



COMMONWEALTH GRANTS COMMISSION

DISCUSSION PAPER CGC 2002/7

**DEVELOPMENTS IN TECHNOLOGY AND PUBLIC ADMINISTRATION -
IMPLICATION FOR ASSESSMENTS**

For discussion at the Commission's Staff Conference
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TABLE OF CONTENTS

Introduction	3
A Research Plan	5
Proposed Action	6
Broadband Telecommunications in Rural and Remote Areas	8
Telecommunications Technologies and Associated Costs	11
Impact of Technology on Assessments	13
Dispersion	14
Service Delivery Scale	16
Conclusion	18
ATTACHMENT A — Commonwealth Government Telecommunication Projects	19
Networking The Nation	19
National Bandwidth Inquiry	20
The Broadband Advisory Group (BAG)	20

INTRODUCTION

1. Some States, in particular Victoria, have argued over a number of years that new technology and innovation enables governments ‘to change the processes by which they gather, analyse and transfer information; and market, sell and purchase goods and services’. They have suggested that the Commission:

- (i) did not take full account of practices in States which fail to adopt better practices, including intensively utilising the potential of Information and Communications Technology (ICT) to reduce costs; and
- (ii) possibly redistributed away efficiency gains made by States who did so.

2. These States have claimed that intensive use of ICT substantially reduced unit costs of providing services — in particular health, education and law and order services — in the rural and remote areas. They have then argued that, as a result, the Commission’s assessment of the dispersion and service delivery scale (sds) factors unduly favour those States that have relatively more people living in the rural and remote areas.

3. Moreover, they have argued that technology ‘has transformed public administration with new services, such as e-commerce and e-government, becoming widespread’. Along with outsourcing, privatisation and decentralisation of decision making, they have contended that ICT exerted a downward impact on ‘fixed head-office type’ costs that the Commission assessed in the administrative scale factor.

4. Other States, in particular the less populous States, have rebutted these arguments. They have suggested that the higher use of ICT increased the quality of services in the remote and rural areas. In turn, this increased the expectation of people living in these areas of receiving a level and quality of services comparable to people living in the more urban areas. Accordingly, they claimed that, regardless of the direction of unit costs, overall levels of expenditure increased and would continue to increase.

5. Some States also questioned whether ICT necessarily reduced unit costs, because investment in ICT was very expensive relative to the size of the State. They also claimed that the current ICT infrastructure in large, sparsely settled areas suffered from a lack of availability and access to adequate capacity, and reliability problems that precluded intensive and effective use of technology in the delivery of services.

6. Because investment in ICT requires substantial upfront planning and co-ordination, some States argued it increased the administrative scale factor.

7. Whether technology-based services are realistic replacements for face-to-face contact with service providers was also an issue. For example, it was argued that Indigenous people respond poorly to services that are not based on a ‘relationship’ with the providers.

8. Arising from these differences in perspective, the States have used their workplace discussions to present the Commission with contrasting evidence of the impact of technology. For example, Victoria sought to demonstrate the beneficial impacts of technology on both cost and quality of service delivery¹. Western Australia, on the other hand, focussed on the limitations of technology in relation to cost, reliability, quality and availability².

9. These issues are not new. The Commission considered some of the impacts of changes in public administration in the 1999 Review. Specifically, these included Microeconomic Reform (MER), in particular the National Competition policy (NCP), and the more widespread use of computer based technology.

10. In *Discussion Paper CGC 2000/6 Impact of Changes in Public Administration*, the Commission indicated, after considering a broad range of new and ongoing changes in public administration, that the changes most likely to impact on its assessments on a continuing basis were:

- (i) MER — mainly NCP, privatisation, corporatisation, outsourcing and regulation costs;
- (ii) technological advances — including their impact on regional and rural areas; and
- (iii) tax reform and associated matters.

11. That paper suggested that the effects of technological changes on different services and on different disabilities were probably best handled on a category-by-category or factor-by-factor basis, as part of the normal 2004 Review processes.

12. Since then, in response to claims made by States, the Commission has said that it needed to establish ‘the facts’ for itself. It said that it wanted to establish:

- (i) the geographic availability of different technologies used in service provision across Australia;
- (ii) what they cost; and
- (iii) what the standard State policy was.

13. This paper suggests how this might be achieved. It sets out a research plan aimed at providing guidance to the Commission on questions such as:

- (i) what typical ICT based services could be provided in a given region — keeping in mind the level and type of infrastructure in place, and

¹ At Mildura, Victoria demonstrated how the use of ICT facilitated improved data gathering, sharing and access to important policing information; for example, communicating details of crimes and images of wanted persons and suspects through Intranet or email.

² At Karratha, Western Australia highlighted lack of reliability and adequacy of information handling capability for potential ICT-based health services.

associated costs (for example, to what extent is the use of ICT inhibited by the cost per head of target population in a region);

- (ii) what the cost-performance trade-off might be and whether it can be quantified to help compare regions in the less populous States with those of more populous States on the basis of cost-effectiveness;
- (iii) whether the less populous States need to fully replicate the ICT infrastructure of the more populous States to be as cost-effective — is the pattern of necessary investment lumpy or incremental, and what factors does it depend on;
- (iv) whether small governments could benefit from the amalgamation of ICT infrastructure with other States, and to what extent this is happening; and
- (v) how the use of technology in service provision would impact on the elements of the assessment, such as the component weights and factors?

