



# Charles Todd Memorial Oration

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NBN Co

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# Sir Charles Todd



JA Little

RC Patterson

Sir Charles Todd

AJ Mitchell

Source: Ann Moyal, *Clear across Australia, A history of telecommunications, The Most Perfect Invention*, page 52

Photo: Picture of Charles Todd and his overseers at the Roper River Depot. From left: J.A. Little, R.C. Patterson, Todd, and A.J. Mitchell,

“Building out the HFC cable is not an economically viable option.”

“Other broadband technologies are more economic, particularly DSL.”

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Optus  
(2002)

Source:

Optus, Submission 36, p 3.

[http://www.aph.gov.au/Senate/committee/ecita\\_ctte/completed\\_inquiries/2002-04/broadband\\_competition/report/report.pdf](http://www.aph.gov.au/Senate/committee/ecita_ctte/completed_inquiries/2002-04/broadband_competition/report/report.pdf)



“My fundamental argument is that we need to get the market structure right first if we do that, the right technology will follow.

“ ... a market structure in which there are multiple providers of retail telephony and broadband services – and they all operate over the same network on equal terms.”

“For that to happen, none of them must own or control the network. Instead, they must buy services from the owner of the network’ and in turn the network owner must be restricted to selling services in the wholesale market rather than the retail market.”

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Paul Fletcher  
*Wired Brown Land*  
p 219-220

“The NSW Farmers’ Association supports the nation building development of the current National Broadband Network.”

“The development of any broadband network needs to provide the opportunity for rural customers to receive the same level of service at equitable prices.”

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Charles Armstrong  
NSW Farmers Association - President  
National Farmers Federation - Councillor  
17 August 2010

# Relative cost of publically funded networks



	1870	1950	2010
Telecommunications Infrastructure	Overland telegraph	Copper Customer Access Network	National Broadband Network
Estimated cost to public purse in today's AUD\$	\$0.9 Billion <sup>1</sup>	\$10 Billion <sup>4</sup>	\$27 Billion
Australian population	1.6 Million	8.1 Million	22.4 Million
Estimated cost per head of population	\$600 / person <sup>2</sup> \$5,365 / person <sup>3</sup>	\$1,222 / person	\$1,204 / person

Note:

- 1 Funded by SA State Government. 60% State's annual budget)
- 2 Australia wide
- 3 South Australia – the only state that funded the project
- 4 In 2009, £42 million. In 1945 is worth around £5,920,000,000 using the share of GDP, calculated using: <http://www.measuringworth.com/index.html>. Then converted to AU\$10,307,900,000 (using rates on 1 December 2009) on <http://www.oanda.com/>

Source: Australian Historical Population Statistics (2008)

“Not enough to pay interest, maintenance and all construction costs – but the incalculable value to the nation as a whole from the undertaking, warranted the understanding of a community who saw the long term value of the broader benefits and were not blinded by a necessity of immediate return.”

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Warwick Smith  
Charles Todd Memorial Oration  
(1995)

# Let there be light

$$\begin{aligned}\nabla \cdot \mathbf{E} &= \frac{\rho}{\epsilon_0} \\ \nabla \cdot \mathbf{B} &= 0 \\ \nabla \times \mathbf{E} &= -\frac{\partial \mathbf{B}}{\partial t} \\ \nabla \times \mathbf{B} &= \mu_0 \mathbf{J} + \mu_0 \epsilon_0 \frac{\partial \mathbf{E}}{\partial t}\end{aligned}$$

Source: Wikipedia



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