



The National Energy Productivity Plan

Business perspectives on priorities and opportunities

2xEP Steering Committee
September 2015

Doubling energy productivity

Energy is ubiquitous in the Australian economy; on farms, in offices, factories, roads and railways. A focus on energy productivity has the potential to unlock thousands of jobs; everything from retrofitting lights and re-designing production processes to installing more capital-intensive equipment.

There are literally hundreds of available innovations that involve changes to technology, changes to business models, changes to financing, incentive and regulatory structures. By stimulating innovation the economy will benefit from being more competitive and from exporting the innovations that we develop at home.

In addition, energy productivity improvement results in positive outcomes for the environment. Energy productivity is central to the greenhouse gas emission reduction project.

In a neat alignment of public policy proposals from different times and places, the 2xEP program reiterates the recent Competition Policy Review that summarised its views as:

- *make markets work in the long-term interests of consumers;*
- *foster diversity, choice and responsiveness [in government services];*
- *encourage innovation, entrepreneurship and the entry of new players*
- *promote efficient investment in and use of infrastructure and natural resources;*
- *establish [competition] laws and regulations that are clear, predictable and reliable; and*
- *secure necessary standards of access and equity.*

Doubling energy productivity is an ambitious goal that would yield immense economic benefits. Complacency around the status quo is not an acceptable alternative.

The Australian Alliance to Save Energy (A2SE) acknowledges members of the 2xEP Steering Committee, the 2xEP Working Groups, the organisations they work for and their significant contributions, in-kind and pro bono, to the work the 2xEP program and to this contribution to development of the National Energy Productivity Plan.

The 2xEP Steering Committee and 2xEP Working Groups are, formally, advisory only. The views expressed in this text are those of A2SE and are not necessarily those of our collaborators, supporters and partners. We have taken all care to ensure that data is correct. All responsibility for the text rests with us.

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Background

This report is a contribution from the 2xEP Steering Committee to the policy formulation process for the National Energy Productivity Plan (NEPP). We understand that the COAG Energy Council will consider a first iteration of the NEPP in December. The 2xEP Steering Committee was established with the support of the Australian Alliance to Save Energy (A2SE) to provide business leadership for improving Australia's energy productivity. A2SE has been a leader in energy productivity policy for the last two years and continues to support the 2xEP process.

As the most broadly representative group of Australian businesses engaged with energy productivity improvement, we can play an important role in producing fact-based policy assessments for governments as well as providing a sounding board for proposals from government. In addition the Committee will be recommending initiatives for industry implementation and also for joint government/industry collaboration.

We understand that development of the NEPP will be an iterative process and that this is the first instalment of our input. The recommendations in this report include firm policy recommendations with links to supporting documentation, as well as proposals for feasibility studies to investigate other priority opportunities for further recommendations. Our corporate partners will support these studies with in-kind resources and will also support work to design the industry-led programs. Importantly, these businesses will also identify and promote activities that are industry-led and do not require government support.

The Steering Committee comprises leaders from energy end-use sectors of the Australian economy, the energy management industry and energy-specialist research organisations (see attachment for detail). These leaders are committed to doubling Australia's energy productivity to improve the Australian economy, to enhance business competitiveness and opportunities for generating jobs, to reduce the cost of energy for consumers, and to reduce greenhouse gas emissions and other fossil fuel pollution.

Reporting to the Steering Committee are nine working groups comprising more than 50 industry experts, providing comprehensive coverage of energy end-use sectors and crosscutting issues (finance, research, technology and communications). These people are contributing substantial amounts of their time to develop specific policy recommendations for the NEPP and, subsequently, 2xEP roadmaps in their sectors.

The energy productivity improvement target

This report and the recommendations provided are relevant to the NEPP regardless of whether a target for energy productivity improvement is set or what that target might be. However, A2SE and the 2xEP Steering Committee remain strongly committed to a doubling target i.e. a 100% improvement in Australia's energy productivity (between 2010 and 2030), and believe that a 40% improvement target (between 2015 to 2030) will not be adequate to meet international competitiveness objectives or Australia's current greenhouse gas reduction target.