14. This paper also reports some of the Commission staff's preliminary findings and conclusions on:

- (i) the availability and cost of broadband Internet access in Australia;
- (ii) the availability and cost of providing services using different network technologies; and
- (iii) the way our assessments might be altered because of the impact of technology.

A RESEARCH PLAN

15. A key issue for the Commission is whether all States have access to cost-effective ICT infrastructure which enables them to provide ICT intensive services at different unit costs or at different standards³ in different regions. In this paper, references to ICT infrastructure means telecommunication systems that include physical infrastructure and supporting communications software to allow point-to-point communications.

16. In the past, private demand resulting from the pattern of settlement, levels of disposable income and other socio-demographic characteristics, determined patterns of investment in successive generations of networked infrastructure.

³ National Telehealth Plan identified four priority areas of work in December 2001. Among these were the future financing arrangements for telehealth service delivery and securing access to telecommunications infrastructure.

17. Because ICT will allow fundamental changes in the way government services might be delivered, there is now active consideration of public investment in ICT infrastructure to deliver these services. This is particularly so in the sparsely settled areas where private demand has not encouraged much investment. The Commonwealth and some State governments appear to be making selective investment in, or subsidising access to, ICT infrastructure in some areas. There is also some co-ordinated action at the national level, for example, through the National Telehealth Plan.

18. How governments evaluate ‘business cases’ for investments in ICT infrastructure is also important for us. The range of criteria used to do so needs to be investigated, including ‘social feasibility’ such as how non-acceptance of ICT-based services on the part of ‘customers’ might be taken into account⁴.

19. For the assessments, ICT-based services would impact mainly through changes in the relative costs and use of inputs, because changing unit costs of one or more inputs would create incentives for modifying the mix of all inputs. If costs of accessing technology based services differ across regions, it is likely that combinations of inputs used in delivering services and hence cost structures across regions will differ too.

Proposed Action

20. Based on our understanding of the impacts of ICT-based technology to date, and our discussions with the States, Commission staff have proposed questions we would like to address and set out the work we will undertake to answer them. The objective is to understand the standard policy on the use of ICT in the provision of services, in each type of circumstance, by type of service and type of client, and what it costs. We will keep in context patterns of settlement and clusters of population, and the reality that the provision of many ICT-based services to remote and isolated areas is supported from major cities and regional centres.

21. The questions and action plans are as follows:

- (i) What is the current roll-out of different types and levels of ICT infrastructure? What are their technical capacities and limitations?
- (ii) What representative tasks are associated with provision of ICT-based government services, across a spectrum of associated demands on the network capabilities?
- (iii) Are there service delivery limits, like size of catchment populations, for each service?

⁴ The Northern Territory, for example, agrees that broadband services provide administrative benefits, enhanced communication and information services through the Internet and email and some new services through video-conferencing and interactive applications. However, it argues that the services are not uniform in all locations or for all purposes. For example, video-conferencing can be used successfully in legal proceedings, job interviews and medical consents, but not so successfully in education and training. There is a strong business case for use of ICT applications in health, but not so strong a case for its use in education.

- (iv) What are the cost differences in using the current ICT infrastructure (mostly privately owned) in different parts of the nation in performing a range of representative tasks?

Action Plan. We hope to produce maps that show regions in Australia by patterns of costs and performance measures. We will also attempt to relate cost and performance measures to a range of tasks relating to typical Education⁵, Law and Order⁶ and Health⁷ services. We propose to examine the issues by December 2002 using:

- information provided by States, including at workplace discussions and at the Staff Conference in November 2002;
 - publicly available information;
 - liaison with experts; and/or
 - appointment of a consultant, if necessary.
- (v) what actions have the State governments taken to supplement the privately available technology infrastructure to expand the locational boundaries within which ICT can be applied to service delivery?
- (vi) what types of ‘business cases’ are the States applying in their decisions to use, or expand, ICT availability? In particular do they evaluate:
- wider, and shorter or longer term, economic (including private) benefits, and if so, how;
 - efficiency and effectiveness of ICT-based services, and the ‘customers’ view of them; and
 - impact on ‘head-office’ type costs?

Action Plan. We propose to examine State governments’ policy on justification required for the use or expansion of ICT for service delivery purposes by having discussions with selected States (NSW or Victoria, and the Northern Territory) by February 2003.

- (vii) What impacts, in relation to some common services, have ICT-based services or general technological developments had on unit cost, cost structures, and on types, quality and levels of services provided?

⁵ For example: distance education; access to knowledge resources; submission of homework; and teacher training and development.

⁶ For example: co-ordination of police patrols and obtaining evidence for court proceedings from witnesses through video conferencing facilities.

⁷ For example: remote diagnosis, teleradiology and specialist advice.

