Charles Todd Memorial Oration

Mike Quigley
NBN Co
18 August 2010
Sir Charles Todd

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.”

Source: Optus, Submission 36, p 3.
“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.”
“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.”

Charles Armstrong
NSW Farmers Association - President
National Farmers Federation - Councillor
17 August 2010
## Relative cost of publically funded networks

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

**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.”

Warwick Smith
Charles Todd Memorial Oration
(1995)
Let there be light

\[
\begin{align*}
\nabla \cdot \mathbf{E} &= \frac{\rho}{\varepsilon_0} \\
\nabla \cdot \mathbf{B} &= 0 \\
\nabla \times \mathbf{E} &= -\frac{\partial \mathbf{B}}{\partial t} \\
\nabla \times \mathbf{B} &= \mu_0 \mathbf{J} + \mu_0 \varepsilon_0 \frac{\partial \mathbf{E}}{\partial t}
\end{align*}
\]
