings provision itself could undermine election integrity and trust in the democratic process. Validating legislation would need to be carefully drafted to set low thresholds at which statutory provisions can maintain the validity of an election and define whether these thresholds should differ according to the type of election event.
300. It may be appropriate to consider different approaches for savings provisions capable of covering the potential scenarios in both the NSW Legislative Assembly and proportional counting systems such Legislative Council and local government councillor elections. Due to the complexity of voting and counting in proportional systems, it can be computationally difficult to ascertain whether the loss or frustration of even small numbers of votes is likely to impact an outcome. Legislative Assembly elections, on the other hand, are single member contests with full-value transferable preferences. The impact of eligible electors not being able to cast a vote (or not having a vote counted) due to technical failure of a TAV platform can be accurately modelled after an election to apply a materiality test to the outcome. Any requirement to rerun the election is limited to a particular electorate.

301. For the Legislative Council, however, which is elected by all 5.5 million voters in NSW, a constitutional requirement provides for random sampling during the distribution of preferences. This means a recount could already produce a different outcome despite the capture of every preference in the Electoral Commission’s computer count system. A review of preferences to assess whether not cast/missing online votes could have changed the outcome of a Legislative Council election may not provide consistent conclusions.
302. A similar ambiguity arose until recently in multi-member Local Government contests, which has been overcome by the introduction of the Weighted Inclusive Gregory Method (WIGM) for the first time at the elections held in 2021. The main impact of online voting interruptions or interference in Local Government contests now, as was observed in the Kempsey Shire Council case,²⁹⁹ arises when there are a small number of votes between candidates at any exclusion point during a count. Without a savings provision, if the number of “lost” online votes is equal to or greater than the difference between an ongoing and excluded candidate, it is likely that a contest would need to be re-run despite the disadvantages and inconveniences of doing so for the community.
303. The consequence of the Court of Disputed Returns ordering that a Legislative Council election was invalid because of a technical failure in TAV would be the need to conduct a new state-wide election, with attendant risks to continuity of the law-making functions of the NSW Parliament, as well as a significant erosion of public trust and the cost and time for re-running the election.
304. To accommodate the characteristics of different election types, a future savings provision regime in NSW could apply the following principles:
- a) For all types of elections, it is appropriate and proportionate, given the small-scale of TAV, for an election not to be invalid on the basis only that TAV was not available.
 - b) For multi member proportional representation elections (such as the Legislative Council and local government councillor elections), it also may be appropriate to extend such protection to where there have been performance issues after votes have been cast. Such consideration is warranted because the scale of the risks and costs involved in re-running multi-vacancy elections, and the consequent detriment to the public interest.
 - c) For other contests (such as Legislative Assembly electorates, local government mayoral elections and councillor by-elections), a savings provision may be appropriate even if votes cast by TAV cannot be verified or counted but only if the Electoral Commissioner determines prior to the declaration of results that the number of votes cast by TAV in that election (but which could not be included in the count) was greater than the smallest exclusion point.
305. The appropriateness of approaches to savings provisions is informed by analysis of past election data to determine what changes to votes are sufficient to alter election outcomes. NSW Electoral Commission analysis of 2015 and 2109 State general election results in the Legislative Council and the Legislative Assembly indicates that random removal of 5 per cent of formal ballots from all candidates (across 10,000 simulations) had the following outcomes:
- 2015 Legislative Council: No change
 - 2015 Legislative Assembly: Alternative outcome in one (of 93) electorates in 0.01 per cent of simulations
 - 2019 Legislative Council: No change
 - 2019 Legislative Assembly: No change
306. In alternative scenarios where the impact was assessed by removing only ballots where the first preference was for the elected candidate, alternative election outcomes can be observed when as little as 1 per cent of votes are removed. This was observed in the three Legislative Assembly electorates in 2015, and two in 2019.

²⁹⁹ [NSW Electoral Commissioner v Kempsey Shire Council \(No 2\) \[2022\] NSWSC 409.](#)

307. In the case of the 2022 Senate elections for all Australian States, analysts developed heuristics to test the data and published the smallest vote change to alter who won at least one seat (usually the last seat allocated through the Senate preference distribution process). From smallest to largest factor, the changes to affect the electoral outcome were Victoria 0.24 per cent, Western Australia 0.77 per cent, South Australia 0.82 per cent, New South Wales 1.19 per cent, Queensland 1.82 per cent and Tasmania 3.24 per cent.³⁰⁰
308. These analyses indicate that a lost opportunity to vote (or have a vote cast counted) by 0.1 per cent of the electorate historically would not have materially affected an election outcome.³⁰¹

