USING ICT TO DRIVE YOUR SUSTAINABILITY STRATEGY

WHITE PAPER

AUDIENCE: Heads of Procurement, Sustainability, Risk, Energy, Environment, Information Technology
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Executive Summary

Australian corporations and government bodies face the imperative to create a platform in their own organisations to tackle the complex issue of climate change through sustainability strategies.

Sustainability means providing solutions that improve operational resilience, commercial sustainability and environmental sustainability

Sustainability means taking responsible action and providing solutions that improve operational resilience, commercial sustainability and environmental sustainability with the resultant environmental, commercial and social benefits. This is now more important than ever.

There is a wide range of Information and Communication Technology (ICT) solutions that have the potential to deliver a positive commercial outcome which can be modelled and proven whilst delivering a strong environmental and social benefit. WWF [1] has evaluated the role of ICT in meeting the challenge of climate change and concluded that if ICT was widely used it could help deliver up to 2-7 billion tonnes of greenhouse gas emission reductions annually, simply by scaling up proven, commercially viable solutions.

ICT can help reduce 2-7 billion tonnes of emissions annually using proven, commercially viable solutions

Many organisations have started a sustainability journey towards reducing their own contributions to greenhouse gas emissions in recognition of a burning platform for change. There is mounting pressure to embrace environmental and social responsibilities to address greenhouse gas emissions at a corporate level, the onset of government policy, carbon pricing increasing energy costs and the imperative of maintaining market relevance, credibility and competitiveness.

In order to address these growing imperatives, Australian organisations need to take action on two fronts: making operational changes through investments in new technology as enablers of sustainability outcomes and changing employee behaviours.

ICT solutions can improve productivity and efficiency as well as environmental sustainability

ICT solutions are instrumental to achieving sustainability outcomes for Australian organisations. Government policy is setting substantial national carbon mitigation and abatement targets, which will require large-scale energy conservation of the kind that ICT can demonstrably help to deliver. Operationally, ICT can also be a key productivity and efficiency enabler, helping organisations improve performance from the individual through to the enterprise level. ICT solutions will also prove to be critical in a time of global economic uncertainty, providing cost-effective solutions that will drive both productivity and sustainability benefits.

This white paper discusses climate change, its implications for Australian industry and the benefits in organisations pursuing an environmental sustainability strategy in particular. It demonstrates easy, expedient and cost-effective ways for organisations that could help reduce their energy use and greenhouse gas emissions by adopting ICT solutions including Telstra's next generation networks and existing ICT technologies, implemented by Telstra's Next Generation Services. Solutions including video conferencing, teleworking, web contact centres, fleet and field force management are examined.

Telstra's ROI tools demonstrate that less energy-intensive technology can provide quantifiable commercial outcomes

Telstra, with Capgemini's assistance, has developed sophisticated Return on Investment (ROI) tools to quantify the benefits of using these solutions in terms of reduced environmental footprint, operating costs, employee productivity and improved energy efficiency. These benefits are further examined in case studies in this white paper. Telstra's ROI tools demonstrate that organisations employing proven ICT solutions can make the transition to less energy-intensive technology platforms and business processes with quantifiable commercial outcomes, whilst delivering strong environmental and social benefits. This ensures that large organisations can ultimately drive productivity and growth in a sustainable way.

Disclaimer

The models used and examples given throughout this paper in relation to the possible benefits of adopting Telstra's ICT solutions are based on a number of assumptions, which are outlined in the Appendices to this paper. These assumptions may not be correct for your business. Importantly, the potential benefits outlined in this paper are indicative only and are subject to technical appraisal. Whilst every care has been taken in relation to these assumptions whether any benefits will actually be achieved will depend upon whether the assumptions used are accurate and appropriate for any particular business, how the business is currently conducted, and how Telstra's ICT solutions would be implemented by the organisation.

Call Telstra Enterprise and Government to find out more about solutions which may be suitable for you.

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1 Introduction

Australian organisations face increasing pressure to address environmental responsibilities

Historically, Australia has a poor record of managing greenhouse gas emissions, yet, according to the *Garnaut Climate Change Review* [2], it is particularly vulnerable to climate change. As a result, Australian organisations are under mounting pressure to embrace their environmental and social responsibilities as the nation moves towards a low-carbon future. Half of Australia's largest companies are risking cost blow-outs, increased regulatory burdens and reputation damage as a result of inaction on climate change issues, according to a report by the London-based Ethical Research Investment Services and the Centre for Australian Ethical Research [3a] in Canberra. This report also concluded that Australian companies were doing less to address climate change than their global counterparts.

Government regulation, social responsibility, brand differentiation and economic pressures are key drivers

The growing need for organisations to address sustainability as a critical business issue is being driven by a variety of factors including government regulation; corporate social responsibility as a brand differentiator for customers and employees, and increasing economic pressures. The Australian Government's proposed Carbon Pollution Reduction Scheme (CPRS) in 2010 will have a financial (energy cost) impact on all Australian firms and carbon pricing will encourage organisations to seek alternatives to energy use and travel. Meanwhile, the rising awareness levels of the general public about the potentially serious impacts of climate change are increasing the pressure on organisations to 'go green'. Finally, the current global financial crisis is likely to create a strong imperative for corporations to seek operational efficiencies and minimise costs, whilst maintaining productivity.

If action is not taken, capital investment, skills development, employee retention and thought leadership will be lost

For Australian organisations to remain relevant and competitive, adopting a sustainability focused strategy and implementing initiatives to mitigate climate change will be a necessary element of their overall business strategy. A study [3b] by Ethical Research Investment Services and the Centre for Australian Ethical Research raised concerns that if the pace of Australia's engagement with the environmental, social and government agenda did not accelerate, then opportunities in capital attraction, skills development, employee retention and thought leadership will be lost to foreign markets.

This white paper focuses on environmental sustainability strategies and quantifies the possible commercial and sustainability benefits

Telstra defines sustainability in terms of taking responsible action and providing solutions that improve operational resilience, commercial sustainability and environmental sustainability. In the current macro economic environment, clearly corporations need to be resilient in managing risk and maintain a secure operating environment. In addition, they need to ensure business continuity in case of operational failure caused by exogenous factors and still meet commercial commitments to deliver profitable returns. And, now more than ever, corporations need to consider environmental sustainability and the actions needed to reduce greenhouse gas emissions - all whilst achieving sustainable commercial outcomes that will satisfy customer, community, employee and shareholder expectations. Developing business cases for ICT investments that can bring about these benefits requires quantification. This white paper focuses on sustainability strategies and the quantification of commercial and sustainability benefits that they can generate.

The models used and examples given throughout this paper in relation to the possible benefits of adopting Telstra's ICT solutions are based on a number of assumptions, which are outlined in the Appendices to this paper. These assumptions may not be correct for your business. Importantly, the potential benefits outlined in this paper are indicative only and are subject to technical appraisal. Whilst every care has been taken in relation to these assumptions whether any benefits will actually be achieved will depend upon whether the assumptions used are accurate and appropriate for any particular business, how the business is currently conducted, and how Telstra's ICT solutions would be implemented by the organisation.

Call Telstra Enterprise and Government to find out more about solutions which may be suitable for you.

2 Climate change and the need for action

2.1. Australia's greenhouse gas emissions

Australia's per capita greenhouse gas emissions are highest in the OECD

Australia's per capita greenhouse gas emissions are the highest in the OECD and among the highest in the world. Nearly half of our emissions come from the burning of fossil fuels for stationary energy (i.e. electricity generation), largely due to our reliance on coal, the most greenhouse-intensive fuel. Australia's emissions have substantially increased since 1990, Australia's emissions have reached 576m tonnes in 2006, from 552m tonnes in 1990, having remained relatively flat during the 1990s decade.[4]

2.2. The impact on Australia

Today's global atmospheric concentration of greenhouse gases is over 380 parts per million (ppm) compared to 280 ppm before the industrial revolution.[5] This increase has resulted in a global average temperature increase of 0.8°C. The European Union has endorsed a goal to stabilise the temperature increase at 2°C above pre-industrial levels. This would, with 50 per cent likelihood be achieved by limiting the atmospheric greenhouse gas concentration to around 450 ppm.[6]

Models suggest rising sea levels, intense storms, major floods and increased drought

Comparably, in Australia the average temperature has increased 0.9°C since 1950.[7] Simulations developed by Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Bureau of Meteorology[8] track the startling impacts to the continent's temperature and rainfall patterns under even a mid-range emission scenario. Models suggest that drought could be as much as 20 per cent more prevalent by 2030 over much of Australia. More intense storms and tropical cyclones producing more severe oceanic storm surges are projected, and major floods are likely to take place every 10 or 20 years. Sea levels are also predicted to rise.

2.3. Australia's regulatory response

The Kyoto Protocol commits Australia to limit greenhouse gases to an 8% increase on 1990 levels by 2012

The Australian Government has ratified the Kyoto Protocol, committing Australia to meet its Protocol target[9] (limiting greenhouse gas pollution to an eight per cent increase on 1990 levels by 2012). The Australian Commonwealth Government commissioned Garnaut Climate Change Review released in September 2008[10] concluded that Australia is among the developed nations most vulnerable to climate change, and outlined significant impacts on Australia's infrastructure, economy, natural systems and human health over the next two decades.

The Australian Government has further announced its intention to introduce a carbon price signal from 2010 onwards and an emissions reduction target for 2020.

Among the schemes to take effect:

Government initiatives include the National Greenhouse and Energy Reporting System (NGERS) and the Carbon Pollution Reduction Scheme (CPRS)

- The National Greenhouse and Energy Reporting System (NGERS), introduced on 1 July 2008, a national framework for companies to report their greenhouse gas emissions, reductions, removals and offsets, energy usage and production, and penalises noncompliance. By 2010, the scheme will require all organisations with a footprint of more than 50,000 tonnes of carbon dioxide equivalent emissions to report their energy usage and emissions to the Greenhouse and Energy Data Officer, with lower thresholds for corporate groups to be progressively phased in by 2010-11.

- The Carbon Pollution Reduction Scheme (CPRS), which will place a price on greenhouse gas emissions, with the 'trade' component encouraging cost efficient initiatives by allowing organisations to purchase extra permits on the carbon market. The CPRS, proposed to come into effect in 2010, is effectively a cap and trade scheme in which the target acts as a limit, or 'cap', on the amount of emissions that can be emitted from industry sectors. The Government has indicated around 75 per cent of Australia's emissions will be covered by the Scheme.

The Federal Government proposes national emission reductions of 5-15% by 2020 and 60% by 2050

Australia is further taking leadership by fostering carbon capture and storage (CCS), putting in place a renewable energy target and through the still to be announced, energy efficiency package.

The Federal Government has proposed a long-term emission reduction target of 60 per cent by 2050, and the CPRS proposes a medium-term national emissions target in the range of 5-15 per cent by 2020 (compared to 2000 levels).

2.4. Corporate response

General sustainability initiatives for the broader business community are becoming increasingly important in light of regulatory changes due in 2010.

Corporations increasingly see social and environmental responsibility as crucial to strategic direction

The direct relationship between corporate social and environmental responsibility, sustainable business development and economic performance is unequivocal. Leading organisations increasingly see their social and environmental responsibilities as a critical element of their strategic direction, a component of risk management, and a means by which they can engage and retain employees and enhance their shareholder value. According to the Corporations and Markets Advisory Committee[11] companies failing to do so may jeopardise their commercial future.

When PriceWaterhouseCoopers surveyed the chief executive officers and chief financial officers of 303 major Australian companies in November 2007 [12], over 80 per cent agreed business should take an active role in responding to climate change. While many were concerned about future compliance requirements and unsure of obligations, 36 per cent of business leaders had no emissions data and over 75 per cent of businesses were yet to formally assess their specific climate change risk.

A KPMG International study [13] of corporate responsibility reporting, surveying 2200 companies including the Global Fortune 250 (G250) and the 100 largest companies by revenue (N100) in 22 countries, concluded that 44 per cent of G250 companies fear the physical risks of climate change including extreme weather, changing agricultural patterns, flood risk, and ecology and biodiversity change. The surveyed companies also voiced concern that governments are starting to regulate greenhouse gas emissions, and 17 per cent are aware that their reputation is at stake as the climate crisis grows. In Australia, the number of companies publishing information on sustainability has more than doubled since 2005, to 68 per cent of ASX 100 companies.

Enterprises are still investing in 'green ICT': reducing energy costs, IT costs, and supporting the environment are the top three drivers

A survey undertaken by Forrester [14], published in December 2008, would indicate that enterprises are still investing in 'green' ICT initiatives with no signs of slowing of investment. Reducing energy costs, "to doing the right thing for the environment" and reduced IT costs have been identified as the top three drivers for 'green' IT. Another report published in December 2008 by Ovum [15] concludes that Environmental Responsibility is gathering momentum.

The *Sustainability Outlook 2009 Report* [16] by UBS Investment Research published the one of the most frequently asked question from clients; whether the ensuing economic downturn will undermine environmental concerns in general and climate change 'reactions' in particular? The answer was unequivocal – sustainability will become more mainstream, the world of the next 15 years will need to structure its growth differently from the last 20 years and that the general issue of sustainability is becoming increasingly relevant to society, governments, firms, and therefore also shareholders.