Action Plan. Understanding these impacts could lead to the application of different cost structures or disabilities in the assessments. These would allow greater differentiation between the more urban areas on one hand, and the regional and remote areas on the other. We propose, by March 2003, to select a set of locations and to send out a questionnaire to each State asking it to respond to a set of objective and evaluative questions for these locations.

- (viii) Are there some types of people, or circumstances, that prevent the use of otherwise common ICT applications in some situations?

Action Plan. The proposed questionnaire would also attempt to evaluate customers' view of common ICT-based services.

22. The research will not comprehensively answer all questions, but it should provide enough evidence to allow educated judgements to be made about the extent to which ICT-based services are cost-effective in different situations.

BROADBAND TELECOMMUNICATIONS IN RURAL AND REMOTE AREAS

23. This section focuses on broadband⁸ Internet access in Australia, with an emphasis on comparing the costs of services in the urban areas relative to the rural and remote areas⁹. One important context for the comparison is a range of initiatives the Commonwealth Government has taken to reduce the cost and accessibility differential of telecommunication services between urban and rural/remote areas. These initiatives are described in Attachment A.

24. The Broadband Advisory Group (BAG) of the National Office of Information Exchange (NOIE), in a discussion paper titled *Broadband in Health: Impediments and Benefits* in July 2002, reported that broadband communications using a range of technologies were available. However, while there were advances in the roll out of broadband networks, access to appropriate broadband networks, particularly for remote areas, continued to be an issue.

25. Similarly, the National Bandwidth Inquiry¹⁰ found that there was sufficient 'backbone' network¹¹ capacity in and between major centres, particularly on the east coast. However, there were few spurs off the main backbone into regional areas and the 'last mile' (the connection from the backbone usually at a local exchange to premises), was expensive in metropolitan and regional areas. Availability and access across Australia was therefore

⁸ Broadband is the term used to describe network infrastructure capable of transporting data at rates in excess of 250 thousand bps (bits per second), this being sufficient to support real-time transmission of video data.

⁹ Costs in this document relate specifically to telecommunications (the exchange of data between distributed computers) and do not include devices such as mainframes and PCs that may be connected at either end.

¹⁰ Conducted in 1999 by the Australian Information Economy Advisory Council, Department of Communication, Information Technology and the Arts.

¹¹ The backbone network, which links major cities, is mainly a fiber optic cable network.

not uniform. There were limitations in the 'backbone' in places such as regional Western Australia. There were other limitations in terms of access to regional centres from the east coast because of lack of availability of spurs.

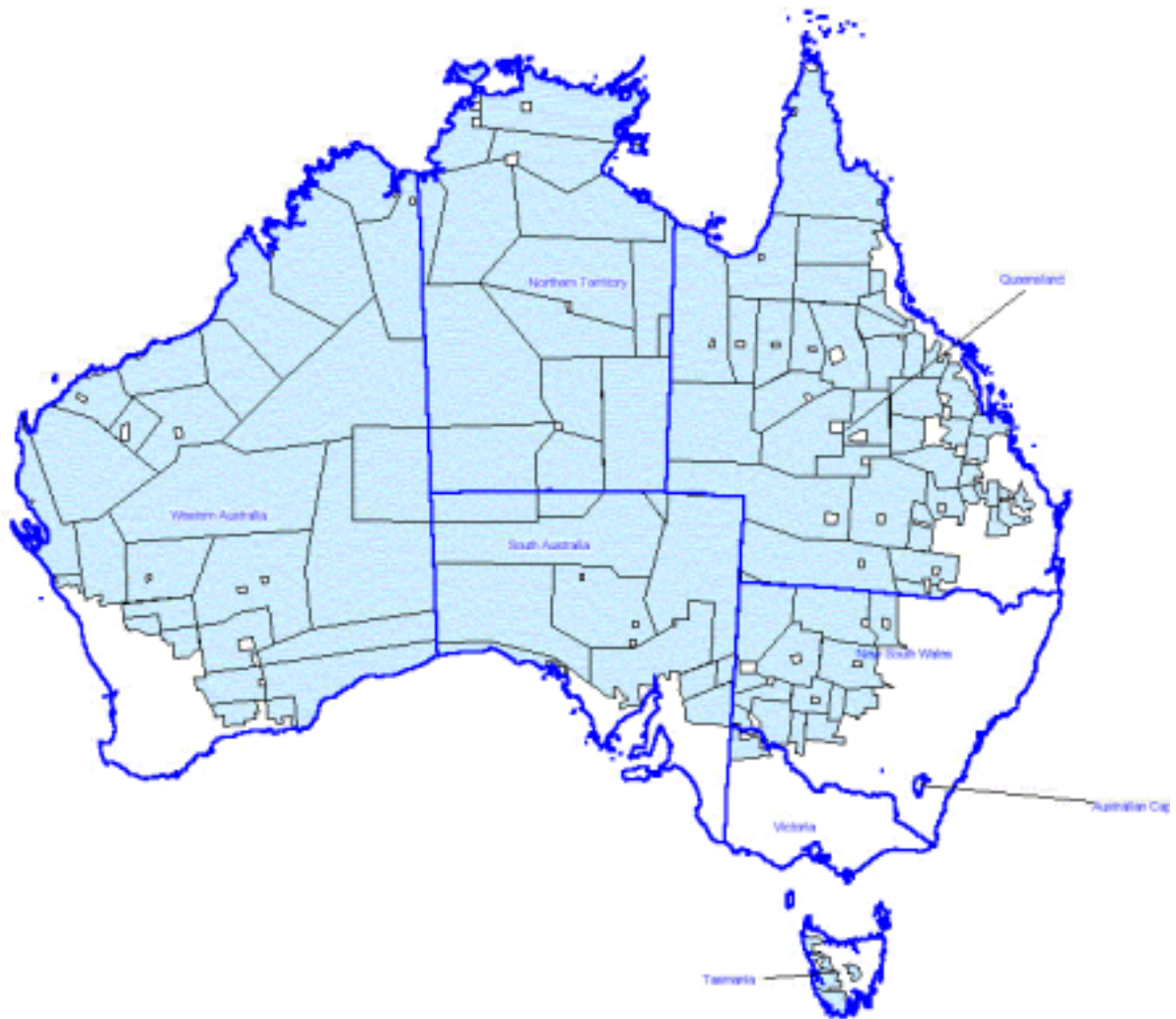
26. There are several technologies that can supply the 'last mile' broadband communications capacity. Each has benefits and limitations.