Reform to operational requirements of legislation

309. Other legislative reforms to support TAV concern timeframes between nominations closing and election day and the Legislative Council requirements for marking and counting preferences. To enable the robust deployment of technology in the democratic processes of the state, NSW should consider these three additional legislative reforms.
310. The first is lengthening the pre-election timeframes between the close of candidate nominations and subsequent ballot paper draws for Legislative Assembly and Legislative Council elections, and the commencement of the early voting period. Legislated timeframes for ballot paper production are directed towards manual, paper-based processes and may provide insufficient time for preparing an electronic voting system between the closure of nominations and start of the early voting period. Lengthening this timeframe will provide more time to sufficiently prepare any future TAV systems with candidate information and to complete user testing. One of the cited reasons for the failure of a 2007 internet voting pilot in the United Kingdom was that short pre-election timeframes did not allow for sufficient design, development and testing and the development of complete project documentation.³⁰²
311. The NSW Joint Standing Committee on Electoral Matters has previously observed that these short timeframes posed challenges for political parties in preparing campaign material for the start of the early voting period.³⁰³ In 2019, the committee recommended that the NSW Government consider legislative amendments to delay the start of the early voting period to allow parties and candidates more time between the ballot draw and the start of early voting to register campaign materials.³⁰⁴ The early voting period was subsequently shortened from two weeks to one week for the 2023 NSW State election, via ordinary legislation.³⁰⁵ The committee has also noted the challenges in amending the timing of processes linked to the expiration of the Legislative Assembly under section 24A of the *Constitution Act*, including the issue of the writs, which specify the date for the close of nominations.³⁰⁶
312. The second change would be to replace the ballot sampling system for preference distributions in the NSW Legislative Council with a full count system and take full advantage of existing digital scanning and counting technology. The counting process for the Legislative Council, which requires random sampling to distribute preferences, is an anomaly when compared to other jurisdictions, which have harnessed technological advancements to allow a full distribution of preferences.

³⁰⁰ Vanessa Teague et al, [Submission to the JSCEM Inquiry into the 2022 Federal Election](#), Submission 282, Parliament of the Commonwealth of Australia, Canberra, 28 September 2022.

³⁰¹ It is important to note that the results of past elections are not indicative of future elections, and there may be situations where a single vote can impact the outcome of an election.

³⁰² The Electoral Commission (UK), [Submission to Speaker's Commission on Digital Democracy – Inquiry into Electronic Voting](#), Parliament of the United Kingdom, London, 10 October 2014.

³⁰³ Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2019 NSW State Election](#) (Final Report), October 2020, 7-10; Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2015 NSW State Election](#) (Final Report), November 2016, 23.

³⁰⁴ Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2019 NSW State Election](#) (Final Report, October 2020), 3.

³⁰⁵ [Electoral Legislation Amendment Bill 2022](#).

³⁰⁶ Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2019 NSW State Election](#) (Final Report, October 2020), 3.

313. Clause 10(f) of the Sixth Schedule to the Constitution Act requires that preference distributions in the count of NSW Legislative Council ballot papers be conducted using ballot paper sampling.³⁰⁷ This requirement was introduced in 1978, as part of the reconstitution of the Legislative Council to provide for direct election by the people via system of proportional representation.³⁰⁸
314. Since that time, advances in technology have allowed complex preference distributions in proportional representation contests to occur without a need for random sampling. Computational data entry and full electronic distribution of preferences is now considered best practice. The AEC has distributed preferences in the Federal Senate count process without random sampling since 1984, following changes to the Commonwealth Electoral Act made in 1983.³⁰⁹ Similarly, the Weighted Inclusive Gregory Method was introduced as the method of counting for NSW Local Government councillor elections in 2021. This method does not use random sampling and is conducted using the NSW Electoral Commission's electronic count system, which was modified accordingly for those elections.³¹⁰
315. Changing the requirement for random sampling within Schedule 6 of the Constitution would allow the Legislative Council count method to take advantage of a system that allows a full distribution of preferences, without sampling. A full distribution of preferences would assist in any future assessment of the materiality to the outcome of an election in the event of eligible electors not being to cast a vote due to technical performance of a TAV system or other disruption.
316. While reform to preference distribution in the Legislative Council does not otherwise touch on TAV design benefits or requirements, future technical refinements to counting methods would evolve in the same digital ecosystem as TAV. Any future TAV initiatives approved in the short term in NSW will require interoperability with the systems under development as part of the NSW Electoral Commission's digital modernisation program.
317. The third and final potential reform is to rationalise the way parties, groups and candidates are displayed on the Legislative Council ballot paper for a digital screen display or for telephone voting. There are practical challenges translating the large and complex ballot paper to a digital format, in a manner that is simple to use and does not unfairly preference certain candidates.
318. The size and complexity of the Legislative Council and some Local Government councillor ballot papers pose logistical challenges for both paper-based and TAV channels. The ballot paper for the 1999 State general election featured 264 candidates in 81 groups, necessitating a ballot paper 100 centimetres wide by 70 centimetres long, later known as the "tablecloth".³¹¹ While no Legislative Council ballot paper has reached this size since, there are challenges in translating a paper format to a digital one in the case of the Legislative Council. For one, it is difficult to make the ballot paper electronically accessible in a manner that does not favour particular groups of candidates. Presenting the first candidate who appears on the paper ballot and requiring the internet elector to scroll down, has the potential to lead to that candidate benefitting significantly from a "donkey vote", where electors favour the candidate presented first on the screen.³¹² It is also very time consuming for telephone operators (and electors) to read out all candidates "below the line" for telephone-assisted voters, adding to the logistics of that method of TAV.

³⁰⁷ Constitution Act, Sixth Schedule.