Achieving 2xEP will:

- Improve the global competitiveness of Australian business. Analysis by A2SE and ClimateWorks Australia shows that Australia lags competitors on measures of energy productivity and will fall further behind unless effective action is taken urgently. 2xEP can be achieved with existing technology; much greater improvements are likely to be feasible due to advances in technology over the next 15 years.
- Save energy consumers \$30 billion/year by 2030.
- Help achieve the current national target of reducing greenhouse gas emissions by 26% by 2030. Analysis shows that 2xEP will achieve 45% of this target. 2xEP is the lowest level of ambition that should be considered to help meet climate obligations efficiently and effectively..
- Drive 2.7% GDP increase by 2030.
- Reduce oil imports and improve supply security.

A2SE and the 2xEP program will work diligently with governments towards the current target, and nothing recommended in this report is inconsistent with achieving that target.

Initial recommendations for the December 2015 meeting of COAG Energy Council

The 2xEP Steering Committee has developed a set of initial recommendations for action to overcome market barriers and facilitate an acceleration of Australia's energy productivity improvement. Further recommendations will be developed following the additional analysis that is proposed in this report. In some sectors, like manufacturing, there is a clear understanding of the priority measures required to achieve 2xEP based on extensive historical experience. In other sectors, such as freight transport, we have developed a menu of prospective opportunities that are in need of further analysis before conversion to policy recommendations.

All of our recommendations are designed to meet the following principles:

- The recommendations are supported by business
- Action is justified by market failure and/or demonstrated need to accelerate energy productivity improvement for competitive benefit leading to improved returns on investment.
- An integrated package of measures is required to deliver sustainable change, and no type of measure should be excluded; instead a pragmatic approach should be taken to determine the best measure to address the specific market barrier.
- There is a focus on the national harmonisation of policies and programs
- Regulation is applied only where it is demonstrably cost effective (and supported by business).
- A solid fact base will be used to support a positive benefit/cost analysis.
- There must be adequate stakeholder consultation.

Across the economy: Generic issues

1. Establish a voluntary commitment and recognition program – ‘2xEP Challenge’

This voluntary program would provide recognition and support to organisations that choose to commit to improve energy productivity, with the highest level of recognition being for those that commit to double energy productivity by 2030. It is essential to provide flexibility for businesses to make commitments in a form and at a level suitable to each. The program must offer a compelling value proposition, including preferential access to energy productivity support programs as businesses make more challenging commitments. The program should reinforce and protect its voluntary nature, including by being industry-led as far as possible. The program should recognise and encourage participation along supply chains where that is the most appropriate avenue for businesses to engage. As envisaged, the program can be applied across a range of sectors and all sizes of organisation.

No.	Measure title	Draft language for initiative
A	<p>2xEP Challenge Program</p> <p>Applicability: Agriculture Manufacturing Mining Freight transport Commercial buildings Public sector</p>	<p>The [Commonwealth/Council] encourages businesses undertaking efforts to improve energy productivity to measure and report the benefits of action.</p> <p>The [Commonwealth/Council] acknowledges extensive work already underway within the business community to promote collaboration on voluntary action through the 2xEP initiative. This is a collaborative industry-led program spanning business and industry associations, energy services providers and research organisations. Its recently established 2xEP Steering Committee is developing sector-specific roadmaps to improve energy productivity across the economy, and is already providing valuable input to governments.</p> <p>Governments will continue to work cooperatively with the business community on options to support energy productivity improvements, including through 2xEP.</p> <p>A particular proposal from the 2xEP Steering Committee is to establish a voluntary commitment program for businesses (and open also to government agencies and non-government organisations): the 2xEP Challenge. Options for this scheme are already under consultation and engaging a wide range of business and industry associations, individual firms and thought leaders, as well as the state governments, sponsored by NSW. This program seeks to recognise energy productivity leaders and provide support for wider industry action.</p> <p>Recognising that business-led voluntary action can boost economic productivity, national competitiveness and employment opportunities, the [Commonwealth/Council] will work collaboratively to develop and support this program formally launching from July 2016, including providing suitable funding for its initial four years of operation.</p>

2. Establish a program for best practice demonstration and extension

We propose that ARENA dedicate a share of its funding – starting with \$200 million/year in 2016-17 - to energy productivity improvement. The funding would be applied to grants for demonstration projects of best practice energy productivity, or commercialisation of technologies, that show significant potential for wider replication. This could apply to projects within a facility or across a supply chain. The grants of 50% of the installed capital cost of the project would be available for projects at organisations of any size. Participation in the 2xEP Challenge Program should afford applicants an advantage in accessing the funds.