3 Driving an environmental sustainability strategy

Growing trend amongst global organisations using environmental sustainability principles to reshape operations show an energy-saving agenda can offer fresh opportunities for growth

For Australian organisations, the need to take on environmental and social responsibilities is in alignment with its business imperatives. In order to stay relevant and competitive in the marketplace, organisations must adopt sustainable practices to manage their long-term business stability, as well as social and environmental risks. The growing trend amongst global organisations using environmental sustainability principles to reshape their operations demonstrates that pursuing an energy-saving agenda can offer fresh opportunities to fuel economic growth.[17] Workplaces that operate more simply and efficiently are inherently more productive, and businesses that deliver better outcomes for employees, the community and the environment are likely to deliver better commercial outcomes.[18]

The benefits of introducing environmental sustainability initiatives and solutions can extend far beyond reducing an organisation's environmental footprint. Indeed, commercial, environmental and social benefits can accrue to organisations that demonstrate their commitment to reducing greenhouse gas emissions as part of a longer-term business strategy.

Seven ICT initiatives could help reduce up to 4.9% of Australia's annual greenhouse gas emissions by 2015 and save about $6.6 billion annually

Applying ICT solutions to infrastructure and industry is an increasingly important means by which Australian organisations can help address the challenges of climate change and capitalise on opportunities that these challenges present. A Telstra commissioned 2007 report considering greenhouse gas savings and financial benefits resulting from the use of telecommunications networks – *Towards a High-Bandwidth, Low-Carbon Future: Telecommunications-based Opportunities to Reduce Greenhouse Gas Emissions*[19] – concluded that ICT solutions can lead to cost savings for organisations and consumers and yield nationally significant reductions in greenhouse gas emissions. It found that if everyone adopted seven specific initiatives it could help abate up to 4.9 per cent of Australia's overall annual greenhouse gas emissions by 2015 and result in energy and travel cost savings of up to $6.6 billion annually. These initiatives are:

- Networked demand-side management to increase renewable energy use
- Integrated personalised public transport
- 'In-person' high-definition video conferencing to improve business productivity
- Presence-detecting services that turn off devices that are 'on' but not being used
- Real-time freight allocation systems to fill empty freight vehicles
- Remote power management for appliances not in use or on 'stand-by'
- Teleworking

ICT offers holistic and measureable energy efficiency solutions along entire supply chains

ICT offers holistic and measurable energy efficiency solutions along entire supply chains and has the ability to transform data networks, equipment, work processes and practices, facilities and fleets. Capitalising fully on ICT advances and realising the commercial, environmental and social benefits they could deliver, requires a re-evaluation of existing work methods and considering their technology enablers.

3.1. Engaging employees in an environmental sustainability strategy

Employee engagement programs around sustainability are critical to being able to effect long-term change

In order to deliver on the full potential of environmental sustainability solutions, employees need to recognise the benefits of technology and business process change, and as a result, adopt and commit to new ways of working. Employee engagement programs around sustainability initiatives therefore, are critical to organisations being able to leverage and embed these solution enablers in order to effect long-term change.

In addition to supporting and delivering on solution enablers, employees can deliver a deep knowledge pool for generating practical ideas to reduce costs and effect change to deliver sustainability outcomes. Actively engaging and encouraging employee participation in sustainability initiatives can generate ideas that contribute to an overall environmental sustainability strategy as well as build on and enhance investment in solution enablers. The environmental, commercial and social benefits of environmental sustainability initiatives are pertinent messages to employees, and can strongly align the individual to the organisation. Indeed, environmental sustainability initiatives have the potential to boost employee motivation and morale, and be seen as a credible employer brand benefit.[20]

3.2. Benefits of environmental sustainability initiatives and solutions

Environmental sustainability initiatives can improve operational and financial performance and create new business opportunities

Many organisations are already reviewing the risks and opportunities inherent in a carbon-constrained world. Some are restructuring their operations through technology and business process changes, relying heavily on sustainability measures that curb electricity usage and fuel consumption. Many are doing this proactively to reap the benefits sooner. The international KPMG survey of corporate responsibility reporting found that 48 per cent of G250 companies saw new business opportunities associated with needing to address climate change related risk.[21]

The *Sustainable Asset Management Sustainability Yearbook 2008*[22] cites research published in the Harvard Business Review, which found that an organisation's sustainability performance can also be seen as a measure of its operational efficiency. There is also growing evidence that organisations that are performing better on social and environmental outcomes produce better financial results.[23]

Multinational company Coca-Cola[24] believes that energy efficiency investments make good sense financially. It expects to deliver a 20 per cent improvement in its energy utilisation ratio, more than 20 per cent improvement in the company's carbon footprint and a 20 per cent or higher improvement on its internal rate of return by implementing energy efficiencies. Coca-Cola forecasts that its energy investments as part of its overall productivity initiatives, will deliver global returns of $US400-500 million by 2011.

Sustainable work practices may be more affordable than generally thought

The shift to more sustainable work practices may also be more affordable than many business leaders think. McKinsey's Australian 2020 Carbon Abatement [25] Cost Curve suggests that the breakeven point for emissions reduction is 20 per cent. That is, by adopting a range of measures, Australia's overall emissions would be reduced by 20 per cent with a zero net cost. Such cost curves can be equally applied to organisations seeking to transform their operations and workplaces by implementing ICT technology.

Inroads into energy efficiency helps insulate from carbon pricing burdens

At its most fundamental, improving energy efficiency can reduce an organisation's costs, thereby earning it a potential competitive advantage. Making energy efficiency inroads also helps to insulate a business from increasing energy costs and carbon pricing burdens under proposed future regulation. Carbon abatement initiatives are expected to inspire new business partnerships, further technological innovation and result in improved employee and shareholder engagement.

According to AMP Capital Investors research [26], over 75 per cent of the value of a typical Australian organisation is made up of its intangible assets. These include an organisation's corporate reputation, the way it attracts and retains its employees, occupational, health and safety practices, and its reputation and commitment to environmentally-sustainable practices.

How organisations are perceived by their employees, investors, customers and suppliers can have a profound influence on business profitability. Additional research supports the assertion that both employees and shareholders place a higher value on organisations that have adopted a sustainability strategy. And research conducted by the Financial Securities Institute of Australasia [27] in conjunction with Econtech also confirms the strong link between sustainability and shareholder value. The report, *The Tip of the Iceberg,* showed that companies adopting sustainability measures were reporting:

- a reduction in the risk premium of around 30 basis points: [28]
- a lasting gain in labour productivity of around 0.8 per cent;[29] and
- a brand-based price premium of around two per cent. [30]

3.3. Employee retention and engagement

Employees increasingly also seek more flexible and environmentally-conscious workplaces – demands which can align strategically with employers' needs.

Companies seeking to attract and retain experienced employees need to consider their environmental and social reputation

Companies seeking to attract and retain experienced employees may need to give greater consideration to their environmental performance, especially as Australia faces skills shortages and feels the full impact of a shrinking, ageing workforce. Australian Bureau of Statistics labour force projections indicate that 80 per cent of future workforce growth in the next decade will be in the group over 45 years of age, and in the year 2020 the number of people leaving the workforce will exceed those entering the workforce.

The retention of employees is the biggest driver towards ethical practises

The Grant Thornton International Business Report (IBR) 2008 P [31], which examined the attitudes, plans and trends of 7800 privately-held businesses in 34 economies across six continents, reported that "the availability of a skilled workforce is cited by more than half of Australian businesses (58 per cent) as a major constraint to expansion". Australian businesses cited the recruitment and retention of employees as the biggest driver towards more ethical practices.

Employees cite corporate responsibility issues as one of their key criteria when choosing an employer – a trend most apparent among members of generations X and Y. A News poll [32] of 467 workers in 2007 showed that 84 per cent of employees want to work in an environmentally-friendly office. 90 per cent of women and 78 per cent of men said their employer should have the environment at the top of mind. The survey stated that 81 per cent of 18-24 year-olds wanted to work in a 'green' office, as did 86 per cent of 35-49 year-olds.

As the nature and composition of the Australian workforce changes, an organisation's ability to retain employees may depend on its ability to meet individual work requirements and align business practices with employees' values.

Reducing the need for travel through ICT through video conferencing and enabling employees to work from home are two approaches that can lead to a more engaged and productive workforce. [33]

3.4. Employee Productivity

Advanced ICT solutions have the potential to improve environmental sustainability and also measurably improve workforce productivity

Productivity improvements can be gained by deploying effective and advanced ICT solutions. While ICT solutions have the potential to significantly improve environmental sustainability, these solutions are also able to deliver tangible commercial benefits to organisations. Evidence from a diverse range of organisations across a variety of industries shows measurable productivity gains can be made by enabling workforces to work more efficiently and communicate and collaborate more effectively which can translate into substantial performance improvements at the individual, workgroup and enterprise level. [34]

The ACIL Tasman white paper [35] *ICT as a Driver of Productivity* concluded that "the preponderance of empirical evidence suggests that investment in ICT has brought about significant productivity benefits".

Some of ACIL Tasman paper's findings included:

- ICT is likely to boost the productivity levels of most workers
- E-mail, telephone, instant messaging and mobile phones can make internal and external communications more timely and more productive
- Mobile phones increase worker flexibility, efficiency and productivity
- Broadband enables more flexible work practices, hours and location, which can increase productivity

4 Telstra's environmental sustainability solutions

Minimising corporate Australia's exposure to climate change risks demands leadership and technological expertise. Practical ICT solutions, available today, can help transform workplaces and processes to achieve environmental sustainability outcomes, enabling organisations to reduce their greenhouse gas emissions while delivering strong productivity improvements.

Four technology solutions available today from Telstra have demonstrated significant economic, environmental and social benefits

Four key technology solutions comprising Telstra's next generation networks and existing ICT technologies, implemented by Telstra's Next Generation Services – video conferencing, teleworking, web contact centres, fleet and field force management – have a demonstrated ability to generate significant commercial, environmental and social benefits when adopted individually or working together.

4.1. Video Conferencing

Video Conferencing is a viable alternative to business travel that can enhance productivity, lower costs and cut greenhouse gas emissions

Australia's geographically dispersed business networks require considerable interaction between remote business teams and individuals, largely by means of long-distance, short-duration air travel. However, this travel is both energy intensive and time inefficient.

Video conferencing incorporates audio, video and computing, and allows people in different locations to interact, face-to-face, in real time during secure transmissions via a flexible high bandwidth link – a viable alternative to business air travel. Solutions can range from the web-cam located on a desktop personal computer to high-definition video conferencing rooms ideal for smaller meetings or real-presence and/or telepresence setups better suited to larger groups.

In Telstra's experience, video conferencing has been shown to enhance employee productivity. Substituting video conferencing for some business travel and avoiding its associated expenses can also help cut an organisation's operating costs and greenhouse gas emissions, increase its agility and speed to market, and generate strong returns within a relatively short time (often within 12 months).

4.2. Teleworking

Teleworking can save time, improve productivity, reduce greenhouse gas emissions and office property costs

Teleworking (also known as telecommuting or flexiwork) enables employees to split their working time between the office and another location. A security token guarantees fast, reliable computer access to the office information systems, courtesy of a wired or wireless broadband modem and connection. The employer commonly provides these tools of trade for the employee to work from home, from a hotel or adopts a hot-desking approach within the office.

Australian Bureau of Statistics figures show that three-quarters of Australians drive to work[38] and Australians travel 43.5 billion kilometres a year commuting to and from their place of work using private vehicles.[39] The average distance travelled per worker to and from work in a year is 7200 km and this travel generates

According to the Australian Telework Advisory Committee, about 65 per cent of jobs are suited to telework

approximately 2.6 per cent of Australia's total greenhouse gas emissions[40]. The ABS[41] also reveals that one-quarter of the 9.5 million people in the Australian workforce now work at least some of their hours at home.

Teleworking is becoming an attractive alternative to Australia's increasingly mobile employees, who have to contend with increasing fuel costs and longer commutes, due to the sprawl of Australia's major cities. The time and cost for the average Australian commute is significant – about 300 hours per annum and around $1500 in fuel costs.

A 2007 Sensis business survey[42] found that 22 per cent reported that they or their employees teleworked and that it was having an overwhelmingly positive impact on their business. Business owners cited improved flexibility for their employees, the ability to access information from anywhere, savings in time and improved productivity as the key benefits.

Global studies show that teleworking can provide substantial productivity gains and potential to deliver substantial environmental benefits

Globally, studies on teleworking have found that both workers and employers report substantial productivity gains associated with home access to ICT.[43] The move towards teleworking also has a potential to deliver substantial environmental benefits. Six per cent of Bell Canada's 43,000 employees who telework collectively reduced the company's annual greenhouse emissions by 20,000 tonnes of carbon dioxide equivalents.[44]

While the potential for organisations to reduce their carbon footprint (largely through reduced work-related travel) is considerable, those implementing teleworking stand to realise greater savings on property-related costs, notably reducing office space requirements and electricity expenditure. The *Towards a High-Bandwidth, Low-Carbon Future* report[45] concluded that teleworking could reduce office space demands by 15 per cent, which has significant potential for energy savings in commercial workplaces.

4.3. Web Contact Centres

The web contact centre – a secure, virtual contact centre hosted by a telecommunications provider – is an alternative to the traditional centralised model. It relies on a personal computer, phone line and suitable Internet access to enable employees to work remotely and flexibly.

Web Contact Centres offer greater flexibility for organisations and employees

Web contact centres enable organisations to develop flexible contact centres suited to the underlying demand, with peaks being managed by web contact centre operators. Such a blended cost can result in lower initial capital costs and lower ongoing operating costs for the contact centre operator.