³⁰⁸ [Constitution and Parliamentary Electorates and Elections \(Amendment\) Act 1978](#).

³⁰⁹ [Commonwealth Electoral Legislation Amendment Bill 1983](#) (Explanatory memorandum).

³¹⁰ NSW Electoral Commission, [Functional specification for vote count: Using the Weighted Inclusive Gregory Method](#), March 2021, 9.

³¹¹ Antony Green, [New South Wales Legislative Council Elections 1999](#) Research Paper, Parliamentary Library, Parliament of NSW, May 2000, 1; Steven Reynolds, [The tablecloth and the long bell: media perceptions of the NSW Legislative Council 1999–2009](#) 26(1) *Australasian Parliamentary Review*, 26(1), 2011, 143-144.

³¹² Antony Green, [Donkey Vote Advantages for the 2021 Western Australian Election](#), *Antony Green's Election Blog*, 13 February 2021.

319. One approach for screen-based digital is to implement a randomised display, where the ballot paper opens at a different point for each elector. This is similar in theory to the system of ballot rotation used in the Tasmania, known as the Robson rotation, where candidates named are placed first in a random sequence on paper ballot papers.³¹³ This was the approach taken with iVote for the 2019 NSW State election, following commentary during the 2015 JSCem inquiry into the election that the previous iVote system defaulted to displaying the candidate at the beginning of the ballot paper.³¹⁴
320. A different approach is taken in the ACT, where the kiosk system used in voting centres displays the ballot paper in full ballot paper view, noting that there is only a single, lower house in that jurisdiction. If the relevant Legislative Assembly electorate has only a small number of candidates, the ballot paper displays in a readable fashion, in a similar size to its paper form. However, if an electorate has a larger number of candidates, there is potential for the ballot paper to be displayed in quite a small font. In this case an elector who has low vision can zoom the screen, using a slide bar at the bottom of the screen, which may obscure some candidates from view.
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³¹³ Tasmanian Electoral Commission, [A discussion paper on Robson rotation in Tasmania](#), Hobart, April 2008.

³¹⁴ Joint Standing Committee on Electoral Matters, Parliament of New South Wales, [Administration of the 2015 NSW State Election](#) (Final Report), November 2016, 15.

Long-term national approach to TAV

321. Through ECANZ, this review has canvassed the views and experiences of the other Australian jurisdictions in relation to TAV. These jurisdictions face common challenges in developing secure, cost-effective and sustainable TAV channels. Each jurisdiction faces potential procurement and implementation risks from a limited global vendor market. The best prospects for TAV arise under a unified national approach to digital election infrastructure, including integration with any emerging national digital identity system.
322. There are important insights into the challenges ahead for any TAV initiatives in Australia, informed by the recent experiences in NSW, the Australian Capital Territory and Western Australia.
323. The ACT is unique in offering a widely available kiosk voting system which, approaching its third decade of operation, channels three quarters of the territory's comparatively (to NSW) small number of votes at a general election. In 2020, the ACT offered a limited internet voting service to electors overseas.
324. Western Australia offered internet voting, in 2017, supported by the NSW iVote platform. The internet voting channel was available to electors with disabilities and was used by 2,200 electors. Looking to future TAV deployment, Western Australia recently has undertaken a market testing exercise via a Request for Information process. For the 2025 State general election it is developing a procurement strategy for a Direct Recording and Electronic (DRE) replacement solution for its Vote Assist kiosk product (previously deployed at two voting centres in Perth) and an automated telephone IVR system. Longer term, the Commission says it is committed to a full online internet voting in the future.³¹⁵
325. While NSW is a sovereign jurisdiction and undertakes its elections according to the State Constitution and electoral laws, its actions intersect with the broader Australian democratic culture and electoral technology ecosystem.
326. Any additional TAV initiatives for NSW (beyond those proposed for kiosk trials and the internet option for electors who are blind or have low vision) would ideally be undertaken as part of a national electoral technology system, cooperatively designed, commissioned and operated on behalf of all the States, Territories and the Commonwealth.
327. Such an initiative has been identified in other inquiries. The 2017 report of a Victorian Parliamentary Committee concluded that:
- “It makes little commercial or economic sense to implement a state-by-state based approach to remote voting. Developing a national, electronic voting capability is, for the committee, and indeed the NSW JSCEM and the Commonwealth JSCEM, a major priority for the future of Australia's electoral administration.”³¹⁶
328. A common national election technology system would project electoral transparency consistent with Australia's democratic conventions and values, and promote a consistent elections experience for citizens, with national privacy, identity and cyber security assurance.
329. The development and operation of this technology could be undertaken by a standing national elections delivery agency. Its role would include the design, risk assessment and delivery of digital elections platforms, including for voting, for use by all jurisdictions for respective elections and referenda.

³¹⁵ Western Australian Electoral Commission, [Update on Technology Assisted Voting Request for Information \(RFI\)](#), Communications Update 5, Perth, 2 March 2023.

³¹⁶ Electoral Matters Committee, [Inquiry into electronic voting](#), Parliament of Victoria, Melbourne, May 2017, 134.