- (i) Asymmetrical Digital Subscriber Line (ADSL), other forms of Digital Subscriber Line technology and cable are the most common technologies in metropolitan areas.
- (ii) Leased lines on Integrated Services Digital Network (ISDN) provide narrowband connections in many places but have limitations.
- (iii) Satellite is, technically, available everywhere.
- (iv) Wireless is a possibility in the future but is not currently widely available as a commercial offering.

27. All of these technologies have their limitations. Among them is the asynchronous nature of ADSL and one-way satellite, which limits their use for services that require real-time interactivity. Satellite, because of high latency, creates difficulty in interactivity. Cable is limited by its rollout; as it must physically connect to premises to be available, and is less likely to be rolled-out in regional areas because of associated costs. Wireless is sometimes limited to line of sight. The systems that do not require line of sight often do not supply high bandwidth because of the frequency used.

28. The shaded area of Map 1 shows the extended or remote telecommunications zones that are not covered by telephone lines or cables capable of supporting broadband transmissions. Subscribers in this area rely on satellite services for broadband services.

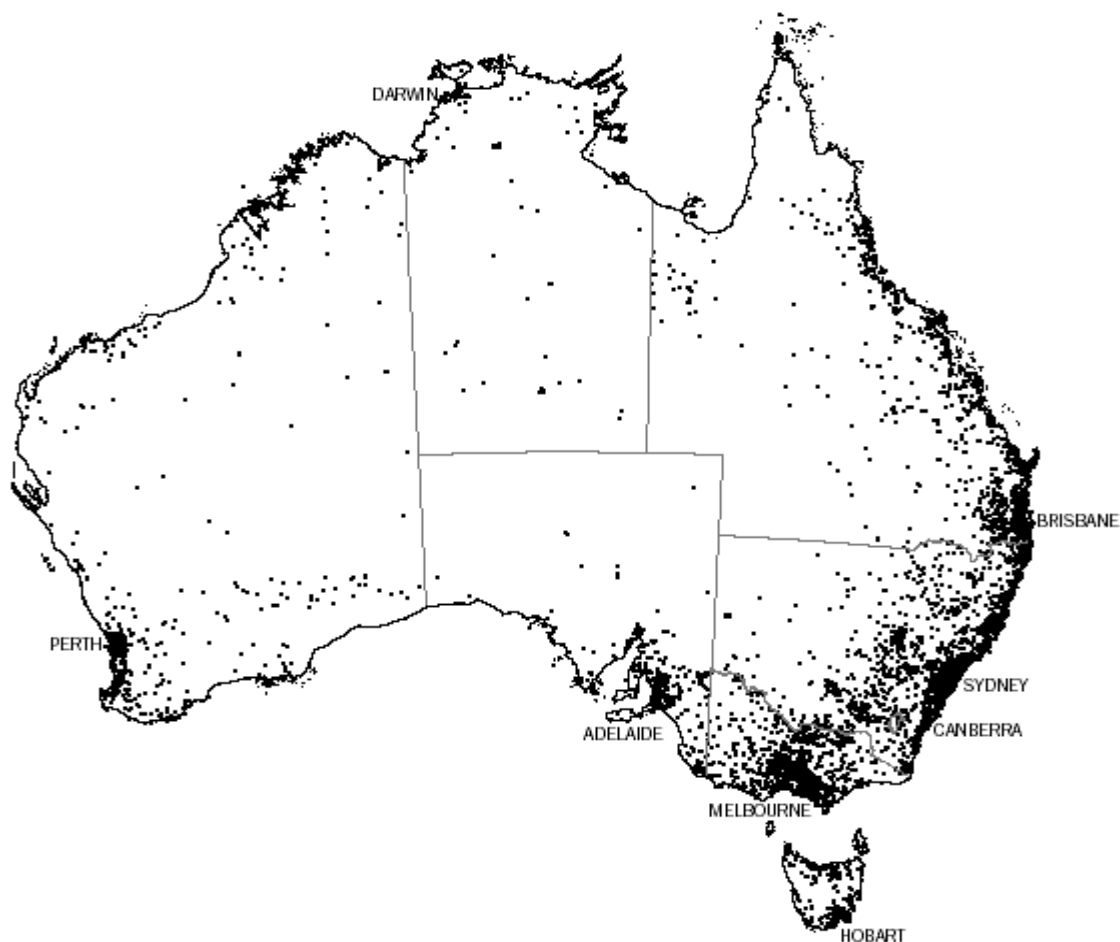
Map 1 EXTENDED COMMUNICATIONS ZONES



Source: Australia Communications Authority

29. Map 2 shows the population distribution in Australia in 2000.

Map 2 POPULATION^(a) DISTRIBUTION, AUSTRALIA – 2000



Source: ABS, Regional Population Growth, Australia and New Zealand (3218.0).

(a) Estimated resident population

30. There is a strong correlation between the large areas of sparse population density in Australia and the non-availability of telephone lines or cable capable of supporting broadband transmissions. This mandates the use of satellite technology for broadband services in remote areas, which introduces the cost element of the use of technology.

Telecommunications Technologies and Associated Costs

31. Using Telstra's services as a guide, Table 1 provides an example of pricing for telecommunications use of 'BigPond' broadband services that are generally relevant to remote areas. Satellite is the only generally available solution for regions that are not connected by the conventional telephone network (copper wire).

Table 1 AVAILABILITY OF NETWORK TECHNOLOGIES IN AUSTRALIA BY TYPES OF REGIONS¹²

Urban	Rural	Remote
Basic PSTN	Basic PSTN	Basic PSTN
ADSL		
HFC cable		
ISDN	ISDN	
MMDS	MMDS	
One-way satellite	One-way satellite	One-way satellite
Two-way satellite	Two-way satellite	Two-way satellite
2.5/3G	2.5/3G	

Source: Productivity Commission, Remote and Rural Telecommunication Services, July 2001

Note: One-way satellite services use the PSTN for sending data from the user (upstream transmission). Two-way satellite services are not reliant on the PSTN for upstream transmission. Third generation mobile services (3G) are not yet available.