A Web Contact Centre can help reduce greenhouse gas emissions and the physical infrastructure required including equipment

Web contact centres can help reduce greenhouse emissions from travelling to and from large call centres, since employees can work from home or from smaller 'cottage offices'. It can also help cut down on the hidden costs of travel – the wear and tear of vehicles, as well as road and rail infrastructure which require energy and materials to maintain. In addition, physical infrastructure such as buildings, or interior fit-out is not required, saving the resources used to manufacture them.

For business continuity purposes, most call centres have alternate sites that are fully provisioned with servers, individual computers and communications equipment. These are constantly maintained in a ready state, all the while using energy and creating unnecessary greenhouse emissions. By comparison, a web contact centre then has its own business continuity facilities that are shared across many different customers. The same equipment can therefore be used many times over as the need arises, instead of being individually duplicated and sitting idle.

A Web Contact Centre allows the same equipment to be used instead of being duplicated for each customer

Web contact centres avoid the need to purchase or manage on-site equipment and infrastructure and can be provided on a cost-effective usage-based model. They also allow companies to rapidly scale up capacity in response to market demand, without the cost and lag of developing new physical facilities or ongoing service management costs. Network hosting offers built-in business continuity capabilities, secure, carrier grade infrastructure and customer interaction via voice, email, web chat and fax – a set-up that can minimise the need for systems integration.

By enabling access to previously untapped workforce segments, such as the semi-retired, mobility restricted and parents with young families, web contact centres may also assist employers to efficiently manage workforce diversity in conjunction with peaks and troughs in demand.

4.4. Fleet and Field Force Management

Transport is one of the major greenhouse gas contributors

Energy usage associated with transport is one of the major greenhouse gas contributors. Fleet and Field Force Management enable organisations to automate, streamline and mobilise field processes and optimise resource allocation. Managers can use these customised and integrated tools to more efficiently route travel and jobs, and to improve data communication within their field force. Leading technology combining GPS, GPRS and wireless business capabilities can dramatically increase productivity and performance.

The expected benefits are derived from three key areas:

- Efficiency gains by eliminating manual and paper-based processes. By freeing the mobile workforce from time-consuming manual administrative processes, they can focus on higher value activities that drive real revenue outcomes.
- Companies are able to maximise their investments in existing enterprise applications, by making them available to the mobile workforce.
- Enhancing competitive differentiation by empowering the field force with real-time visibility of customer, product and pricing data. The availability and access to real time pricing and product information from corporate systems can enable better business controls and lower potential data errors that might escalate into customer disputes. Field forces are also able to respond in real-time to activities in the field and provide better visibility at an operations centre.

Fleet and Field Force Management can increase efficiency and productivity while reducing fuel usage and vehicle maintenance

On-demand, real-time visibility of the mobile workforce and company fleet, and instant communication can reduce downtime. Additional benefits include fewer service interruptions, improved customer satisfaction, reduced fuel consumption and vehicle maintenance, plus the associated environmental advantages of efficiently managing fleets.

Case Study: Telstra's service vehicle fleet

The Telstra vehicle fleet is one of the largest automotive fleet of its kind in Australia. It clocks up around 160,000,000 kilometres annually as telecommunications technicians belonging to over 7000 field service units complete about 25,000 installation and repair tasks daily. The technicians traditionally relied on paper logs and were required to call in to their head office to receive their work orders. Customer service was slow and the incidence of repeat visits was high.

In an effort to improve productivity and enhance customer service delivery, Telstra installed GPS systems in technicians' vehicles in 2005 to link into the job dispatching system and to improve route efficiency. The technology enables work to be allocated to the closest technician, reduces on-road time and wear-and-tear on fleet vehicles.

Since 2005, Telstra's communications technicians achieved a 45 per cent improvement in productivity and decreased revisits by around 20 per cent. Estimated fuel savings of around eight per cent were achieved, which represents a significant saving over the size of the fleet in both fuel and greenhouse gas emissions.

Additionally, Telstra has reduced the number of vehicles in the fleet by 17 per cent, with a further reduction in fleet energy use.

5. Measuring the costs and benefits of ICT solutions

WWF estimates that ICT can cut 2-7 billion tonnes of global greenhouse emissions annually by using existing technologies

Several of the four ICT technologies outlined in the previous section have already been adopted in Australia and overseas with outstanding results, as exemplified by corporations participating in the WWF Climate Savers program[46]. It is difficult to estimate the quantity of greenhouse gas emissions that ICT can reduce globally, however a WWF review[47] of the UN's Intergovernmental Panel on Climate Change (IPCC) assessment reports, the Stern Report, International Energy Agency outlooks, McKinsey and earlier studies considered the possibilities of existing technologies. It concluded that if ICT was widely used it could help deliver up to 2-7 billion tonnes of greenhouse gas emission reductions annually simply by scaling up proven, commercially viable solutions.

The 2-7 billion tonnes of potential for reduced emissions is a multiple of the total current global emissions from using ICT technology, currently estimated at about half a billion tonnes of greenhouse gases annually. If only a few sectors and countries began transforming their operations using ICT a 20 per cent reduction in greenhouse gas emissions could be achieved, or as much as 70 per cent with greater adoption of the technologies, according to the WWF analysis.

Telstra's advanced ROI tools model the costs and benefits of ICT solutions to produce an NPV calculation

The ability to measure the commercial, employee and community benefits of ICT solutions is vital. Advanced Return on Investment (ROI) tools are used in this paper to model the costs and benefits to a hypothetical company of adopting each solution. The ROI tools incorporate an economic evaluation, estimated greenhouse gas impacts and employee productivity outcomes in calculations producing a net present value (NPV) by assessing the financial costs and savings to the company for each alternative.

WWF Climate Savers

Collaboration between some of the world's leading corporations and WWF is demonstrating that large enterprises can make significant contributions towards meeting pollution reduction targets and still maintain their commercial viability. WWF's Climate Savers program partners include Hewlett Packard, Nokia, IBM, Johnson & Johnson, Lafarge, Nike, Novo Nordisk, Johnson Diversey, Polaroid, Sony and Tetra Pak.[36] Since 1999, these organisations have discovered that economic growth and greenhouse gas reductions can be compatible objectives. The WWF also reports that improved sustainability practices have impacted positively on the businesses' efficiencies, reputations and overall working environment and their individual business gains have contributed significantly to national targets.

According to the WWF, Climate Savers companies are on a course to reduce their greenhouse gas emissions by 14 million tonnes by 2010. Johnson & Johnson, for example, is reaping more than USD $30 million in annualised energy efficiency savings.[37a] Lafarge's reductions in CO^2 emissions in 2005 – more than four million tonnes – were worth €73 million on the EU allowance market.[37b] IBM has led the way in dealing with the key issue of employment-related transport emissions: one-third of its global workforce participates in one of the world's largest global corporate work-at-home and mobile employee programs. IBM met its initial Climate Savers commitment, avoiding greenhouse gas emissions associated with the company's annual energy use by an average of 5.7 per cent from 1998 to 2004, and generated energy cost savings of US$115 million. [37c]

5.1 Measuring the costs and benefits of Video Conferencing

The following table summarises the key costs and benefits of adopting high-definition video conferencing. The principal economic drivers are highlighted within the table.

Table 1 – Key costs and benefits of adopting Video Conferencing

	Company	Employee	Community
Savings	• Travel costs • Accommodation • Fuel costs • Carbon-pricing costs	• Travel time	• Reduced emissions • Reduced congestion
Additional benefits	• Higher employee engagement and retention • Productivity gains • More immediate decision-making	• Better work-life balance • Saved travel time • Improved productivity and job satisfaction • Less time commuting	• Reduced commuter traffic • Less pressure to extend airports
Costs	• Video equipment • Room refurbishment • Data transmission • Equipment maintenance • Electricity costs		

The ROI tool (see Appendix 1 for example for a hypothetical business) estimates greenhouse gas emissions avoided and saved travel time for the employee, which is also measured as a productivity gain for the company. Capital and operating costs include the initial equipment fit-out, annual maintenance contracts, bandwidth charges and the electricity powering the video equipment.

The travel savings can be calculated in two ways. The first is by assuming a percentage reduction of the travel budget. The second matches the locations of the new video equipment with flight experience between these locations over a financial year to calculate the average flight cost, duration, distance and average emissions. The number of avoided interstate business travel is measured as a low percentage of actual meetings held, which varies with the type of video conferencing room. The price of carbon is recognised as both a cost and a saving from 2010 onwards. Carbon pricing is also incorporated into the cost of travel and the running costs of the video equipment.

Example of potential benefits of installing Video Conferencing

(For a comprehensive calculation relating to a hypothetical company refer to Appendix 1)

The hypothetical example within this white paper is a company that has two principal locations: Sydney and Melbourne. The majority of the travel is between these locations and it is looking to use High Definition (HD) video conferencing to reduce business travel costs. For this example, it is assumed that the company currently spends approximately $1m per annum on interstate travel. The company decides to evaluate the potential benefits of installing two room based HD video conferencing systems.

For each company, the outcomes will be different due to differing travel patterns, locations and cost assumptions. The results and views (including costs) outlined in this hypothetical example are general and indicative only.

Savings and costs

For a company installing two high-definition video conferencing rooms, the capital costs include the video conferencing equipment and installation. Ongoing costs include equipment maintenance and bandwidth charges. Assuming that for every seven video conference meetings the company avoids two interstate travel trips, the company achieves savings from reduced interstate travel, together with the associated taxi and hotel costs.

Video Conferencing: generates ~NPV of $464,000 over five years with a payback of around seven month. Avoids creation of ~ 212 tonnes of CO^2 per year

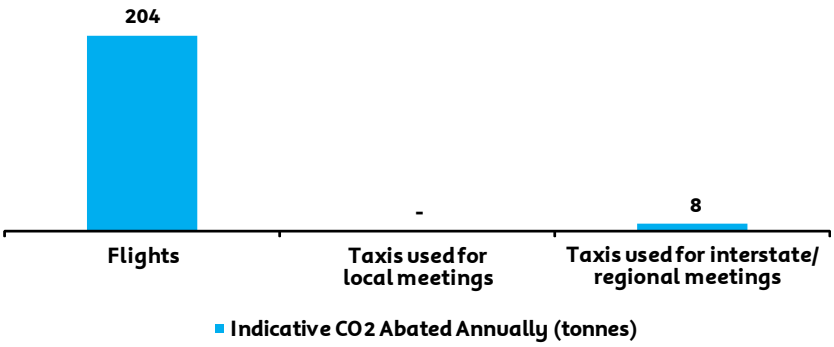
NPV generated

Installation of a pair of HD Video Conferencing facilities would generate a NPV of $464,000 over five years, with a payback of around seven months.

Reduced greenhouse gas emissions

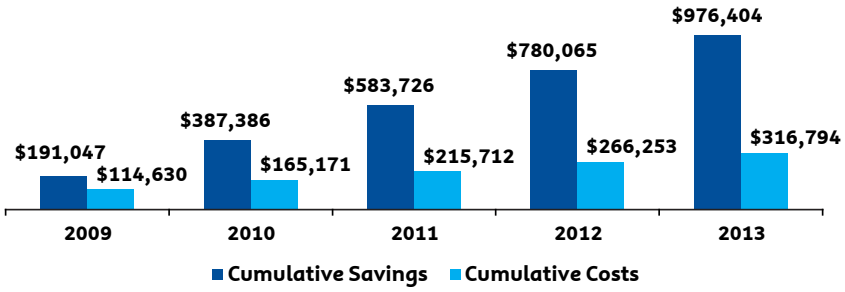
Running a pair of video conferencing rooms incurs electricity usage (in use and on standby) but reduces emissions associated with air travel. Effective implementation of a video conferencing protocol could potentially save ~274 business trips annually which would incur some 568,000km of travel and avoid the creation of some 212 tonnes of carbon dioxide. The following graph illustrates an example of the net emissions saving* from using video conferencing and employees reducing travel for one in every seven meetings.

Graph 1 – Indicative CO2 abated annually through Video Conferencing



The following graph illustrates the commercial benefits the ROI tool derived for this hypothetical example.

Graph 2 – YoY total cumulative costs and savings of Video Conferencing



* *Emissions associated with air travel vary considerably due to a range of factors including: weather; wind patterns; holding time; taxi distance; maintenance history; aircraft type and engine type. Flyers are also able to offset their flight and thus fly "carbon neutral"*

Employee-related benefits

Employees of the hypothetical company could avoid some 1766 hours of business travel, which could deliver improved employee productivity and better work-life balance. Not all the time recovered will translate into increased productivity due to the overlap of personal and work life that can occur.

Table 2 – Productivity savings through Video Conferencing		
Number of flights saved annually	274	
Number of local meetings annually	-	
Average traveller's salary	$200,000	
Time taken to travel to and from meeting	2.0	Hours
Time taken to check in	0.5	Hours
Time per return flight	4.0	Hours
TOTAL lost productivity per flight	6.5	Hours
TOTAL lost time per local meeting	0.33	Hours
Total hours lost per year from travelling	1,766	Hours
Annual productivity savings	$147,177	
Time saved spent working 50%	$73,588	
Productivity NPV over 5 years	$265,270	
Hours per meeting saved per employee	3.39	Hours

5.2 Measuring the costs and benefits of Teleworking

The following table summarises the key costs and benefits of teleworking. The key drivers of the economic costs and benefits are highlighted in the table.