330. The type of body to undertake the role could follow one of several governance models, such as a company limited by guarantee³¹⁷ or company limited by shares.³¹⁸
331. Steps towards a national approach to election technology systems have been taken previously. The July 2017 ECANZ meeting of Australian Electoral Commissioners signed a letter to all Australian First Ministers advocating a national cooperative approach to the development and security of internet voting. The matter was considered by the 9 February 2018 meeting of the Council of Australian Governments which, in its post-meeting communique, said:
- “COAG also considered proposals from the Electoral Council of Australia and New Zealand to modernise state and federal electoral systems. COAG noted the importance of cooperation to mitigate cyber security risks, and looks forward to the Australian Cyber Security Centre’s proposed cyber-security health checks of our electoral processes.”³¹⁹
332. In 2019, the Federal Government established an Interjurisdictional Working Group on Electoral Integrity and Security (IWGEIS). Its terms of reference for electoral system resilience included the development of a road map for a common electoral platform. From July 2020 a National Election Platform (NEP) working party developed the concept of a secure information technology hosting environment administered by a national management structure to provide shared services capability for electoral management bodies. The platform would, in the long term, provide access to a number of electoral systems.³²⁰
333. In 2022, the IWGEIS functions were transitioned to the Inter-jurisdictional Forum on Electoral Integrity, co-chaired by a Deputy Secretary of the Department of Prime Minister and Cabinet and the Australian Electoral Commissioner. This forum provides a new avenue for interjurisdictional and interagency information sharing and collaboration on ideas and initiatives relating to all matters of electoral integrity and security, including the development and adoption of election technologies.
334. Separately, National Cabinet, which succeeded COAG as a forum for first Ministers in 2020, has identified the delivery of “government services fit for the digital age” (tasked to Data and Digital Ministers) as a priority policy issue, which also offers a route and forum for consideration of a national electoral delivery body.³²¹

³¹⁷ PEXA Pty Ltd was established following a 2011 intergovernmental agreement on national conveyancing to build and operate a single national electronic system for the settling of real property transactions in all Australian States and Territories. This agreement also established the Australian Registrars’ National Electronic Conveyancing Council (ARNECC), composed of the Land Titles Registrars (or their nominee) from each Australian State and Territory, tasked with the ongoing management of the regulatory framework for National E-Conveyancing to minimise inconsistencies between jurisdictions, see Council of Australian Governments, [Intergovernmental Agreement for an Electronic Conveyancing National Law](#), 2011.

³¹⁸ PSMA Australia, trading as Geoscape Australia, is self-funded through the sale of spatial data, see PSMA Australia Limited, [Statement of Expectations](#), 4 December 2017; Healthdirect Australia was established in 2006 and is jointly funded by the Commonwealth Government and the governments of the ACT, New South Wales, Northern Territory, South Australia, Tasmania, Victoria and Western Australia. Its shareholders are delegated representatives of the Health Ministers of each of the jurisdictions. Healthdirect Australia provides health services that are accessible via multiple channels — helplines, video call solutions, websites, service finders, mobile applications and social media networks, see Healthdirect Australia, [Our Shareholders](#), Retrieved 30 October 2023 at <https://about.healthdirect.gov.au/shareholders>.

³¹⁹ Roger Wilkins, [Report on the Security of the iVote System](#), Sydney, May 2018.

³²⁰ Australian Electoral Commission, [Inquiry into whether Victoria should participate in National Electoral Roll platform: Submission No. 3](#), Parliament of Victoria, Melbourne, 22 October 2021, 1

³²¹ Department of Prime Minister and Cabinet, [National Cabinet Priorities](#), Canberra, November 2022.

Conclusions and findings by the NSW Electoral Commissioner

335. Paper-based voting continues to provide the strongest foundation for secure and accurate elections in New South Wales due to the physical security attributes of ballot papers and the transparency of voting and counting paper-based votes. I recommend that paper-based voting continues as the primary voting channel for the foreseeable future.
336. Global experience demonstrates that TAV has inherent risks that, if they were to materialise, could impact the integrity of an election process, including risks around technical non-performance, transparency, verifiability of votes and cyber security.
337. The threat environment has worsened over the past decade, particularly for internet-based election systems. These risks require management via complex controls. It is essential that any TAV systems are secure by design and are operated under robust risk-management practices.
338. In Australia, electors are required to vote in elections or referenda infrequently – on average less than once a year across the three levels of government. Attendance voting is an important democratic practice that imposes a minimal time obligation on the electorate.
339. Parliamentary and council elections operate in a unique context given the democratic imperatives of fairness, accessibility, compulsory voting, transparency and the secret ballot. This gives rise to additional risks and security requirements when compared to online elections for other bodies, such as boards and committees.

Findings

Operator-assisted telephone voting for electors who are blind or have low vision should continue

340. Operator-assisted telephone voting remains a feasible and necessary voting channel for electors who are blind or have low vision and should remain available for state and local government elections in New South Wales. This channel has been used successfully at recent elections in several Australian jurisdictions and is a priority for expansion to interstate and international electors in Queensland, Victoria and South Australia.
341. Automated telephone Interactive Voice Response (IVR) solutions using keypad responses could be examined as an alternative or complementary channel. IVR, however, historically has had a low utilisation rate in New South Wales among electors who are blind or have low vision – and also among other elector classes eligible to use TAV. At both the 2015 and 2019 State General elections, the number of IVR voters were approximately one per cent of internet voters.³²² Emerging solutions (such as voice response software) should be considered in the longer term.