We recognise that this measure may require a change to ARENA’s mandate, but was strongly supported by the working groups and the Steering Committee.

No.	Measure title	Draft language for initiative
B	Demonstration of Energy Productivity Technologies and Best Practices. Applicability: Manufacturing Mining Freight transport Commercial buildings Agriculture Public sector	The [Commonwealth/Council] encourages businesses undertaking efforts to improve energy productivity to accelerate their utilisation of new energy productive technologies and international best practices. 2xEP Steering Committee proposes to establish a grants program for encouraging companies to take commercial risk by implementing technologies and innovative international best practices to substantially improve their energy productivity. It is proposed that ARENA re-allocate a part of its funding – starting at \$200 million annually in 2016-17 – to grants for energy productivity demonstration projects that show significant potential for wider replicability. This sum will need to grow over time. The grants would be for a maximum 50% of the installed capital cost of the project. There should be consideration for making large grants at least partially recoverable if the project achieves a minimum targeted ROI. This would help to grow the funding pool over time.

3. Improve the range, quality and delivery of information for end users

Federal and state governments currently provide valuable information for energy users, including through the online Energy Efficiency Exchange (eex.gov.au) and recent programs like Energy Efficiency Information Grants (EEIG). This information is in need of extension and improvement, particularly in the context of the emerging energy productivity agenda. There are three parts to this recommendation. The first is to repackage and upgrade information, including with enhanced links to examples of local and international best practice. EEIG and the Clean Technology Innovation Program (CTIP) provide rich sources of relevant case studies. Improvements would include step-by-step guides to assessment and implementation including examples of innovative financing and commercial models. The goal is to improve ease of use and facilitate business case development.

The second part is to provide guidance on access to expert advice and implementation services. The third element is to provide communications and networking through industry associations to actively link information with targeted users. This would include the use of social media and information in a range of formats (including YouTube clips) to more effectively deliver these to market. Energy productivity information and capacity building could be enhanced through integration with the Entrepreneurs Program and the Industry

Growth Centres and other existing sector-specific programs and channels. Trusted service providers and industry bodies have an essential role to play in utilisation and promotion of the service and specific content. The Steering Committee was clear about the need for this work to be undertaken by a team of people with expertise in communications as well as content.

No.	Measure title	Draft language for initiative
C	<p>Improve the quality and accessibility of energy productivity information</p> <p>Applicability: Manufacturing Mining Freight transport Built environment</p> <p>Agriculture: Note that due to special needs of this sector additional support and outreach are proposed (see recommendation 16)</p>	<p>The [Commonwealth/Council] encourages businesses to improve energy productivity by improving access to high quality, practical information supported by case studies.</p> <p>The 2xEP manufacturing working group proposes that the Commonwealth invest in the eex.gov.au (Energy Efficiency Exchange) website to convert it to a COAG 'Energy Productivity Exchange' which is more effective at targeting and accessing business energy consumers.</p> <p>This proposal would have three elements: 1. Upgrade the energy productivity exchange; 2. Provide links to implementation services; and 3. Provide communication and extension services to direct information to the customers and help them use it.</p> <ol style="list-style-type: none"> 1. The upgrade to the site should include: <ul style="list-style-type: none"> • Improved content – energy productivity focus, practical commercial information and business cases, rich in case studies, covering financing and innovative ownership models, and reviews of applicability and effectiveness of new technologies. • Captures EEIG information, evaluation and communities of practice • Provides comprehensive links to communities and examples of best practice internationally and new technology information • Integrates with other sectoral productivity enhancement programs to be the energy chapter of their offerings. 2. Links to implementation support services 3. Communications and networking services to direct information to users and support them using it <ul style="list-style-type: none"> • This would include improved targeting and delivery, including using social/business electronic media

4. Improve energy productivity data and reporting

2xEP emphasises the critical importance of relevant, robust, timely and consistent energy productivity data to inform analysis and decision-making. The data currently available to inform assessments of energy productivity is inadequate and this needs to be rectified as a priority.