Table 3 – Key costs and benefits of Teleworking

	Company	Employee	Community
Savings	• Reduced office footprint • Reduced energy usage and carbon-pricing costs	• Reduced commuting costs • Higher disposable income	• Reduced commuter traffic • Reduced commuter emissions • Promotes regional and community development
Additional benefits	• Higher employee engagement, retention and productivity • Opportunities to take advantage of broader talent pool	• Better work-life balance • Less time commuting	• Potentially stronger social ties to the local community from home workers • Net reduction in energy usage and carbon emissions
Costs	• Cost of employee remote working equipment • Ongoing communication costs	• Home office set-up • Home energy usage	

The ROI tool (see Appendix 2 for further detail of a hypothetical business) estimates greenhouse gas emissions avoided and saved travel time for the employee[48], which is also measured as a productivity gain for the corporation. The capital and operating costs include setting up the employee with remote working equipment, ongoing communication charges and the replacement of the equipment every three years. Savings include the reduced office footprint and reduced energy costs.

The community benefits from an overall reduced energy footprint because the employee at home uses significantly less energy than an office-based employee. Company savings include reduced office space requirements (assuming the company rigorously enforces a hot-desking policy) and the associated energy costs supporting the office (e.g. air-conditioning, heating and lighting).

The price of carbon is recognised as both a cost and a saving from 2010 onwards. Carbon pricing is incorporated into the cost of travel and the running costs of the equipment. The model also estimates the benefits to the employee of not commuting each day, including savings in petrol and other car running costs, plus the avoided travel time.

Example of potential benefits of introducing teleworking

(for a comprehensive calculation relating to a hypothetical company refer to Appendix 2)

A hypothetical company with 1800 employees adopts teleworking for 200 employees. Employees will work from home three days a week and hot-desk two days a week in the office. It is modelled that the number of flexi-workers will increase by five per cent each year. The company provides a full range of mobility tools, including laptops, network mobile data cards, broadband and a home office grant.

For each company, the outcomes will be different due to differing flexiworking patterns, locations and cost assumptions. The results and views (including costs) outlined in this hypothetical example are general and indicative only.

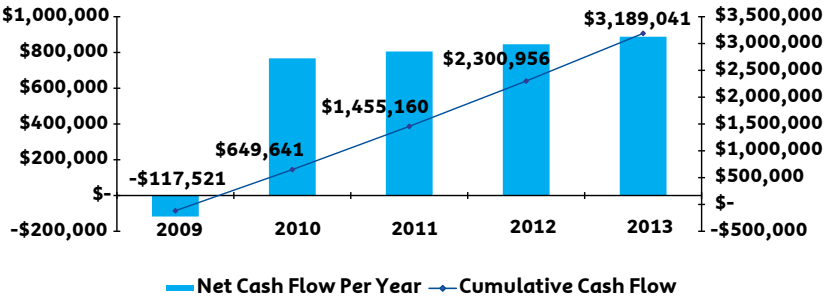
NPV generated

Teleworking generates NPV of ~$2.1m over five years. Avoids creation of ~493 tonnes of CO^2 per year

In this example, the commercial benefit to the company from adopting teleworking delivers a NPV of approximately $2.1m; largely resulting from reduced office accommodation and energy costs. Net greenhouse gas emissions are reduced by approximately 493 tonnes as a result of the lower office energy costs and reduced travel related emissions.

The commercial benefits of adopting this teleworking solution for the hypothetical company are illustrated in the following graph.

Graph 3 – Estimated commercial benefits of adopting Teleworking



Employee-related benefits

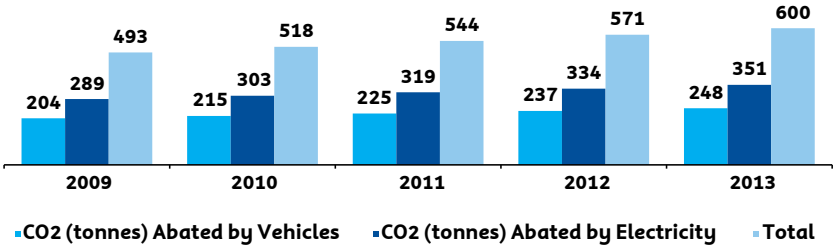
Based on teleworking for three days a week, the employee of the hypothetical company could gain a better work-life balance from avoided commuting, save an average 225 hours of commuting per year and avoid petrol costs of approximately $1,100 on the avoided commute[49]. Further details of the ROI tool outputs are provided in Appendix 2.

Reduced greenhouse gas emissions

The teleworking employee generates emissions at home. Independent research[50a] however estimates these emissions to be about one-third of those incurred within an office environment. The reduction in commuting as demonstrated above also contributes to a reduction in emissions.

The estimated carbon savings in this hypothetical example are illustrated below.

Graph 4 – Estimated carbon savings of Teleworking



5.3 Measuring the costs and benefits of Web Contact Centres

An article published by Business Communications in November 2005 compared the traditional premises-based contact centre with a web-based (hosted) contact centre. It found that web-based solutions have a number of significant advantages over premises-based contact centres, including their rapid implementation and lower maintenance requirements; flexibility for growth and network management; and significantly higher security, reliability and continuity.

The following table summarises the key costs and benefits of the web contact centre.

Table 4 – Key costs and benefits of a Web Contact Centre

	Company	Employee	Community
Savings	• Reduced office footprint • Reduced infrastructure, energy usage and carbon pricing costs • Increased productivity	• Reduced travel costs • Increased disposable income	• Reduced commuter traffic • Reduced commuter emissions from fuel • Reduced electricity-related emissions
Additional benefits	• Higher employee engagement and retention • Strong security and protection of company information • Potential to grow or contract with market demands • Access to non-traditional employees	• Better work-life balance • Less time commuting	• Potential employment opportunities for those more tied to the home • Enables regional and community development
Costs	• Cost of employee remote working equipment • Ongoing communication costs	• Home office set-up	

The capital and operating costs include setting up the employee of the hypothetical company with remote working equipment, ongoing communication charges and the replacement of equipment every three years. Savings include the reduced office footprint and reduced energy costs. The community also benefits from an overall reduced energy footprint as the employee at home uses significantly less energy than an office-based employee.[50b]

The price of carbon is recognised as both a cost and a saving from 2010 onwards. Carbon pricing is incorporated into the cost of travel and the running costs of the equipment. The model also calculates the benefits to the employee from not commuting each day, savings on petrol and other car running costs, plus the avoided travel time.

Example of the potential benefits of using web contact centres

(for a comprehensive calculation relating to the hypothetical company refer to Appendix 3)

In this example, assume a contact centre organisation of 150 employees decides to adopt teleworking for 50 employees, who will work at home three days a week and in the office, hot-desking, two days a week. The company provides a full range of web contact tools including laptops, landline phones and headsets, broadband and a home office grant.

For each company, the outcomes will be different due to differing call centre work patterns, locations and cost assumptions. The results and views (including costs) outlined in this hypothetical example are general and indicative only.

Web Contact Centre: generates NPV of ~$456,000 over five years. Avoids creation of ~140 tonnes of CO^2 per year

NPV generated

The economics are compelling for this hypothetical example, delivering a NPV of about $456,000, largely derived from reduced office accommodation requirements.

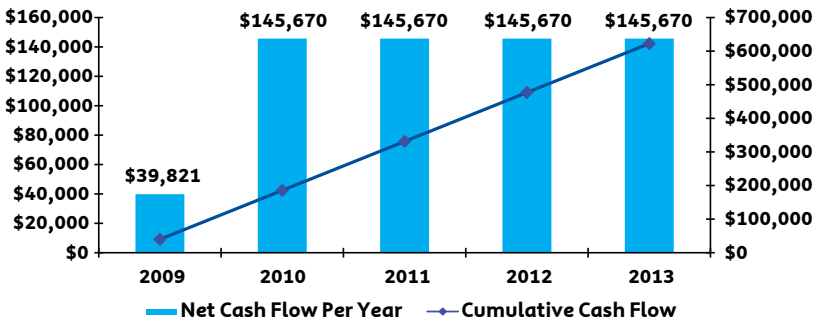
Employee-related benefits

The employee of the hypothetical company works from home and is able to provide a full contact centre service from the comfort of their home while the Contact Centre Manager has the full visibility and monitoring of the 'home worker', as if that person was working in the contact centre.

Using average commuting statistics from the ABS[51], an employee operating as a web contact centre operator for three days a week, gains a better work-life balance from avoided commuting, saves an average 250 hours of commuting per year and avoids petrol costs of approximately $1300. Further details of the ROI tool outputs are provided in Appendix 3.

The commercial benefits of adopting a web contact centre in this hypothetical example could deliver the economic outcomes illustrated in the following graph.

Graph 5 – Estimated commercial benefits of adopting a Web Contact Centre

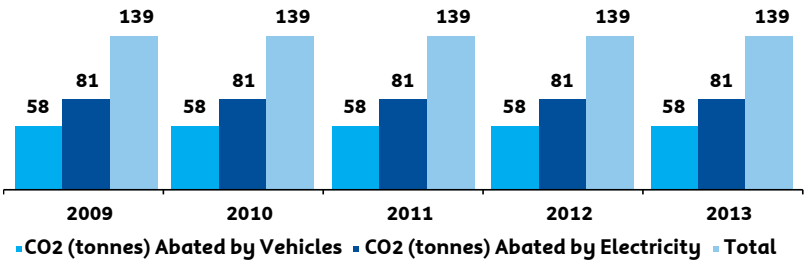


Reduced greenhouse gas emissions

The web contact centre employee of the hypothetical company does generate emissions at home. However independent research indicates that these emissions are about one-third of those incurred within an office environment.[52]

The estimated carbon savings in this hypothetical example are illustrated below:

Graph 6 – Estimated carbon emission savings of using a Web Contact Centre (tonnes)



5.4. Measuring the costs and benefits of Fleet and Field Force Management

The following table summarises the key costs and benefits of fleet and field force management.

Table 5 – Key costs and benefits of Fleet and Field Force Management

	Company	Employee	Community
Savings	• Fuel consumption • Less distance between jobs • Less re-entering of job data • Greater productivity		• Reduced traffic congestion • Reduced traffic emissions
Additional benefits	• Greater customer satisfaction	• Better planned work day • Potentially more jobs	
Costs	• Fitting vehicles and/or workforce with equipment and ongoing communication costs		

The capital and operating costs include setting employees up with fleet vehicles or field force workers with equipment, ongoing communication charges and replacement of equipment every three years. The savings include the reduced fuel costs, greater productivity and reduced fleet running costs.

The price of carbon is recognised as both a cost and a saving from 2010 onwards. Carbon pricing is incorporated into the cost of travel and the running costs of the vehicles. The community also benefits from a reduced overall motor fuel footprint and its related reduced emissions as the mobile field force travels less to achieve the same level of customer visits.

Example of potential benefits of introducing Fleet and Field Force Management

(for a comprehensive calculation relating to the hypothetical company refer to Appendix 4)

In this example, assume an organisation with a field force of 500 employees adopts a Field Force Management application to improve its productivity. The company provides appropriate hand-held mobile devices including mobility tools, GPS and mobile network data access. The GPS functionality enables management of vehicles, routing and fuel consumption, workflow and field processes.

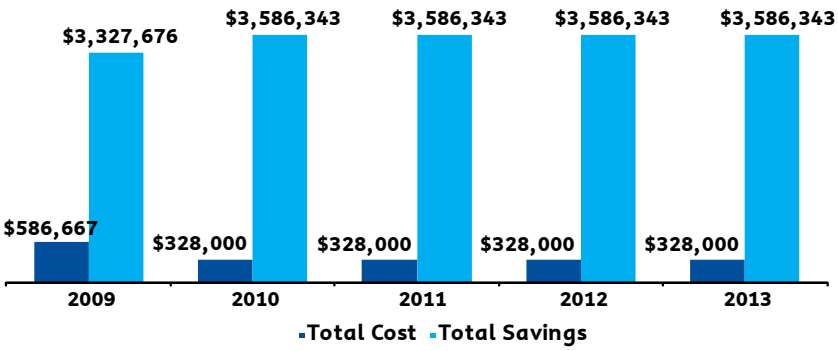
For each company, the outcomes will be different due to differing work patterns, locations and cost assumptions. The results and views (including costs) outlined in this illustrative are general and indicative only.

The estimated commercial benefits of adopting these solutions in this hypothetical example are illustrated in the following graphs.

Graph 6 – Net Present Value of Fleet and Field Force Management solutions

	2009	2010	2011	2012	2013
Capital Costs	$258,667	$-	$-	$-	$-
Recurring Expenses	$328,000	$328,000	$328,000	$328,000	$328,000
Total Annual Costs	$586,667	$328,000	$328,000	$328,000	$328,000
Cumulative Savings	$3,914,343	$3,914,343	$3,914,343	$3,914,343	$3,914,343
NET EFFECT	**$3,327,676**	**$3,586,343**	**$3,586,343**	**$3,586,343**	**$3,586,343**
NPV	**$12,697,011**				

Graph 7 – Yearly costs and savings of Fleet and Field Force Management



Fleet and Field Force Management: generates NPV of ~$12.7m over five years. Avoids creation of ~632 tonnes of CO^2 per year

Savings and costs

The annual saving is approximately 10 per cent of the labour and fuel costs based on this field force.

Employee-related benefits

Efficiency gains are achieved by eliminating manual and paper-based processes, which help to minimise potential data errors, including customer disputes. Employees with real-time visibility of customer, product and pricing data are also empowered to respond effectively to activities in the field. These improvements to business controls free the mobile workforce from time-consuming manual administrative processes to focus on higher value activities.