Internet voting for electors who are blind or have low vision should be explored

342. Internet voting appears to be the preferred way for electors who are blind or have low vision to vote independently; that is, without the direct assistance of another person to mark a ballot paper or to attend a voting centre.
343. Internet voting may be feasible at small scale only from 2027 for NSW state and local government elections for this class of electors. This provisional view is contingent on a market RFI around technology vendor interest and capability, as well as a preliminary assessment of integration requirements with the NSW Electoral Commission's enterprise and system architecture.
344. If a feasible technology solution seems possible after a RFI to the market, funding would be required for the NSW Electoral Commission in the 2024-25 State budget to procure, configure and test a preferred solution in time for the 2027 State general election.

³²² NSW Electoral Commission, [Report on the conduct of the 2019 NSW State election](#), Sydney, 2019, 79.

345. Work should progress on the assumption that up to 4,000 electors who are blind or have low vision would use internet voting and up to 1,000 would use operator-assisted telephone voting in 2027, representing around 0.08 per cent and 0.02 per cent of New South Wales electors, respectively.
346. Analysis of historical election data suggests that there is a low probability that the exclusion of up to 5,000 votes would materially affect a state election outcome, which is greater than the number of electors currently proposed to be eligible to use TAV in 2027. It remains possible, however, that in small or very close contests the unavailability of TAV for even a single eligible elector may be considered to give rise to a material irregularity.

Legislation is recommended to manage special risks of internet voting

347. Given the cost and adverse impact on public trust in democratic processes of re-running an election due to invalidity, it may be proportionate and appropriate for New South Wales legislation to protect, in specified circumstances, the validity of an election result despite technical performance issues with a TAV channel; for example where it is not available for all or some eligible electors to use or where votes that are already cast cannot be verified or counted.
348. Consideration should be given to savings provisions operating differently between different types of elections to reflect and balance the requirements of different counting systems, size of electorates and consequences of holding an election again.
349. For all types of elections it appears appropriate and proportionate, given modelling based on previous results data and the proposed small-scale of TAV, for an election not to be invalid on the basis only that TAV was not available.
350. For multi member proportional representation elections (such as the Legislative Council and local government councillor elections), however, it also may be appropriate to extend such protection to address risks of performance issues after votes have been cast. Such consideration is warranted because the scale of the risks and costs involved in re-running multi-vacancy elections, and the consequent detriment to the public interest.
351. For other contests (such as Legislative Assembly elections, local government mayoral elections and local government by-elections), a savings provision may also be appropriate even if votes cast by TAV cannot be verified or counted. This could apply if the Electoral Commissioner determines prior to the declaration of results that the number of votes cast by TAV in that election (but which could not be included in the count for any reason) was greater than the smallest exclusion point.
352. Overall, the scenarios for applying a savings provision to technical performance issues for TAV require a clear legislative framework before online voting is offered again.
353. Other constitutional and legislative reform to support TAV should be considered including:
- a) lengthening the pre-election timeframes to settle candidate nominations and ballot draws for Legislative Assembly and Legislative Council elections to provide sufficient time to prepare TAV systems with candidate information and for user testing;
 - b) replacing the ballot sampling system for preference distributions in the NSW Legislative Council with a full count system that can use existing digital scanning and counting technology; and
 - c) simplifying the way parties, groups and candidates are nominated for and/or displayed on the Legislative Council ballot, so it is suited to digital display and other assistive technology.

354. Even at small scale, registration via an eligibility declaration by electors who are blind or have low vision is required to support integrity and technical planning ahead of the election period. This may be simplified to a “once only” pre-registration using the registered early voter (technology assisted voting) process in section 37 of the [Electoral Act](#). It is my preference to not require evidence of qualification for an elector who is blind or has low vision to be registered for TAV, although auditing may be appropriate if the number of users is not consistent with those expected eligible elector cohort.
355. The internet voting solution contemplated for electors who are blind or have low vision in 2027 is, despite its small scale, a complex undertaking requiring significant budget commitment from the State for capital and recurrent costs.
356. The estimated cost will be determined during a market request for information and subsequent business case development. Recent increases in information hardware and services costs, coupled with additional cyber security requirements, may significantly increase the investment required.
357. Wider deployment of internet voting to other elector classes for the 2027 State general election would introduce an unacceptable level of risk to electoral integrity, including risks relating to short lead-times between nomination of candidates and production of ballot papers, technical performance, cyber security and, potentially, disinformation.
358. Any internet voting solution for governmental elections requires a higher standard of governance than other types of internet voting (such as for corporate and community organisations), as well as more robust technical standards and operational reliability.
359. System architecture and governance for internet voting must be informed by international standards and the operational protocols and auditing requirements that apply in the *Eleven Essential Principles for an Australian Internet Voting Service* published by the Electoral Council of Australia and New Zealand (ECANZ).³²³ It must be reviewed by an expert panel (cryptographers, mathematicians, system design, cyber security) to provide assurance of technical integrity both before implementation and following election events.