32. Table 1 confirms that the only generally available communications technologies for broadband services in remote areas are satellite-based as very few remote communities have PSTN access. On this basis, Table 2 compares the relative costs of using different technology in Telstra’s ‘BigPond’ services offerings.

¹² PSTN – Public Switched Telephone Network, the conventional copper wire dial-up telephone network. This network supports ISDN and ADSL.

- ISDN – Integrated Services Digital Network, a digital service providing switched and dedicated integrated access to voice, data and video. A basic rate ISDN service consists of two 64 thousand bps (bits per second) channels and supports a range of voice, data, fax, video-conferencing and digital imaging services. Because it has 2 channels one can be used for telephone and the other for Internet access. ISDN is generally provided by using the copper pair cable of the normal customer access network but it can only be extended up to 5 kilometres (cable distance) from a digital exchange.
- ADSL – Asymmetrical Digital Subscriber Line, a compression technology that allows combinations of services including voice, high-speed data and one-way full-motion video to be delivered over existing copper lines to customers' premises. Line speeds of up to 1.5 million bps can be achieved. The effective distance that ADSL can be used from a digital exchange is approximately 5 kilometres.
- HFC cable – Hybrid Fibre Coax cable, speeds of up to 2 million bps. Cable access is currently restricted to selected areas of Australia’s major cities (eg. Transact in Canberra)
- MMDS – Multipoint Microwave Distribution System, is a wireless broadband technology for Internet access. MMDS uses microwave technology to transmit digital data over distances of up to 70 Km (line of sight).
- 3G – the next generation of mobile networks that will handle high bit-rate data connections.
- Satellite – supports downstream data transfer rates of up to 512 thousand bps. Satellite represents the most appropriate technology for “extended zone” or remote users who do not have access to the PSTN.

Table 2 COMPARATIVE BROADBAND COSTS - TELSTRA^(a)

Technology Type	Installation Costs	Monthly Fee	Monthly Usage allowance	Rate per additional Megabyte above allowable limits	Total fee
	\$	\$	Gigabyte	\$	\$
Cable	189	64.95	1	0.149	1358.10
ADSL	249	93.45	1	0.149	1931.10
Satellite	2365 ^(b)	60.50	1	0.264	3454.00

Source: Telstra BigPond, September 2002.

- (a) This table represents a sample derived from Telstra's BigPond Business Plans for an 18-month contract. It does not include any rebates or arrangements that businesses, State or local governments may negotiate.
- (b) Telstra offer 50 per cent rebates, capped at \$765 for satellite customers in certain limited areas under the Federal Government Special Digital Data Service Obligation.