Reduced greenhouse gas emissions

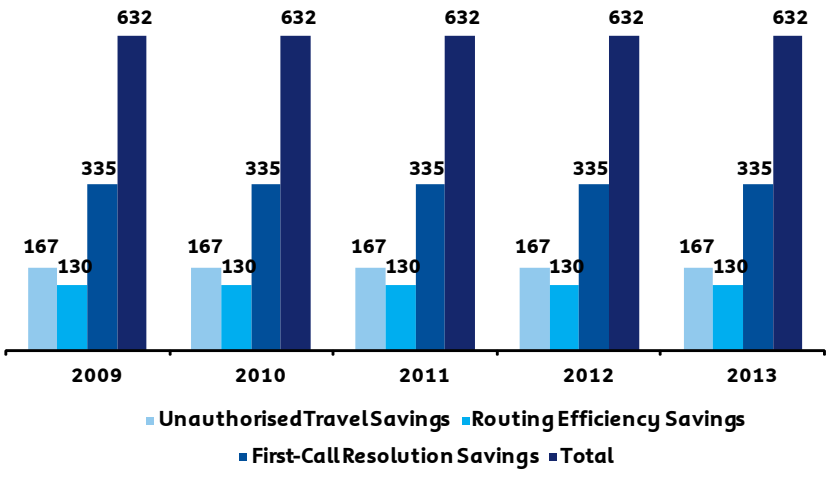
Reductions in greenhouse gas emissions arise from the reduction of unauthorised travel, better routing between calls and improved first-call resolution (from being able to dispatch the best qualified technician to the job). Reducing vehicle travelling distances results in diminished vehicle wear-and-tear and maintenance costs which contributes to greenhouse gas emission reductions.

Indicative CO^2 emissions savings for this hypothetical example are set out below.

Table 7 – Estimated CO2 emission savings of Fleet and Field Force Management

CO2 Emission Savings (Tonnes)	2009	2010	2011	2012	2013
Unauthorised Travel Savings	167	167	167	167	167
Routing Efficiency Savings	130	130	130	130	130
First-Call Resolution Savings	335	335	335	335	335
TOTAL	632	632	632	632	632
Equivalent to:					
Trees that need to be planted	252,786	252,786	252,786	252,786	252,786
Hectares of mature pine plantation	2,022	2,022	2,022	2,022	2,022
Number of cars taken of the road	126	126	126	126	126
Average household emissions saved	57	57	57	57	57
'Black Balloons' of greenhouse gas	12,639,293	12,639,293	12,639,293	12,639,293	12,639,293

Graph 8 – Estimated CO2 emission sources and reductions with Fleet and Field Force Management (tonnes)



6. Conclusion

As the topic of climate change becomes an increasingly critical issue of government, public and corporate concern, organisations are recognising the imperative of having an effective environmental sustainability strategy. This is evidenced by the legislative requirement for companies to measure and report on their greenhouse gas emissions combined with corporate social responsibility expectations and current global economic pressures. The challenge of fulfilling these various responsibilities while remaining operationally robust and competitive is faced by many Australian organisations today.

Recognise the imperative of an effective environmental sustainability strategy

This challenge is likely to generate strong incentives to take mitigative action including investment in technologies that could reduce carbon footprints. ICT solutions have the great advantage of serving a dual purpose; they have been proven to be effective enablers of sustainability strategies as well as productivity and efficiency strategies. As such, they offer significant pathways to carbon abatement as well as enhancing long-term economic competitiveness.

This white paper has provided the climate change context of today's Australian organisations and, having outlined the associated environmental, commercial and social pressures this represents, it has demonstrated the proven benefits of ICT solutions in addressing these pressures. The ROI tools presented here illustrate how Telstra's next generation networks and existing ICT technologies can be built into an organisation's environmental sustainability strategy. Telstra will continue to work with large organisations to help transition them to more energy-efficient platforms and business processes which deliver long-term positive environmental, commercial and social benefits.

Telstra will continue to work with large organisations to help tranisition to more energy-efficient platforms

Seven steps[53] that could lead to improved environmental sustainability:

1. Understand your company's carbon footprint

Estimate your company's direct emissions. Your energy retailer can provide information on total electricity and gas usage and related greenhouse gas emissions. Total petrol and diesel purchases can easily be converted into greenhouse gas emissions. Estimate the indirect emissions from the total kilometres flown and total taxi fare expenses.

2. Estimate the cost of the energy used in creating these emissions

Gain a better understanding of the total cost of energy and business travel across your business. Use the Carbon Pollution Reduction Plan's carbon price to estimate the future carbon priced cost of energy.

3. Set a realistic but aggressive reduction target for the next 5-10 years

Reducing your company's energy costs will make it more competitive and allow it to differentiate on environmental grounds.

4. Make achieving targets a shared responsibility

Develop an education program, communication strategy and communication plan. Provide regular updates on progress towards achieving the targets. Use a sustainability office campaign to advise on simple, achievable steps (e.g. recycling, turning PCs off at power point).

5. Understand that more IT does not mean more greenhouse gases emitted

An increase in IT infrastructure and spending does not necessarily mean a larger carbon footprint or a more negative environmental impact. This paper demonstrates how investing in telecommunications solutions can reduce energy costs and emissions, and provide quick paybacks.

6. Measure the benefits with sophisticated Return on Investment (ROI) tools

Telstra, for the Enterprise & Government sector, has ROI tools that model the financial, greenhouse gas avoidance and employee benefits from adopting specific telecommunications solutions. These ROI tools were developed in partnership with Capgemini, who undertook the detailed modelling for Telstra.

7. Consider enlisting help

Industry associations often have specialist teams dedicated to sustainability. In addition, there are other organisations that can help:

- Specialist greenhouse gas-benchmarking organisations, a service sometimes available through national or local government. Alternatively, companies like WWF-Australia, which operates the Climate Savers program, provide this advice.
- Business consultants, technology consultants and outsourcers, such as Capgemini - provide guidance on appropriate business practices and technology deployment.
- Telstra, for the Enterprise & Government sector – has sophisticated ROI sustainability models that can help organisations understand, measure, evaluate and create business cases for telecommunication solutions.

Employee driven programs

Your organisation's biggest asset in driving environmental sustainability initiatives can be your own people. Employees can deliver a deep knowledge pool for generating practical ideas to reduce costs and effect change to deliver environmental sustainability outcomes. Actively engaging and encouraging employee participation in sustainability initiatives can boost motivation and be seen as a credible employer brand benefit. For your organisation, employee driven programs could ensure that environmental sustainability initiatives are actually embedded and meet your targets.

7 Acknowledgements

7.1. About the authors

7.1.1 Hugh Saddington (Telstra)

Hugh Saddington is the General Manager of Telstra's Market Strategy and Analytics team. Based in Sydney, he is a thought leader on energy issues, climate change and the use of technology to reduce costs and emissions. Hugh is responsible for developing Telstra Enterprise and Government's business strategy and exploring the anticipated issues influencing Telstra Enterprise and Government and its customers.

Hugh joined Telstra in 2001 as the Group Manager of Strategy and Business Planning for Telstra's retail division. Prior to joining Telstra, Hugh worked as a consultant at The Boston Consulting Group where he developed the strategy for large energy corporations in Australia, New Zealand and Hong Kong. Hugh has also held strategy and development positions in Navigant Consulting Group, Energy Australia and CitiPower.

Hugh graduated from Liverpool University in the United Kingdom with a Bachelor in Dental Surgery. He then served in the Royal Air Force (RAF) as a dental surgeon/aero-medical evacuation flight commander. After five years with the RAF, he completed his Masters in Business Administration at Manchester Business School before migrating to Australia in 1995.

7.1.2 Paul Toni (WWF)

Paul Toni leads the Climate Change and Sustainable Development Program at WWF-Australia and is a respected voice on Australia's preparedness for a climate-constrained future. Before assuming this role Paul managed WWF's anti-land clearing campaigns in NSW, Queensland and Tasmania for two years.

Previously, Paul worked as a solicitor and barrister in private practice for 10 years specialising initially in commercial litigation and later in native title, Aboriginal land rights and administrative law. He also held the position of principal solicitor of the NSW Environmental Defender's Office.

7.2 About Telstra

Telstra is a leading provider of network-centric communication and managed services to large enterprise and government organisations in Australia and around the globe. Telstra serves more than half of the world's top 500 companies through its international operations that facilitate access to over 240 countries and territories.

Telstra offers superior value for money through its range of award-winning world-class products and services that are underpinned by the next generation Telstra Next IP™ network and Next G™ network – fully owned and managed based on the stringent quality standards of Australia's largest network manager. Telstra's solutions are developed and tested in close co-operation with partners such as Cisco, Microsoft, Ericsson and Alcatel and designed and deployed for customers by Australia's largest and most qualified Professional Network Services organisation. Telstra's service to enterprise and government customers is internationally recognised for its high quality, including full International Customer Service Standard (ICSS) certification, backed by Telstra's Customer Service Commitments and delivered by Australia's largest and highly qualified field and technical workforce with a culture of continuous improvement. Telstra is a financially strong and reliable partner for large enterprise and government organisations who cannot afford downtime and use ICT solutions to improve productivity and drive growth in a sustainable way.

In the quest to reduce its own greenhouse gas emissions, Telstra has taken a leading position in Australia by demonstrating that corporate energy efficiency targets can be achieved. Telstra's own Communications Technicians Vehicle fleet (one of the largest in Australia) has been enabled with field force management solutions to reduce carbon output in addition to a 20 per cent improvement in productivity and fuel savings of around 8 per cent. Another of Telstra's business units – Network Construction group was the first group to estimate and compile a greenhouse gas (GHG) inventory. Also, Telstra has developed the first of a number of Lifecycle Assessment (LCA) models to quantitatively determine the carbon footprint of Telstra products in the infrastructure of our enterprise and government customers which involves working with Telstra's suppliers as well. These LCA's have also been applied to Telstra's own online billing and teleworking products. Externally, the Dow Jones Sustainability Index rates Telstra's performance against the world's top 40 telecommunication companies in energy efficiency at 82 per cent.[57] This is more than double the average score for this dimension of environmental performance. Telstra is also a leader on the Carbon Disclosure Project's Climate Leaders Index and has submitted publicly-available responses continually since 2003. In 2008, Telstra was a Key Steering Committee member of CEO Climate Policy Recommendations to G8 leaders.

Telstra and WWF-Australia have an ongoing partnership[54] aimed at building a network of protected areas to establish safe havens for Australia's wildlife and help them combat the impacts of habitat loss and climate change. The program known as Building Nature's Safety Net [55] supports Garnaut recommendations that biodiversity conservation should be an important component of Australia's Carbon Pollution Reduction Scheme. [56]

7.3 About WWF

WWF is one of the world's largest and most experienced environmental organisations with some five million supporters and a global network that includes more than 100 countries. WWF is dedicated to stopping the degradation of the planet's natural environment, and to building a future in which humans live in harmony with nature by:

- conserving the world's biological diversity;
- ensuring that the use of renewable natural resources is sustainable; and reducing pollution and wasteful consumption.

WWF uses the best available science to work with businesses, governments, industries and communities throughout the world to develop creative ways in which human demand for natural resources can be kept within sustainable limits. In collaboration with leading companies, WWF is working to turn the necessity of reducing greenhouse gas emissions into a business advantage. It has published joint white papers internationally on sustainable ICT and telecommunications with Hewlett Packard, Bell Telecom and the European group ETNO.

WWF's global Climate Savers program includes member companies Hewlett Packard, IBM, Sony and Nokia. WWF commends Telstra and its other corporate partners committed to reducing emissions for the example they are setting to their shareholders, employees, customers and the industrial sectors and communities in which they operate.

7.4 About Capgemini

Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. It provides clients with insights and capabilities that boost their ability to achieve superior results through a unique way of working – the Collaborative Business Experience – and through a global delivery model called Rightshore®, which aims to offer the right resources in the right location at a competitive cost. Active in 36 countries, Capgemini reported global revenues in 2007 of EUR 8.7 billion (approximately US$12 billion) and employs over 87,000 people worldwide.

Capgemini assists clients in demanding and rapidly changing business environments to translate high-level strategic advice into transformational sustainability initiatives against the backdrop of climate change. It has supported clients preparing for a 'low-carbon' future through compliance reporting, greenhouse gas reduction strategies, sustainable procurement strategies, green optimisation and green IT transformation programs. Capgemini's competencies encompass consultancy, strategy, organisation, process optimisation, program support, deployment and certification.

8 Important Terms

This paper and the results and examples outlined in this report are subject to the following important terms:

Validity of Business Model

The results and views (including costs) are indicative only and are not intended to be relied upon. The assumptions and modelling may not be correct for your organisation. The hypothetical companies used in the examples may not bear any resemblance to your business.

Confidentiality Statement

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Model Accuracy

Assumptions are either sourced from external experts or from Telstra's own experience. Whilst every care is taken to ensure that these assumptions are realistic, many of these may not apply to your organisation and therefore, we make no guarantees about the suitability of the assumptions and the results for your business. You should make your own enquiries as to whether these assumptions are accurate and/or applicable to their own circumstances. The variance between the model and actual outcome depends on many factors including your current business practices and how effectively an organisation implements a strategy, which is not possible to model.

Information Accuracy

Whilst every care is taken to ensure that information provided is correct, it may not apply to your organisation and therefore you should make your own enquiries as to whether the information is applicable to and complete for your circumstances.