Kiosk voting trials for the 2028 Local Government elections should be explored

360. Kiosk voting machines at voting centres could deliver accessibility benefits and support faster counting and declaration of results. They could also provide flexibility for electors outside their state electorate to conveniently access an absentee vote, as well as voters in council elections where absentee voting is not presently permitted at all due to the complexity associated with the number of wards, contests, polls and referenda.
361. While the capital, operational and maintenance costs for a standalone New South Wales kiosk voting system currently do not offer a viable state-wide value proposition, the option should continue to be examined, with suitable funding. A cost benefit analysis of kiosk voting should include the environmental impact of electronic waste generated by hardware upgrade requirements.
362. The feasibility of kiosk voting should be explored through limited-scale trials at the 2028 Local Government elections, subject to a request for information to the market demonstrating suitable technology solutions and budgetary provision before July 2026..
363. This would achieve the 2016 NSW Joint Standing Committee on Electoral Matters (JSCEM) recommendation of a limited trial of kiosks in electorates where there was confidence in an expected result and consulting with electoral authorities from other jurisdictions regarding possible pooling and sharing of resources.³²⁴

³²³ Electoral Council of Australia and New Zealand, [Eleven essential principles for an Australian internet voting service](#), Canberra, 4 July 2017

³²⁴ Joint Standing Committee on Electoral Matters, [Administration of the 2015 NSW Election and Related Matters](#), Report 2/56, Parliament of NSW, Sydney, 17 November 2016, 20.

364. Longer term, the public interest in exploring broader TAV solutions is also likely to continue in response to the ongoing decline of physical mail services and potential limited availability in Australia (and internationally) of suitable paper and printing supplies. These anticipated changes will particularly affect voters in remote locations in New South Wales, as well as electors who are interstate or overseas during election periods.

A national approach should be taken to investment in and governance of electoral platforms

365. The challenges in developing secure, cost-effective and sustainable TAV channels are faced by all Australian electoral commissions. Each jurisdiction also faces potential procurement and implementation risks from a limited global vendor market.

366. While New South Wales is a sovereign jurisdiction within the Australian federation and undertakes its elections according to the State Constitution and other laws, its actions intersect with the broader Australian democratic culture and electoral technology ecosystem. The JSCEM has recommended that the NSW Electoral Commission consult other election management bodies regarding the sharing of resources, as a cost-mitigation method.

367. The introduction of broader eligibility for TAV via personal devices presents a reputational risk for all Australian electoral management bodies. Any additional TAV initiatives for New South Wales (beyond those proposed here for kiosk trials and the internet option for electors who are blind or have low vision) would best be undertaken as part of a national electoral technology system, cooperatively designed, commissioned and operated on behalf of the states, territories, and the Commonwealth.

368. A common national election technology system would promote electoral transparency, consistent with Australia's democratic conventions and values, and provide a consistent electoral experience for citizens, with national privacy, identity and cyber security assurance. These benefits are recognised and supported by a peak advocacy organisation for people who are blind or have low vision, as it would "foster consistency and inclusivity for all Australian voters, regardless of their location".³²⁵

369. The development and operation of this technology would best be undertaken by a standing national elections delivery organisation. Its role would include the design, risk assessment and delivery of digital elections platforms, including for voting, for use by all jurisdictions for their elections and referenda.

370. National Cabinet's stated priority to "deliver government services fit for the digital age" (tasked to Data and Digital Ministers) offers a context for consideration of this proposal, building on the initiative foreshadowed in 2018 for consideration by the Council of Australian Governments (COAG) for the development of a national internet voting service.

371. The recent establishment of the Inter-jurisdictional Forum on Electoral Integrity, co-chaired by a Deputy Secretary of the Department of Prime Minister and Cabinet and the Australian Electoral Commissioner, provides a new avenue for interjurisdictional and interagency information sharing and collaboration on ideas and initiatives relating to all matters of electoral integrity and security, including for the development and adoption of election technologies.

³²⁵ [Submission 21](#), Blind Citizens Australia, 14 September 2023, 1

Conclusions on steps to procurement and implementation

Design requirements

372. Drawing on recent global experience and stakeholder feedback, any TAV system implemented in NSW should be designed to include the following:

- a) An ability to be reconfigured for different election types including state general elections (Legislative Assembly and Legislative Council), local government elections (councillor and mayoral elections), by-elections and referenda
- b) Designed in line with ECANZ Eleven Essential Principles for an Australian Internet Voting Service, including for enfranchisement, security, integrity, privacy and vote secrecy
- c) Technical and security features:
 - encryption of vote information (on the elector's device) and decryption using a private key
 - separating data connecting the elector to the vote
 - mixing of votes after the close of election whilst maintaining verifiability
 - provision for the electoral management body to monitor the entire election event
 - future scalability
- d) System verifiability requirements (potentially codified in legislation) including:
 - individual verifiability to allow a user to verify their vote was cast as intended and recorded as cast
 - universal verifiability to allow external auditors to verify that the votes are counted as recorded
 - rigorous testing and compliance of software, potentially by an external accreditation organisation
- e) Publication of source code and system documentation
- f) Adherence to cyber security standards from Australian Cyber Security Centre, informed by international standards
- g) Robust contractual agreements with commercial third-party vendors to protect the supply chain, including visibility and input into the use of sub-contractors to deliver services, vetting of all staff who may need to access the system, and compliance with data protection standards such as the Essential Eight and requirements under the Digital Transformation Agency's Hosting Certification Framework
- h) Project deadlines with internal end-to-end testing complete and operational systems integrated six months before state-wide election events, to provide a go/no go decision point.