33. The comparison illustrates that telecommunications services in remote and rural areas incur a higher cost of provision and have the associated difficulty of ensuring a quality of service comparable with urban areas. Hardware purchase and installation is a significant component in the cost of satellite access when compared to cable or ADSL.

34. In summary, we conclude that settlement characteristics and remoteness are important in determining the type and cost of broadband ICT or telecommunications technology available in different parts of Australia.

IMPACT OF TECHNOLOGY ON ASSESSMENTS

35. Improvements in technology, in the wider sense, are the driver that enables sustained economic growth through enhancements of productivity. Since technology, particularly when embodied in certain inputs, impacts through reduced relative costs of that input, it might change the combination of various inputs required to efficiently produce services.

36. Public administration is no exception to this general principle. Improvements in technology enable governments to improve quality, or reduce costs of providing services. As technologies are adopted, they lead to changes in levels of relative costs, and in total expenses across States, regions and services, depending on choices made by governments¹³.

37. In relation to the Commission's assessments, these changes are captured through:

¹³ Governments could choose to use the freed up resources to improve any or all services, including those in remote areas. The mechanics of public choice determine how the gains are spread.

- (i) changes in total expenses, leading to changes in standard expenses for individual categories, including the components into which categories are dissected; and
- (ii) changes in relative costs across regions, measured in some of the disability factors.

38. ***Changes in standard expenses.*** The effects of changes in the use of ICT on standard expenses can include:

- (i) changes in standard expenditure for particular categories — ICT may result in savings in some categories which, depending on State policies, may actually be saved (all other things being equal this would affect the budget result), spent in the same function that produced them, spent in other functions, or result in tax reductions;
- (ii) changes in standards for other categories, such as the capital related categories of depreciation and debt charges, through shifts in the mix of capital and labour inputs used to provide services; and
- (iii) shifts in the relative importance of components of expense within a category, reflecting changes in the ways services are provided.

39. Changes (i) and (ii) are reflected in the Commission's assessments through the inclusion of financial data for the latest year in the annual updates. The third type of change is usually only captured during a review.

40. ***Effects on disabilities.*** Changes to ICT potentially have the greatest effect on relative costs of service provision in different types of regions such as for urban, rural and remote areas. These are captured through the dispersion and service delivery scale disabilities because they are influenced by costs incurred in, or service delivery methods used which are particular to the rural and remote areas. Other effects could be on the administrative scale disability.

Dispersion

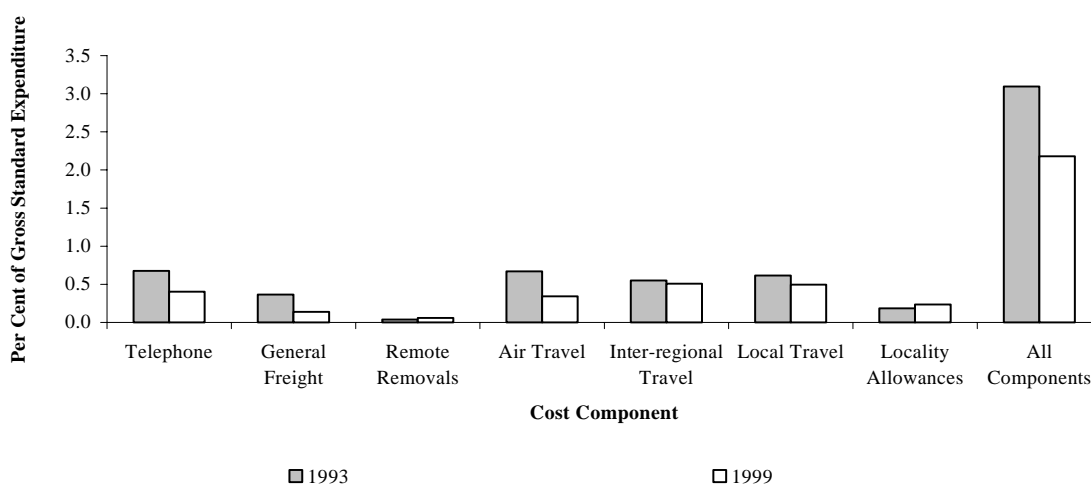
41. ICT potentially affects dispersion related expenses by changing levels of expense incurred on each cost component (freight, travel, communication and so on). This in turn affects the importance of the total dispersion disability in the Commission's framework (more or less dispersion-affected expense will increase or decrease the importance of the factor).

42. While successive reviews have shown changes in the relative importance of the various dispersion affected costs (relative to all other types of costs and between the various dispersion affected costs) it is not easy to establish the cause and effect relationships. For example, we can reasonably measure changes in unit costs of the dispersion-affected costs over time, but there is no direct data relating to changes in the volume and quality of services delivered in remote areas. It appears very plausible that

when States with more remote areas apply ICT intensive service delivery methods, the overall expenses on some cost types will increase, while others will decrease.