Telstra TE&G Video Conferencing Economic and Environmental Returns

Name of Company	Hypothetical Company

Solution Design

Office	Type	Type of Equipment	Number of Devices	Room Installation Required?	Ideal size of meeting	Multi Point Meeting Possible?
SYD	Sydney	Polycom HDX 8000	1	Y	Medium (3-6)	Y
MEL	Melbourne	Polycom HDX 8000	1	Y	Medium (3-6)	Y

First year of Installation	2009
Room Installation	
Will the cost of Refurbishment be paid up front or paid over a 5 year period	◉Capitalised / ○Paid over 5 years
One Touch HDX 8000 Solution	○Yes ◉No

Current Situation Description

Intra-company/External Meetings	90%	10%

Intra-company Meeting Statistics	Nature of Meetings		MultiPoint meetings	
Within CBD	0%	out of which	10%	are multipoint
Regional	0%	out of which	50%	are multipoint
Interstate	100%	out of which	50%	are multipoint
	100%			

Meetings requiring overnight stay	10%
Number of International Meetings a year avoided	5
Total Travel Budget	$1,000,000
Calculate Savings as a % of budget?	○Yes ◉No
What is the Target Savings %	5%

Summary of Order

	Total Ordered	Room Refurbishment
Cisco Tele 3000	-	-
Cisco Tele 1000	-	-
Polycom HDX 8000	2	2
Polycom HDX 9000 VC	-	-
Polycom HDX 9000 Board Room	-	-
Polycom RealPresence HD 400	-	-
Polycom RealPresence HD 200	-	-
Polycom HD 4000	-	-
TOTAL	**2**	**2**

Telstra **TE&G Video Conferencing Economic and Environmental Returns**

Equipment Assumptions								
POA = price on application	Capital Cost	Room Installation Cost	Ongoing Maintenance	Bandwidth Usage	One Touch (pa)	Est. Electricity (KWh)		% of utilisation
						Running	Standby	
Cisco Tele 3000	POA	POA	POA	POA		4.30	0.69	80%
Cisco Tele 1000	POA	POA	POA	POA		1.08	0.31	80%
Polycom HDX 8000	POA	POA	POA	POA	POA	1.00	0.23	80%
Polycom HDX 9000 VC	POA	POA	POA	POA		1.00	0.23	80%
Polycom HDX 9000 Board Room	POA	POA	POA	POA		1.00	0.23	80%
Polycom RealPresence HD 400	POA	POA	POA	POA		4.30	0.69	80%
Polycom RealPresence HD 200	POA	POA	POA	POA		1.08	0.31	80%
Polycom HD 4000	POA	POA	POA	POA	POA	0.12	0.09	50%

Meeting Assumptions					
Approximate Meeting Time	4.0	2.0	1.0	hours	**Ready Reckoner**
Number of Participants per meeting	4	4	2		10% 1 flight in 5 meetings saved
Working Day	10	10	10	hours	25% 1 flight in 4 meetings saved
Flights that VC Mitigates	25%	15%	2%	of meetings (Telstra estimate)	50% 1 flight in 2 meetings saved
% of local meetings that use taxis	90%	90%	90%	Estimate	100% All meetings save a flight
Internal Meetings	90%	90%	90%	Estimate	200% All meetings save 2 flights

Meeting Mix			
Within CBD	10%	10%	
Regional	20%	50%	Meeting mix estimates based on observed experience
Interstate	70%	50%	

Travel Assumptions		
Approximate Carbon Emissions for Cities Selected	0.75	Average for selected video ends using Telstra experience of 122,000 flights
Average Distance of Return Trip	1,977.57	Average for selected video ends using Telstra experience of 122,000 flights
Cost of Return Flight for Cities Selected	$378.51	Average for selected video wends using Telstra experience of 122,000 flights
Approximate cost of an international flight	$5,000	Estimate of Asia Pacific Business Trip
Cost of Taxis from Airport	$50.00	Estimated based on experience
Time Taken from Airport to CBD	0.5	Estimated based on experience
Check-in time	0.5	Estimated based on experience
Return Flight time	4.0	Estimate based on average distance and average speed
Cost of Taxis Intra-CBD	$15.00	Estimated based on experience
Time Taken to Travel Intra-CBD	0.17	Estimated based on experience
Cost of Hotel Accommodation	$170.00	Estimate based on sample from travel database
Meals, misc expenses per day away	$70.00	Estimate based on experience
Average Distance from CBD to Airport	25	Estimate based on average distance
Intra-CBD travel distance	10	Estimate
CO^2 Emissions per Kilometre	0.29	(www.greenvehicleguide.gov.au) + 30% increase for urban use
Average fuel consumption (litres per 100km)	15.21	(ABS, Survey of Motorvehicle Use, Oct 2005)

Other Assumptions		
Cost of Electricity per MWh	$105.61	Average commercial electricity offer
Cost of Carbon Emissions per tonne	$25.00	Assumption
Tonnes of CO^2 per MWh	1.09	Average Australian emission per MWh of electricity
Number of Working Weeks	50	Assumes two week Xmas Shutdown
Number of Working Days	240	Fifty five day working weeks less public holidays (10)
WACC Rate/Discount Factor	12%	Nominal WACC
Average Traveller Salary	$200,000	Estimated fully costed salary of senior manager
Time saved on flights, returned to the company	50%	Assumption

Telstra **TE&G Video Conferencing Economic and Environmental Returns**

Total Cost $	2009	2010	2011	2012	2013
Cisco Tele 3000	$-	$-	$-	$-	$-
Cisco Tele 1000	$-	$-	$-	$-	$-
Polycom HDX 8000	$114,666	$50,586	$50,586	$50,586	$50,586
One Touch Lease Fee	$-	$-	$-	$-	$-
Capex	$60,000	$-	$-	$-	$-
Room Installation	$4,200	$-	$-	$-	$-
Maintenance	$10,000	$10,000	$10,000	$10,000	$10,000
Electricity Consumption	$466	$466	$466	$466	$466
Carbon Tax	$-	$120	$120	$120	$120
Bandwidth	$40,000	$40,000	$40,000	$40,000	$40,000
Polycom HDX 9000 VC	$-	$-	$-	$-	$-
Polycom HDX 9000 Board Room	$-	$-	$-	$-	$-
Polycom RealPresence HD 400	$-	$-	$-	$-	$-
Polycom RealPresence HD 200	$-	$-	$-	$-	$-
Polycom HD 4000	$-	$-	$-	$-	$-
TOTAL	**$114,630**	**$50,541**	**$50,541**	**$50,541**	**$50,541**

Total Savings $	2009	2010	2011	2012	2013
Flight Cost	$128,561	$128,561	$128,561	$128,561	$128,561
Taxi Cost	$54,720	$54,720	$54,720	$54,720	$54,720
Hotel Accommodation & Food	$7,766	$7,766	$7,766	$7,766	$7,766
Carbon Price Savings	$-	$5,292	$5,292	$5,292	$5,292
Savings as a % of Budget	$-	$-	$-	$-	$-
TOTAL	**$191,047**	**$196,339**	**$196,339**	**$196,339**	**$196,339**
NET Effect	$76,417	$145,798	$145,798	$145,798	$145,798
Productivity Addition	$150,006	$219,387	$219,387	$219,387	$219,387
NPV	$463,623				
Payback Period	7	months			
NPV including Productivity	$728,893				
Savings on Travel Budget	19.10%				

Telstra **TE&G Video Conferencing Economic and Environmental Returns**

Indicative Carbon Savings			
	Number of Trips Saved Annually	Total Distance Saved (km)	CO2 Abated Annually (Tonnes)
Flights	274	541,062	204
Taxis used for local meetings	-	-	-
Taxis for Interstate/Regional Meetings	1,094	27,360	8
TOTAL	1,368	568,422	212

Productivity Savings			
Number of flights saved annually		274	
Number of local meetings annually		-	
Average traveller's salary		$200,000	
Time taken to travel to and from meeting		2.0	Hours
Time taken to check in		0.5	Hours
Time per return flight		4.0	Hours
TOTAL lost productivity per flight		6.5	Hours
TOTAL lost time per local meeting		0.33	Hours
Total hours lost per year from travelling		1,766	
Annual productivity pavings		$147,177	
Time saved spent working	50%	$73,588	
Productivity NPV over 5 years		$265,270	
Hours per meeting saved per employee		3.39	

Telstra Flexiworking Cost Benefit Analysis

Name of Company		Hypothetical Company	
Total Number of Employees		1,800	
Total Number of Flexiworkers (Year 1)		200	
Yearly Increase (%)		5%	
First Year of Initiative		2009	
Do you plan to provide a Teleworking Centre		○ Yes	◉ No
Distribution of Teleworkers over Locations		Cost of Office Cubicle	Total People Flexiworking
	Sydney	$12,000	80
	Melbourne	$10,000	80
	Other	$6,000	40
No. of days of Flexiworking per week			
		Office	Home
	Sydney	2	3
	Melbourne	2	3
	Other	2	3
Equipment Provided for Home use			
		CapEx	Ongoing
	Once off desk grant	☑	
	Misc (Mouse, Printer etc)	☑	
	Broadband Modem	☑	
	Broadband Access		☑
	Landline Phone	☑	
	Landline Phone Access		☑
	Laptop	☑	
	VPN Set-up	☑	
	Next G™ card	☑	
	Next G™ yearly cost		☑
	Mobile Phone	☑	
	Mobile Phone Costs		☑
	Thin PC	☐	

Telstra Flexiworking Cost Benefit Analysis

Setup Costs (Capital)		
Once off desk grant	$500	(Estimates based on Telstra data and HR Sources)
Misc (Mouse, Printer etc)	$300	(Estimates based on Telstra data and HR Sources)
Broadband Modem	$200	(Estimates based on Telstra data and HR Sources)
Landline Phone	$200	(Estimates based on Telstra data and HR Sources)
Mobile Phone	$200	(Estimates based on Telstra data and HR Sources)
Laptop	$2,000	(Estimates based on Telstra data and HR Sources)
Thin PC	$700	
Next G™ card (24 Month Plan)	$-	(Estimates based on Telstra data and HR Sources)
VPN Set-up	$1,000	
Setup Costs (Recurring)		
Next G™ yearly cost	$840	(Estimates based on Telstra data and HR Sources)
Broadband Access	$600	(Estimates based on Telstra data and HR Sources)
Mobile Phone Costs	$600	(Estimates based on Telstra data and HR Sources)
Landline Phone Access	$360	(Estimates based on Telstra data and HR Sources)
Breakup of employee location		
Sydney	40%	(Assumptions)
Melbourne	40%	(Assumptions)
Other	20%	(Assumptions)
Cost Per Office Cubicle (yearly)		
Sydney	$12,000	(Estimates based on advice from Property Advisors)
Melbourne	$10,000	(Estimates based on advice from Property Advisors)
Other	$6,000	(Estimates based on advice from Property Advisors)
Teleworking Centres Assumptions		
Capex per pod	$7,500	(Estimates based on setup costs for a Teleworking Centre)
Opex per pod	$5,700	(Estimates based on setup costs for a Teleworking Centre)
Approximate travel distance to teleworking centre	10	(Based on Assumptions)
		assume Opex only includes rent and no other cost (e.g electricity)

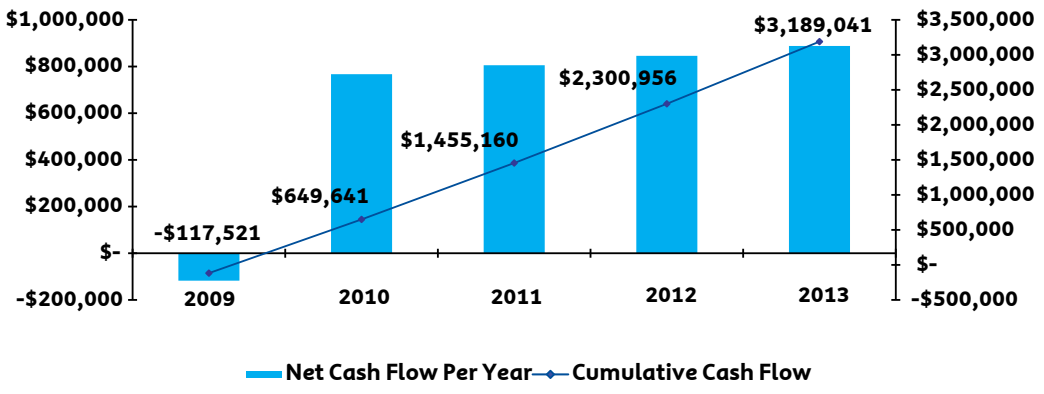
Telstra Flexiworking Cost Benefit Analysis

Transportation Assumptions		
Average commute distance	34	(ABS, Survey of Motorvehicle Use, Oct 2005)
Average Speed in Traffic	22	(www.news.com.au -Crawling, not commuting - Survey May 2008)
Cost of Petrol per litre	$1.50	
CO2 Emissions per Kilometer	0.29	(Extrapolation from www.greenvehicleguide.gov.au)
% of workers who drive - Sydney	67%	(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
% of workers who drive - Melbourne	78%	(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
% of workers who drive - Other	75%	(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
Average fuel consumption (litres per 100 kms)	15.21	(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
		Includes a 30% fuel consumption increase due to peak hour urban traffic
Cost of Electricity per MWh	$105.61	(Business Case Assumptions)
Cost of Carbon Emissions per tonne	$25.00	(Based on Assumptions)
Tonnes of CO^2 per MWh	1.09	(Business Case Assumptions)
Electricity Consumption per employee per yr (Home office)	0.87	(Teleworking Life Cycle Analysis - Telstra, Pg 3-5)
Electricity Consumption per employee per yr (Tele Centre)	2.00	
Electricity Consumption per employee per yr (office)	3.08	(Teleworking Life Cycle Analysis - Telstra, Pg 3-5)
Number of Working Weeks	48	
Nominal WACC	12%	(Nominal WACC)
Reams of Paper per Employee (office)	7.2	(Telstra Usage)
Reams of Paper per Employee (home)	3.6	(Assumption)
Printing at Teleworking Centre	50%	(of office use)
Cost per Ream	$4.00	(Market price)
Printing Cost Per Colour Print	$0.13	(Telstra Data)
Printing Cost Per B&W Print	$0.01	(Telstra Data)
% of B&W prints	56.88%	(Telstra Usage)
% of Colour prints	43.12%	(Telstra Usage)