No.	Measure title	Draft language for initiative
D	Develop and maintain an enhanced platform for the collection and publication of data	The [Commonwealth/Council] proposes that governments coordinate and resource the development and maintenance of data collection and publication. Development of this platform should have regard to the value of data relative to the costs of

	<p>relating to energy productivity</p>	<p>collection and processing.</p> <p>Elements of this proposal include:</p> <ul style="list-style-type: none"> • Data to be collected and collated so as to align with the reporting of other productivity-related data including capital and labour productivity, along with other intermediate inputs. Data to be collected at national, state and territory, sector (and where appropriate, sub-sector) levels. • Publish bi-annual reports of energy productivity and progress towards improvement and targets • An agreed approach to measurement and reporting at the firm or site level will be developed and made available for use by entities on a voluntary basis. The approach will seek to build on international best practice for measurement and verification of energy productivity. The approach may include a mechanism for centralised public reporting of data. • There is also a need to track Australian energy productivity vis international competitors • Establishing baselines for energy productivity and a methodology for energy productivity improvement forecasting: The measurement and reporting of change over time requires the establishment of a robust starting point, baseline and measurement methodology. In order to measure and report change in energy productivity over time, baselines will be established at national, state and territory, sector and, where appropriate, sub-sector levels. It is proposed that the base year be established as either 2005 (in line with the Commonwealth Government emissions reduction target) or 2010 (in line with recent analysis of relevant data and 2xEP) or 2015 in line with the Energy White Paper. An agreed approach to calculating baselines at the firm or operation level will be developed and made available for use by entities on a voluntary basis. • An agreed methodology for forecasting energy productivity should also be developed to forecast achievement against target and against business as usual forecasts.
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5. Establish the Australian Centre for Energy Productivity

Australia is falling behind the world in conducting applied research to facilitate the low cost transition to an energy productive future. Other nations have established dedicated research centres to inform this transition (as listed below). This proposal is for Australia to establish a centre dedicated to energy productivity research, demonstration and communications with a focus on data and analytics, technologies and international best practices.

No.	Measure title	Draft language for initiative
E	Establish the Australian Centre for Energy Productivity Applicable Sectors: All	<p>The [Commonwealth/Council] supports the establishment of an Australian Centre for Energy Productivity (<i>ACEP</i>) bringing together partners from industry, government and research providers to provide coordinated and strengthened research support to ensure that Australia is able to double energy productivity by 2030.</p> <p>It is proposed that <i>ACEP</i> target knowledge gaps and provide new insights to support stronger energy productivity actions by decision makers, and to communicate the findings to a wide audience. The research themes and knowledge gaps that would be addressed include:</p> <ul style="list-style-type: none"> • technology assessment • program evaluation • infrastructure optimisation • policy analysis • investigation of our energy culture • demand and supply analysis <p>Subject to approval in principal by the COAG Energy Council, a full feasibility study will be commissioned for this concept.</p>

Examples of international energy efficiency/productivity centres:

- Precourt Energy Efficiency Centre at Stanford, US
- Energy Conservation Centre, Japan
- Centre for Industrial Energy Efficiency, China
- UC Davis Energy Efficiency Centre, USA
- UNEP Risoe Centre on Energy, Climate and Sustainable Development, Denmark
- UK Energy Research Centre, London, UK
- Wuppertal Institute for Climate, Energy and Environment, Germany
- Oak Ridge National Laboratory, Energy Efficiency & Renewable Energy, Tennessee, USA
- Lawrence Berkeley National Laboratory Environmental Energy Technologies Division, USA

6. Accelerate investment in energy productivity

We need to better understand the barriers that cause substantial underinvestment in energy productivity projects and how they can be overcome. There is no shortage of quick payback energy productivity projects or capital to fund these projects. But often these projects are not being funded with internal capital and companies are not accessing external finance to accelerate their implementation. Many companies have a portfolio of energy productivity improvement projects with over 25% ROI, at a time when they can borrow at 6%.

This investigation should include an examination of the role of incentives, finance and also minimum performance standard to help drive increased investment. (Note also recommendations 3 and 4 on overcoming information barriers that may be holding back these projects). From experience gained through the CTIP we know that there are opportunities to substantially accelerate business investment in energy productivity through provision of incentives, including through the tax system (e.g. instant asset write-offs and accelerated depreciation). Because these projects typically have a high rate of return, breaking this investment barrier will generate additional profit for companies, which will ultimately find its way into government tax revenue. Modelling is expected to show that the initiative would repay the cost of providing incentive and would only have a budget impact in the short term. We recommend identifying likely impacts, benefits and costs of an investment incentive, and assessing a variety of models including tax incentives. The investigation should also determine whether financing barriers exist including an assessment of: the availability of funds, suitability of financial structures, suitability of asset allocation models and asset class definitions, the lending practices of financial institutions, and the best ways to overcome any barriers, including business-led initiatives.