43. Comparison of dispersion-related costs the Commission has used in the last two reviews can throw some light on trends. Figure 1 provides a comparison of the proportion of expenses on each dispersion cost component relative to the total standard expenditure for the years 1993-94 (1993 Review) and 1999-2000 (1999 Review). It is clear that the relative recurring expenses declined for most components and declined substantially overall.

Figure 1 COMPARISON OF DISPERSION-RELATED COSTS AS PERCENTAGE OF TOTAL STANDARD EXPENDITURE IN 1993-94 AND 1999-2000, FOR EACH COST COMPONENT AND OVERALL



44. However, this comparison is partial because it relates to recurring costs only. It is also approximate because other variables, such as composition and settlement of population in remote areas changed between reviews. Besides, there are other effects that are not readily captured. For example, some of the reductions in recurring expenses might have been offset by increased expenses on capital related costs. This is likely if technology is more intensively used. Similarly, the mix of inputs used in providing services across types of regions might have changed.

45. ICT also changes the relative disabilities themselves by altering the relationship between distance and the dispersion-affected costs.

46. To take an example, the distance of smaller population centres from urban centres is a far weaker determinant of recurring communication costs now than it was in the past. As a result, the disability factors for communication costs would reduce. Table 3

compares the telephone cost component factors used in the 1993 and the 1999 Reviews¹⁴. The narrowing of the factor across States is self-evident.

Table 2 COMPARISON OF TELEPHONE COMPONENT FACTORS

Review Year	NSW	VIC	QLD	SA	WA	TAS	ACT	NT
1993	1.05	0.83	1.34	0.77	0.95	0.90	0.41	1.62
1999	1.06	0.89	1.18	0.85	0.90	0.91	0.61	1.17

47. Generally, levels of expense and assessed needs due to dispersion increase or decrease depending on how cost relationships with distance, the proportion of dispersion related expenses and the disabilities change over time¹⁵.

Service Delivery Scale

48. This factor allows for the higher costs that arise in sparsely populated areas because provisions of accessible services through small outlets are generally more costly. It is measured principally through staff to client ratios — generally higher in the remote area. It captures a different dimension of costs to the dispersion factor.

49. Changes due to technology could lead to changes in the relative service delivery scale disabilities within and between the States, and over time. For example, the use of ICT to deliver education in the remote areas could reduce the staff to student ratios and have a narrowing effect on the spread of disabilities.

50. It would be possible to compare changes in service delivery scale factors between the Commission's Reviews. This comparison could be used to reach conclusions on how changing methods of delivering services (including those due to employing ICT) have contributed to those changes, particularly if the spread of the factor across States has indeed narrowed over time.

51. However, as for dispersion, the comparison would be partial because it would relate to recurring costs such as those on staffing, and be approximate because other parameters would have changed at the same time. Moreover, because the methods applied to calculating the factor changed substantially between the 1993 and the 1999 Reviews, a proper comparison would require fresh analysis of data.

¹⁴ To enable a like-with-like comparison, the method used in 1993 has been applied to the 1999 telephone prices data. The published factors in the working paper for the 1999 Review are different because of input cost weights the Commission applied to the prices data in the 1999 Review. Input cost weights did not apply in the 1993 Review.

¹⁵ For example, assuming unit costs of the same inputs (relative to other inputs) decrease over time because of improvements in technology, expenditure would increase if either the intensity of that input in every unit of service, or the volume or the quality of service delivered, more than offset the reduction in the unit cost.

Administrative Scale

52. The conceptual bases for capturing changes in expenses on administrative scale (fixed 'head-office' type) costs are similar to those for dispersion. However, in practice, available data do not readily allow the separation of expenses on administrative scale from those on delivery of services.

53. However, it is of relevance that the Commission's 1999 Review substantially reduced the redistribution of grants due to this factor. This is presented in Table 3.

Table 3 EFFECT OF ADMINISTRATIVE SCALE FACTORS ON GRANT DISTRIBUTIONS, 1999 REVIEW AND 1998 UPDATE

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
1999 Review	-231.1	-134.4	-66.4	35.1	51.5	101.0	107.9	136.2	431.9
1998 Update	-265.9	-186.5	-149.6	78.7	96.8	97.4	91.5	237.7	602.1
Difference	34.8	52.2	83.2	-43.6	-45.3	3.6	16.5	-101.4	190.3

Source: Page 66, Volume II, 1999 Review Report, Commonwealth Grants Commission

54. In summary, regular updating of data used in assessing disabilities would enable these effects to be reflected in the Commission's assessments. For dispersion, we find that the changes from one review to the next have generally been consistent with expectation of the direction of impacts of technology on the dispersion disability. While it is preferable to update the data frequently, the disabilities — dispersion, service scale and administrative scale — have been updated at the five yearly reviews for practical reasons, primarily related to data provision loads on the States.