Project milestones for internet voting for the 2027 NSW State election

373. An internet voting solution for the State general election in March 2027 will be informed by the NSW Electoral Commission's previous iVote experience and in consultation with members of the Electoral Commissioner's Equal Access to Democracy (Disability) reference group representing electors who are blind or have low vision. An indicative schedule includes:

- a) Business case development including Request for Information (RFI) to potential suppliers – October 2023 to February 2024
- b) Funding approval – July 2024
- c) Solution design and tender preparation – July 2024 to December 2024
- d) Confirmation of intent to proceed with SGE2027 implementation – December 2024 (Required prior to starting procurement process)

- e) Procurement – January 2025 to March 2025
- f) System development and implementation – April 2025 to March 2026
- g) System testing – April 2026 to June 2026
- h) Integration and process testing – July 2026 to September 2026
- i) System readiness go/no-go (6 months to election) September 2026

Project milestones for a trial of kiosk voting for the 2028 NSW Local Government elections

374. To undertake a limited trial of kiosk voting for the 2028 Local Government elections an internet voting solution for the State general election in March 2027, an indicative schedule includes:

- a) Business case development including Request for Information (RFI) to potential suppliers – October 2024 to February 2025
 - b) Funding approval – July 2025
 - c) Solution design and tender preparation – July 2025 to December 2025
 - d) Confirmation of intent to proceed with Local Government election 2028 implementation – December 2025 (Required prior to starting procurement process)
 - e) Procurement – January 2026 to May 2026
 - f) System development and implementation – May 2026 to July 2027 (noting this occurs over the 2027 State General election period)
 - g) System testing – July 2027 to October 2027
 - h) Integration and process Testing – October 2027 to February 2028
 - i) System readiness go/no-go (6 months to election) March 2028
-

Appendices

Appendix 1: Eleven essential principles for an Australian internet voting service³²⁶

The following eleven essential principles for an internet voting service were endorsed by the Electoral Council of Australia and New Zealand (ECANZ) on 4 July 2017.

These principles are reflective of existing best electoral practices as they apply to current voting channels.

In developing these principles, the ECANZ examined the United States Election Assistance Commission's 'Voluntary Voting System Guidelines (VVSG 2.0)', and the Council of Europe's intergovernmental standards for e-voting (CM/Rec (2017)5) – drawing on these standards and principles to develop eleven essential principles to guide the design and implementation of an internet voting service in Australia for use by all member Electoral Commissions.

Enfranchisement

Accessibility

- as far as is practical, all eligible people should be able to access the internet voting service

The internet voting service shall be designed, as far as practicable, to enable eligible voters to vote independently regardless of disabilities, technology, or geography. The internet voting service will be an additional and optional service for specific eligible voters to use. It would be offered in conjunction with other pre-existing methods of voting.

Usability

- the process of internet voting should be sufficiently easy for eligible people to cast a vote

The user interface of the internet voting service should be easy to understand, intuitive, and able to be used by all eligible voters on multiple technology platforms. Information provided may be presented differently depending on the differing technologies and channels which the service can be accessed on. For example, the electoral content presented on an electronic ballot paper will be the same as on the physical paper ballot paper (ensuring impartiality and equitably); however, changes may be made in accordance with relevant legislative provisions while ensuring usability on each technology platform.

One person, one vote

- the ability to ensure that each eligible elector receives only their voting entitlement

The internet voting service should enable each eligible voter to be uniquely identified, ensuring that they are distinguishable from other voters. The service should cater for any legislative requirements around the presentation of identification documents. An eligible voter will only be able to use this channel if they can be uniquely identified this way. The service will check eligibility and only grant access to those that have been authenticated as an eligible voter. The service will have a process to ensure that only one vote per eligible voter is admitted to the count.

³²⁶ Electoral Council of Australia and New Zealand, [Eleven essential principles for an Australian internet voting service](#), Canberra, 4 July 2017

Integrity

Security

- prevention of loss, corruption or tampering of votes

The internet voting service and responsible Electoral Management Body shall protect authentication data so that unauthorised parties cannot misuse, intercept, modify, or otherwise gain knowledge of this data. The authenticity, availability and integrity of the electoral roll and lists of candidates shall be maintained. Only persons authorised by the electoral management body shall have access to the central infrastructure, the servers, and the electoral event data.

The audit system should be able to detect voter fraud and provide proof that all counted votes are authentic. The audit system shall be open and comprehensive, and actively report on potential issues and threats. Where incidents that could threaten the integrity of the service occur, those responsible for operating the equipment shall immediately inform the electoral management body. Procedures shall be established to ensure regular installation of updated versions and corrections of all relevant software as the service will need to be continually evolved to meet and protect against potential and actual issues and threats.