Telstra Flexiworking Cost Benefit Analysis

	2009	2010	2011	2012	2013
Number of Employees Flexiworking	200	210	221	232	243
Flexiworking Cost Structure					
Home Equipment					
Cost of Equipment	$880,000	$44,000	$46,200	$48,510	$50,936
Yearly Ongoing Cost of Equipment	$480,000	$504,000	$529,200	$555,660	$583,443
Hot Desking					
Hot Desk Space	$800,000	$840,000	$882,000	$926,100	$972,405
Electricity usage of Hot Desking	$25,980	$27,279	$28,643	$30,075	$31,579
Carbon Tax	$-	$7,039	$7,391	$7,760	$8,148
Printing Costs	$36	$37	$39	$41	$43
Paper Costs	$2,304	$2,419	$2,540	$2,667	$2,801
Teleworking Centres					
CAPEX of Teleworking Centres	$-	$-	$-	$-	$-
OPEX of Teleworking Centres	$-	$-	$-	$-	$-
Electricity usage of Teleworking Centre	$-	$-	$-	$-	$-
Printing Costs	$-	$-	$-	$-	$-
Paper Costs	$-	$-	$-	$-	$-
Carbon Tax	$-	$-	$-	$-	$-
Total Flexiworking Cost	$2,188,320	$1,424,774	$1,496,013	$1,570,814	$1,649,354
Traditional Office Cost Structures					
Traditional Office Settings					
Desk Space	$2,000,000	$2,100,000	$2,205,000	$2,315,250	$2,431,013
Electricity Usage in Office	$64,950	$68,198	$71,608	$75,188	$78,947
Carbon Tax	$-	$17,597	$18,477	$19,400	$20,370
Printing Costs	$89	$93	$98	$103	$108
Paper Costs	$5,760	$6,048	$6,350	$6,668	$7,001
Total Traditional Cost	$2,070,799	$2,191,936	$2,301,532	$2,416,609	$2,537,440
TOTAL Savings = Traditional - Flexiworking	**-$117,521**	**$767,161**	**$805,519**	**$845,795**	**$888,085**
NPV	**$2,121,442**				

Graph 3 – Estimated commercial benefits of adopting Teleworking

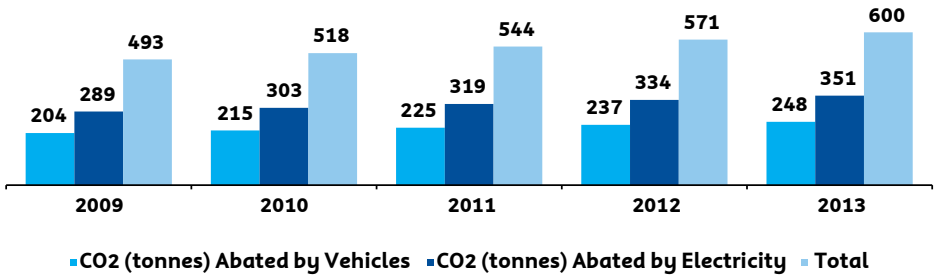


Telstra Flexiworking Cost Benefit Analysis

TOTAL CO^2 Emissions Abated	2009	2010	2011	2012	2013
CO^2 (Tonnes) Abated by Vehicles	204	215	225	237	248
CO^2 (Tonnes) Abated by Electricity	289	303	319	334	351
TOTAL	493	518	544	571	600

Equivalent to:					
Trees that need to be planted	197,350	9,867	10,361	10,879	11,423
Number of cars taken of the road	99	104	109	114	120
Average household emissions saved	45	47	49	52	55
Hectares of mature pine plantation	1,579	79	83	87	91
'Black Balloons' of greenhouse gas	9,867,492	10,360,866	10,878,909	11,422,855	11,993,998

Graph 4 – Estimated carbon savings of Teleworking



Employee Returns		
Total Time Saved		
Distance of Average Commute (Return)	34	km
Average speed in Peak Hour Traffic	22	kmph
Number of Days working from home	3	days
Average Commute time	1.5	
Hours Saved a year	223	
Total Cost Saved		
Cost of Petrol	$1.50	
Average economy of car	15.21	
Litres per trip	5.17	
Cost per Commute	$7.76	
Cost Saved a year	$1,117	

Telstra Web Contact Centre Cost Benefit Analysis

Name of Company	Hypothetical Company		
Total Number of Agents	150		
Total Number of Supervisors	15		
Percent to be transferred to WCC	30%		
Number of Agents in WCC	45		
Number of Supervisors in WCC	5		
Working Days a Week	5		
First Year of Initiative	2009		
Do you plan to provide a Teleworking Centre	○ Yes	◉ No	
Distribution of Agents over Locations	**Total**	**Cost of Office Cubicle**	
Sydney	20	$12,000	
Melbourne	20	$10,000	
Other	10	$6,000	
Distribution of working days across locations	**At Office**	**At Home**	Teleworking Centre
Sydney	2	3	
Melbourne	2	3	
Other	0	5	
Equipment Provided for Home Use			
Standard	**CapEx**	**Ongoing**	
Once off desk grant	☑		
Headset	☑		
Broadband Modem	☑		
Broadband Access		☑	
Landline Phone	☑		
Landline Phone Access		☑	
PC	☑		
Optional			
Next G™ card	☐		
Next G™ yearly cost		☐	
Mobile Phone	☐		
Mobile Phone Costs		☐	
Thin PC	☐		
VPN Set-up	☐		
Web Contact Centre Pricing Selection		Feature Add-on	
Base Package	○	☐ Web & Voice CallBack	
Base+Outbound	○		
Base+Voice Call Recording	○		
Base+Multi Media	○		
Full Feature Package	◉		

Telstra Web Contact Centre Cost Benefit Analysis

Setup Costs (Capital)			
Once off desk grant	$500		(Estimates based on Telstra data and HR Sources)
Headset	$300		(Estimates based on Telstra data and HR Sources)
Broadband Modem	$200		(Estimates based on Telstra data and HR Sources)
Landline Phone	$200		(Estimates based on Telstra data and HR Sources)
PC	$1,200		(Estimates based on Telstra data and HR Sources)
Next G™ card (on a 24 month plan)	$-		(Estimates based on Telstra data and HR Sources)
Mobile Phone	$200		(Estimates based on Telstra data and HR Sources)
Thin PC	$700		(Estimates based on Telstra data and HR Sources)
VPN Set-up	$1,000		(Estimates based on Telstra data and HR Sources)

Setup Costs (Recurring)			
Broadband Access	$600		(Estimates based on Telstra data and HR Sources)
Landline Phone Access	$360		(Estimates based on Telstra data and HR Sources)
Next G™ yearly cost	$840		(Estimates based on Telstra data and HR Sources)
Mobile Phone costs	$600		(Estimates based on Telstra data and HR Sources)

Web CC Indicative Pricing	Agent	Supervisor
Base Package	$2,640	$4,752
Base+Outbound	$4,620	$4,620
Base+Voice Call Recording	$4,620	$4,620
Base+Multi Media	$4,620	$4,620
Full Feature Package	$6,600	$6,600
Feature add on-Web & Voice Callback	$1,320	
Once-off Cost (First 16 Employees)	$13,585	
Cost of Training 16 employees (after Once-off Cost)	$1,502	
Opex of a Traditional Contact Centre Cost	$4,620	$4,620

Cost Per Office Cubicle (yearly)			
Sydney	$12,000		(Estimates based on Property Advisors)
Melbourne	$10,000		(Estimates based on Property Advisors)
Other	$6,000		(Estimates based on Property Advisors)

Teleworking Centres Assumptions			
Capex per pod	$7,500		(Estimates based on property establishment costs)
Opex per pod	$5,700		(Estimates based on property establishment costs)
Approximate travel distance to teleworking centre	10	km	(Estimate)
Assume Opex only includes rent and no other cost (e.g electricity)			

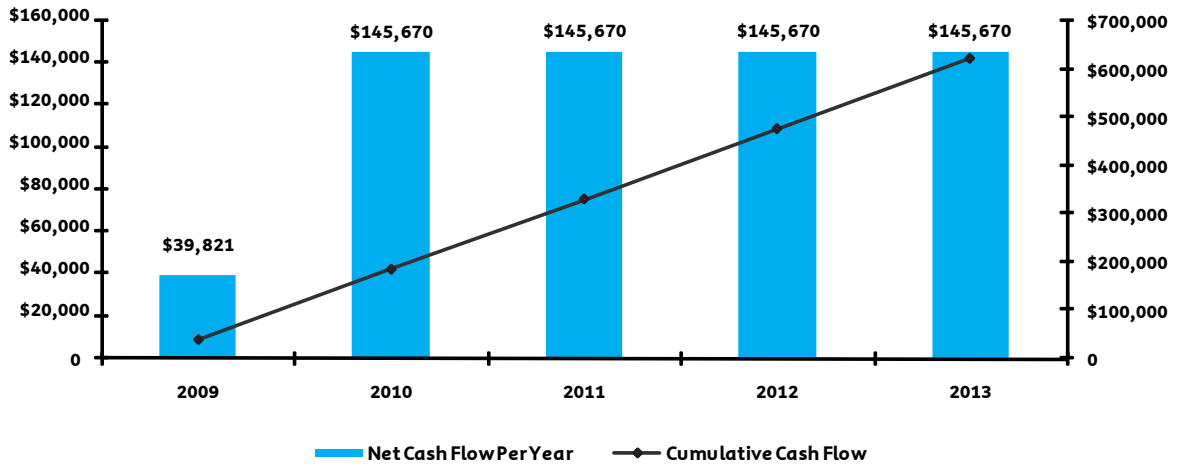
Transportation Assumptions			
Average commute distance	34	km	(ABS, Survey of Motorvehicle Use, Oct 2005)
Average Speed in Traffic	22	kmph	(www.news.com.au /Crawling, not commuting/Survey May 08)
Cost of Petrol per Litre	$1.50		
CO_2 Emissions per Kilometre	0.29	kg	(Extrapolation from www.greenvehicleguide.gov.au)
% of workers who drive			(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
Sydney	67%		(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
Melbourne	78%		(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
Other	75%		(Teleworking Life Cycle Analysis - Telstra, Pg 3-2)
Average fuel consumption (litres per 100km)	15.21		(Teleworking Life Cycle Analysis - Telstra, Pg 3-2) Includes a 30% fuel consumption increase due to peak hour urban traffic

Telstra Web Contact Centre Cost Benefit Analysis

Other Assumptions			
Cost of Electricity per MwH	$106		(Business Case Assumptions)
Cost of Carbon Emissions per ton	$25		(Assumption)
Tonnes of CO^2 per MwH	1.09		(Business Case Assumptions)
Electricity Consumption per employee per year (Home office)	0.87	MWh	(Teleworking Life Cycle Analysis - Telstra, Pg 3-5)
Electricity Consumption per employee per year (Telecentre)	2.00	MWh	(Teleworking Life Cycle Analysis - Telstra, Pg 3-5)
Electricity Consumption per employee per year (Office)	3.08	MWh	(Teleworking Life Cycle Analysis - Telstra, Pg 3-5)
Number of Working Weeks	48		
Nominal WACC	10%		(Nominal WACC)
Reams of Paper per Employee (Office)	ø		(Telstra Usage)
Reams of Paper per Employee (Home)	ø		(Assumption)
Cost per Ream	$4.00		(Market price)
Printing Cost Per Colour Print	$0.13		(Telstra Data)
Printing Cost Per B&W Print	$0.01		(Telstra Data)
% of B&W prints	56.88%		(Telstra Usage)
% of Colour prints	43.12%		(Telstra Usage)