Broader Considerations

55. In some respects, arguments like those made by Victoria relating to the impact of technology on the assessments go beyond the narrower effects described above. This is because governments operate and allocate funds to competing services in a dynamic environment that is marked by continuous changes in relative input costs, including changes brought about by technology, the availability of resources and public choices. As for other resource allocation decisions, public choices made by State governments determine how gains from ICT would be spread across regions and groups in the population. In that sense, it is not sufficient to relate the impact of technology to the grant process alone, and it appears not very relevant to discuss the issue in isolation from why States do what they do.

56. In practice, we would not know much about the dynamics of public choice without elaborate measurements, and can only resort to conceptual mechanics to understand better how and in what directions changes in technology impact on public choices, and hence on the Commission's assessments.

CONCLUSION

57. State views are sought on the research that staff are proposing to undertake. Comments would also be welcome on our preliminary findings. Staff have concluded that private demand and population settlement patterns are the key factors determining the availability and price of broadband communications. We have also set out how we understand our assessments capture changes in cost due to changes in technology.

**ATTACHMENT A — COMMONWEALTH GOVERNMENT
TELECOMMUNICATION PROJECTS**

1. Infrastructure projects relating to ICT that the Commonwealth Government initiated in recent years are listed below.

- (i) Networking the Nation;
- (ii) National Bandwidth Inquiry; and
- (iii) Bandwidth Advisory Group (BAG).

Networking The Nation

2. Under *Networking The Nation*, the Commonwealth set up a Regional Telecommunications Infrastructure Fund and allocated \$250 million over five years, commencing in 1997. The fund is helping to bridge some gaps in the access to and costs of telecommunication services between urban and non-urban Australia. The Fund¹⁶ was allocated to:

- (i) New South Wales - \$37.4 million;
- (ii) Victoria - \$28.5 million;
- (iii) Queensland - \$53.1 million;
- (iv) Western Australia - \$26.5 million;
- (v) South Australia - \$26.5 million;
- (vi) Tasmania - \$58 million;
- (vii) Northern Territory - \$16 million; and
- (viii) Australian Capital Territory - \$4 million.

3. Over the past five years, the [Networking the Nation Board](#) has supported projects and activities that address a range of barriers to accessing telecommunications infrastructure and services. Examples of funded activities include:

- (i) providing new telecommunications infrastructure and services, including those in relation to the Internet and mobile telephony;
- (ii) providing training, skills development, and awareness-raising programs and services; and
- (iii) supporting survey, planning, and strategy development processes.

¹⁶ It included a small administrative component.

4. The fund has now largely been allocated¹⁷.

National Bandwidth Inquiry

5. The National Bandwidth Inquiry¹⁸ in December 1998 was a major Commonwealth Government study into the likely availability and price of bandwidth relating to the telecommunications network over a five-year period, because availability and access to bandwidth are widely regarded as a key enabler for the development of the information economy. Its focus has been on the 'backbone' telecommunications data networks and links within Australia, and between Australia and other countries, including:

- (i) the drivers of demand for bandwidth;
- (ii) bandwidth availability and pricing; and
- (iii) relevant commercial and regulatory issues.

6. The Inquiry provided the most comprehensive and systematic examination of the issues to date. It consulted widely on the issues and produced a number of reports and papers.

7. The Minister for Communications, Information Technology and the Arts released the final report in April 2000. It found that there was likely to be adequate bandwidth in the backbone network on most routes to meet the majority of demand scenarios. Prices were also expected to fall in all areas over the period, with decreases in wholesale prices of 30 – 50 per cent per annum expected on the more competitive routes.

The Broadband Advisory Group (BAG)¹⁹

8. Established in March 2002, BAG will operate within the NOIE and provide high-level advice to the Commonwealth Government on broadband development to ensure that its broadband policy framework optimises the economic and social benefits that could be derived from broadband services. To do so, it will work in close consultation with stakeholders in industry, small business and major service providers as well as key sectors such as health, education and community services, and provide a vehicle for fostering communication between stakeholders on the supply and demand side of the broadband market.

9. Chaired by the Commonwealth Minister for Communications, Information Technology and the Arts, it provides advice on:

- (i) appropriate ways to measure broadband take-up and success;

¹⁷ For further information, see http://www.dcita.gov.au/Article/0,,0_1-2_3-4_106337,00.html.

¹⁸ A sub-committee of the Australian Information Economy Advisory Council (AIEAC) oversaw the Inquiry. For further information, see http://www.noie.gov.au/projects/information_economy/bandwidth/index.htm.

¹⁹ For further information, see <http://www.noie.gov.au/Projects/consult/BAG/index.htm>.

- (ii) current impediments to, and likely drivers of, broadband take-up, particularly in key productivity sectors such as small business, education, health and community services;
- (iii) possible policy solutions to current and emerging challenges on both the supply and demand side of the broadband issue;
- (iv) market based strategies for raising broadband awareness, particularly in key productivity sectors;
- (v) strategies to encourage the development of marketable applications that will facilitate broadband take-up in key productivity sectors;
- (vi) emerging technologies and new business models for delivering broadband services, as requested; and
- (vii) issues that are likely to emerge as the Australian broadband market develops.

10. In providing this advice, it will have regard to current ACCC activities in relation to the development of a competitive broadband market in Australia.