The service will encrypt votes if they are to be stored or communicated outside controlled environments. The electoral management body shall handle all cryptographic material securely. Votes shall be kept sealed³²⁷ until after the close of polling.

Robustness

- the system and processes are not subject to significant interruption or failure

Robustness applies to people, process, and technology. The internet voting service must be available, reliable, and secure to ensure that it can function on its own, irrespective of shortcomings in the hardware or software. The technical solution for the service will be peer-reviewed to help ensure availability, reliability, usability, and security. The service shall identify votes that are affected by an irregularity so that necessary measures are taken, and stakeholders are informed. The electoral management body administering the service will ultimately be responsible for compliance with the above even in the case of failure.

Transparency

- the service and processes be designed to enable scrutiny, to provide stakeholder confidence

The internet voting service and accompanying processes will be established with a focus on transparency. The service will ensure that the way in which eligible voters are guided through the internet voting process shall not lead them to vote without due diligence or without confirmation. The service should be designed to allow the voter to express his or her true will. A voter will be allowed sufficient time to consider their choices and will be under no obligation to commit their vote without time for reflection on their choices. Upon casting their vote, the service will verify to the voter that his or her intention is accurately represented and that the vote has been submitted. Any alteration to the voter's vote should be detected by the service.

Voters and third parties should be able to observe the count of the votes and check that only eligible voters' votes are included in the results. The service will provide evidence that only eligible voters' votes have been included and this evidence will be auditable.

Clear and unambiguous information about the internet voting service should be available to the public explaining how to use the service and how the service operates.

The service should be open for verification, assurance, and scrutiny purposes. Observers, to the extent permitted by law, shall be enabled to observe, comment on, and scrutinise the internet voting component of an election, including the compilation of the results.

³²⁷ Sealed is an analogy to the seal on a physical ballot box. This is the term used in the European standards.

Independence

- accountability for the system and processes shall rest with the Electoral Management Body

The electoral management body will be accountable for the internet voting service of an electoral event. The electoral management body must be able to put into place assurances that maintain their electoral integrity and independence.

Impartiality

- the voter's intention should not be affected by the voting service

An eligible voter's intent should not be affected by the internet voting service. The service will ensure that the way in which voters are guided through the process and the information displayed will not influence their vote.

The service should be structured to ensure that voter's do not miss anything during the voting process. It should provide a means for informal voting by allowing a blank vote to be cast, however advising the voter they would be casting an informal vote and providing them with the option to change their vote if they wish. This provides an equitable approach across channels enabling voters to cast an informal vote via both the service and the paper-based option. Other than a blank ballot paper, all formality rules will be enforced by the service.

Accuracy

- the service should accurately capture, store, and export the voters intention

The internet voting service shall provide sound evidence that only votes from eligible voters are included in the result while de-identifying a completed ballot paper from its voter. The service shall support the voter in marking the ballot paper and accurately store, capture, verify, and export the vote cast. Before an event, the electoral management body administering the service shall satisfy itself that the service is genuine and operates correctly.

The service shall allow and support evaluation regarding the compliance of the service and its related components. This should occur upon introduction, periodically and after significant change to the service has been made.

Privacy

Privacy of personal information

- the system and processes shall maintain the privacy of personal information

The internet voting service shall process and store, if necessary, only the personal data needed for the conduct of the electoral event. The electoral management body administering the service will determine what information is deemed necessary to keep and dispose in accordance with relevant legislative obligations. Any information retained will be secure and any information not required to be retained will be securely disposed of.

Secrecy of vote cast

- the service shall maintain the secrecy of the votes cast

The internet voting service shall be organised in such a way as to ensure that the secrecy of the vote is respected at all stages of the voting process – from pre-polling through to counting of the votes. Votes shall remain sealed until the counting process commences. During completion of the ballot paper, the service will protect the secrecy of the voter's choice. The service should not provide a proof of vote preferences that would facilitate coercion or vote buying.

The service will be able to de-identify a voter from their completed ballot paper to preserve the secrecy of the ballot. The order in which votes are cast shall be mixed to deny reconstruction of the order of votes submitted.

Appendix 2: List of submissions

Submission number	Author
1	Vision Australia
2	Physical Disability Council of NSW
3	Mr Ian Brightwell
4	Accessibility NSW
5	Carers NSW
6	Australian Election Company
7	Deaf Australia
8	Scytl Australia
9	Australian Department of Foreign Affairs and Trade
10	Blind Citizens Australia (endorsed by The Australian Communications Consumer Action Network, Guide Dogs Australia and People with Disability Australia)
11	Deaf Connect
12	Guide Dogs Australia
13	NSW Ageing and Disability Commission
14	Ms Amanda Tink
15	Ms Susan Thompson
16	Anti-Discrimination NSW
17	Council for Intellectual Disability
18	The Law Society of New South Wales
19	The Victorian Electoral Commission
20	Scytl Australia
21	Blind Citizens Australia
22	Accessibility NSW
23	Vision Australia
24	The Law Society of New South Wales