Telstra Web Contact Centre Cost Benefit Analysis

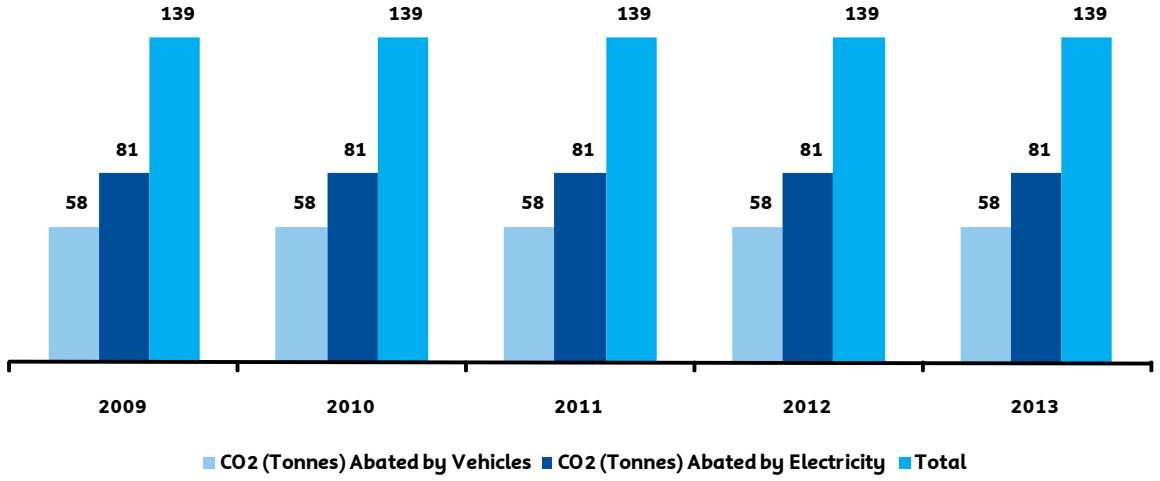
Saving from Web Contact Centre Agents	2009	2010	2011	2012	2013
Number of Agents and Supervisors	50	50	50	50	50
Web Contact Centre Cost Structure					
Home Equipment					
Cost of Equipment	$130,000	$-	$-	$-	$-
Yearly Ongoing Cost of Equipment	$48,000	$48,000	$48,000	$48,000	$48,000
Hot Desking					
Hot Desk Space	$176,000	$220,000	$220,000	$220,000	$220,000
Electricity usage of Hot Desking	$4,330	$4,330	$4,330	$4,330	$4,330
Carbon Tax	$-	$1,117	$1,117	$1,117	$1,117
Printing Costs	$-	$-	$-	$-	$-
Paper Costs	$-	$-	$-	$-	$-
TeleWorking Centres					
CAPEX of Telecentre Contact Centre	$-	$-	$-	$-	$-
OPEX of Telecentre Contact Centre	$-	$-	$-	$-	$-
Electricity usage	$-	$-	$-	$-	$-
Carbon Tax	$-	$-	$-	$-	$-
Cost of Web Contact Centre Solution	$346,777	$330,000	$330,000	$330,000	$330,000
Total cost of selected agents operating in Web Contact Centre environment	$705,107	$603,447	$603,447	$603,447	$603,447
Traditional Office Cost Structures					
Cost of selected agents operating in a traditional call centre environment					
Desk Space	$500,000	$500,000	$500,000	$500,000	$500,000
Electricity Savings in Office	$16,238	$16,238	$16,238	$16,238	$16,238
Carbon Tax Savings	$-	$4,190	$4,190	$4,190	$4,190
Printing Costs	$-	$-	$-	$-	$-
Paper Costs	$-	$-	$-	$-	$-
Traditional Contact Centre costs	$228,690	$228,690	$228,690	$228,690	$228,690
Total cost of selected agents operating in a Traditional Call Centre environment	$744,928	$749,117	$749,117	$749,117	$749,117
TOTAL Savings = Traditional - WCC	$39,821	$145,670	$145,670	$145,670	$145,670
NPV	$455,977				



Telstra Web Contact Centre Cost Benefit Analysis

TOTAL CO^2 Emissions Abated	2009	2010	2011	2012	2013
CO^2 (Tonnes) Abated by Vehicles	58	58	58	58	58
CO^2 (Tonnes) Abated by Electricity	81	81	81	81	81
TOTAL	139	139	139	139	139

Equivalent to:					
Trees that need to be planted	55,643	55,643	55,643	55,643	55,643
Number of cars taken of the road	28	28	28	28	28
Average household emissions saved	13	13	13	13	13
Hectares of mature pine plantation	445	445	445	445	445
'Black Balloons' of greenhouse gas	2,782,146	2,782,146	2,782,146	2,782,146	2,782,146



Employee Returns		
Total Time Saved		
Distance of Average Commute (Return)	34	km
Average speed in Peak Hour Traffic	22	kmph
Number of Days working from home	3.4	days
Teleworking Centre		
Average Commute time	1.5	
Hours Saved a year	252	
Total Cost Saved		
Cost of Petrol	$1.50	
Average economy of car	15.21	
Litres per trip	5.17	
Cost per Commute	$7.76	
Cost Saved a year	$1,266	

Telstra Web Contact Centre Cost Benefit Analysis

Details of Environment ROI

5.1 CO2 Emissions saved by not driving to work

Distance travelled per day 34

% of workers who drive		Total Distance Saved	
Sydney	67%	65,606	18,763
Melbourne	78%	76,378	21,844
Other	75%	61,200	17,503
TOTAL		203,184	58,111

5.2 CO2 Emissions Saved by driving to a teleworking centre (as opposed to work)

Distance travelled per day 10

% of workers who drive		Total Distance Saved	CO2 Emissions in kg
Sydney	67%	-	-
Melbourne	78%	-	-
Other	75%	-	-
TOTAL		-	-

6 Electricity Savings

Work at Home	4	Days a week
Savings of CO^2 by Working at Home	1.62	MWh per year per employee
Work at Teleworking Centre	0	Days a week
Savings of CO^2 by Working at Teleworking Centre	0	MWh per year per employee

Telstra Fleet & Field Force Management Cost Benefit Analysis

Staffing data

Workers to be equipped with EMS/Xora (if applicable)	500	
Cost of field workers (hourly)	$32.50	
% of Back-office workers (compared to field workers)	5%	
Cost of back-office clerks	$24.30	
First Year of Initiative	2009	
Current Work-Order Statistics		
Current number of work orders completed daily	5	
Utilisation Rate of Workforce	100%	
Working hours per day	7.50	
Average revenue per work order	$150	
Shifts per Vehicle	3	
Average Mileage per Vehicle	70,000	km
Estimation unauthorised use over weekends/holidays (km)	5%	km
Are savings calculated by increased productivity or decreased headcount?	◉Productivity	○Headcount
Do you want to include Customer Retention figures in the model?	○Yes	◉No

Derived Assumptions

Average distance travelled to each job	18.30	km
Current Back-Office Data Entry Clerks	25	
Fleet to be equipped with Trimble (if applicable)	167	
Yearly Workload of Company	212,500	
Estimate of Current Operating Costs (Year 1)		
Staffing Costs	$32,239,969	
Petrol Costs	$2,661,750	
Total Costs	$34,901,719	
Savings (Year 1)	$3,327,676	
% Savings in Year 1	9.53%	

Telstra Fleet & Field Force Management Cost Benefit Analysis

EMS Assumptions		
Software (per SIO)	$800	
Services (per licence)	$1,500	
Recurring Charges		
Maintenance (annually 24 month contract)	$288	
Data carriage (per SIO per year)	$60	

Xora Assumptions		
Xora GPS TimeTrack setup fee	$40	
Recurring Charges		
Telstra data plan	$60	
Xora GPS TimeTrack Business Plus cost	$432	

Trimble Assumptions		
Initial Setup costs	$1,000	
Trimble GPS TimeTrack setup fee	$432	
Recurring Charges		
Telstra data plan	$60	
Trimble GPS TimeTrack Business Plus cost	$432	

Field Worker Assumptions		
Number of jobs completed per fieldworker per shift	5.00	Assumption
Current utilisation of your field force	80%	Assumption
Standard working hours per shift	7.5	Assumption
Fully loaded hourly rate	$32	Assumption

Increase in Productivity Assumptions (Decreased by 50% to set achievable targets)		
Customer Retention	8.70%	(Aberdeen Group:The Mobile Field Service Update - 2007 & Beyond)
First call Resolution	10.04%	(Aberdeen Group:The Mobile Field Service Update - 2007 & Beyond)
Service Revenues	8.75%	(Aberdeen Group:The Mobile Field Service Update - 2007 & Beyond)
Service Profits (% of revenue)	3.93%	(Aberdeen Group:The Mobile Field Service Update - 2007 & Beyond)
Increase in work orders completed	9.72%	(Aberdeen Group:The Mobile Field Service Update - 2007 & Beyond)
Work-Travel Time Ratio	3.90%	(Aberdeen Group:The Mobile Field Service Update - 2007 & Beyond)
Back Office reduction in cost	15.00%	

Transportation Assumptions			
Average Speed in Traffic	22	kmph	(www.news.com.au -Crawling, not commuting - Survey May 2008)
Number of Kms before every service	10,000	km	Assumption
Cost of Service	$500		Assumption
Speeding Fines	$79		(RTA NSW Website)
Cost of Petrol per litre	$1.50		Assumption
CO2 Emissions per Kilometer	0.29	kg	(Extrapolation from www.greenvehicleguide.gov.au)
Average fuel consumption (litres per 100 kms)	15		(ABS, Survey of Motorvehicle Use, Oct 2005)
			Includes a 30% markup for Peak hour traffic

Other Assumptions		
Number of Working Weeks	51	Assume 51 week year with one week shutdown over Xmas
WACC Rate/Discount Factor	12.00%	(Nomimal WACC)
Standard working days per year	255	Fifty one weeks with five day working weeks

Telstra Fleet & Field Force Management Cost Benefit Analysis

Year 1 Calculations

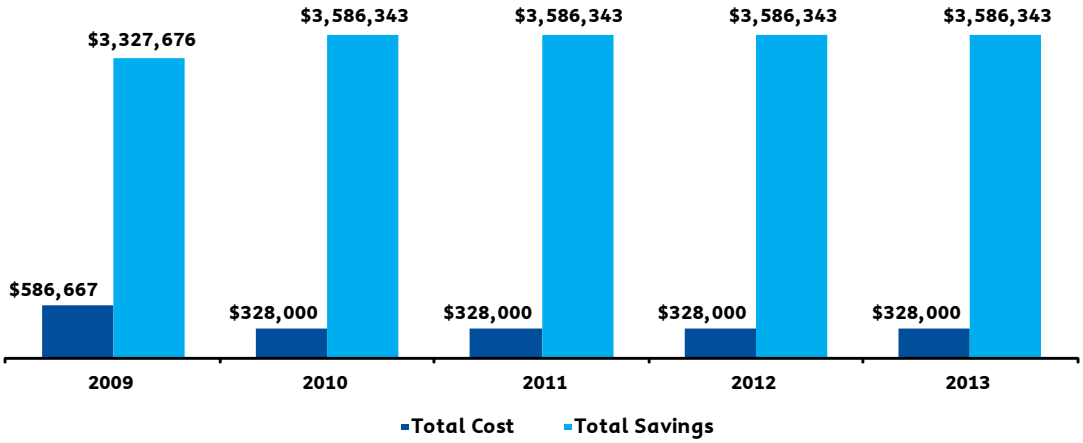
	Trimble (Fleet Management Solutions)	Xora (Remote Field Force Management)
Capital Costs	$238,667	$20,000
Recurring expenses	$82,000	$246,000
TOTAL COST	**$320,667**	**$266,000**
Unauthorised Travel Savings	$133,088	$-
Maintenance	$22,750	$-
Routing Efficiency Savings	$103,808	$-
Incremental Work-order Benefits	$-	$271,097
Productivity Savings from first-call resolution	$-	$3,120,244
Petrol Savings from first-call resolution	$-	$89,080
Reduced Back-office Functions	$-	$174,277
Customer Retention	$-	$-
TOTAL SAVINGS	**$259,646**	**$3,654,697**

NPV Calculations

	2009	2010	2011	2012	2013
Capital Costs	$258,667	$-	$-	$-	$-
Recurring Expenses	$328,000	$328,000	$328,000	$328,000	$328,000
Total Annual Costs	$586,667	$328,000	$328,000	$328,000	$328,000
Annual Savings	$3,914,343	$3,914,343	$3,914,343	$3,914,343	$3,914,343
NET EFFECT	**$3,327,676**	**$3,586,343**	**$3,586,343**	**$3,586,343**	**$3,586,343**

NPV	**$12,697,011**

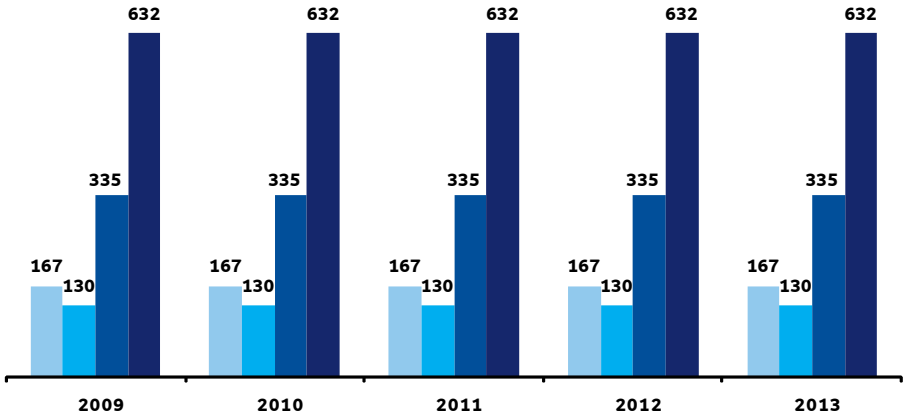
Yearly costs and savings of Fleet and Field Force Management



Telstra Fleet & Field Force Management Cost Benefit Analysis

CO2 Emission Savings (Tonnes)	2009	2010	2011	2012	2013
Unauthorised Travel Savings	167	167	167	167	167
Routing Efficiency Savings	130	130	130	130	130
First-Call Resolution Savings	335	335	335	335	335
TOTAL	632	632	632	632	632
Equivalent to:					
Trees that need to be planted	252,786	252,786	252,786	252,786	252,786
Hectares of mature pine plantation	2,022	2,022	2,022	2,022	2,022
Number of cars taken of the road	126	126	126	126	126
Average household emissions saved	57	57	57	57	57
'Black Balloons' of greenhouse gas	12,639,293	12,639,293	12,639,293	12,639,293	12,639,293

Graph 8 – Estimated CO2 emission sources and reductions with Fleet and Field Force Management (tonnes)



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