No.	Measure title	Draft language for initiative
F	<p>Determine optimal mechanism(s) to accelerate investment in energy productive technologies and processes.</p> <p>Applicability: Manufacturing Mining Freight transport Commercial buildings Agriculture</p>	<p>The 2xEP Steering Committee proposes that COAG support this feasibility study to:</p> <ul style="list-style-type: none"> • Determine the scale of the energy productivity investment opportunities in each sector that are not being implemented and benefits that achieved if realised. • Determine barriers to investments, in particular: <ul style="list-style-type: none"> - Business priorities - Scale transaction size and transaction cost - Diversity of technology and sectoral opportunities - Barriers to greater institutional investor investment such as asset allocation and asset classes • Examine the best ways to overcome the gap between availability and deployment of finance for improving energy productivity. • Confirm the justification for an incentive scheme to accelerate investment in equipment to increase energy productivity. • Identify options including tax and non-tax measures to drive increased levels of investment, and recommend the preferred approach • Model the costs and benefits of measures • Design the program, including criteria for applicable investments under any scheme recommended • Identify the best means of implementing the recommended program for the greatest impact on energy productivity, including integration with other elements of the NEPP.

7. Define the optimal role for distributed renewable energy

Distributed renewable energy can improve energy productivity by reducing the cost of energy inputs whilst maintaining or increasing economic outputs, and by avoiding losses in centralised energy supply. There are significant opportunities for increased use of on-site renewable energy across the economy, but the application of renewable energy to deliver energy

productivity outcomes is not well understood. Note that this recommendation covers distributed renewables only, and does not address utility level renewables.

No.	Measure title	Draft language for initiative
G	<p>Conduct a study to define the contribution of renewable energy supply to energy productivity</p> <p>Applicability Agriculture Mining Built environment Manufacturing Transport</p>	<p>The [Commonwealth/Council] acknowledges that renewable energy is an increasingly significant contributor to the supply of energy and that it has an important role to improve energy productivity, but that this is not well documented.</p> <p>In a bid to better integrate the application of distributed (on-site) renewables and efforts to boost energy productivity, Governments propose to fund a study to be completed within three months to:</p> <ul style="list-style-type: none"> • Develop appropriate and consistent accounting and reporting methods for renewable generation (including distributed renewable generation) and its contribution to energy productivity. • Define policies and programs to best support the uptake of distributed (on-site) renewables application in business, particularly where co-benefits can be achieved, and to remove barriers to installation.

8. Unleash information and communications technologies to drive change

The ICT sector is well placed to make significant contributions to energy productivity improvement across the national economy, but there are gaps in the understanding of the ways that this could be best enhanced. This activity aligns well with the focus of governments on innovation for enhancing national productivity. "ICT" includes technologies, practices and 'big data'.

No.	Measure title	Draft language for initiative
H	<p>Fund a study on how best to accelerate the application of information and communications technologies to improve energy productivity</p> <p>Applicability Agriculture Built environment Manufacturing Mining Transport Public sector Finance for energy productivity investment</p>	<p>The [Commonwealth/Council] recognises the critical contribution of Information and Communication Technology (ICT) as an enabler of energy productivity improvement and the potential for that contribution to be enhanced.</p> <p>The potential for ICT to make significant contributions to energy productivity improvement across the national economy, in particular sectors, and in individual organisations, includes applications such as:</p> <ul style="list-style-type: none"> • video conferencing, teleworking • smart buildings, smart cities and infrastructure • decision-making for transport and logistics • driverless vehicles • 'big' data analytics applied for better decision-making • streamlined reporting of performance • enhanced employee and stakeholder engagement • energy use information delivered to mobile devices • remote power management • better integration of renewables in energy systems <p>In order to encourage the uptake and deployment of ICT as an</p>

		<p>enabler of energy productivity improvement the government will support a project to achieve the following:</p> <ol style="list-style-type: none"> 1. Review ways to incentivise business and government to upgrade and modernise their ICT to improve energy productivity for business and government departments. 2. Identify and address regulatory barriers to the adoption of energy productivity enabling ICT technologies. 3. Improve and better co-ordinate research on ‘big data’ with business - to help ensure Australian research in this area meets business needs. 4. Identify innovative approaches to the application of ICT in energy productivity improvement and to support their development through research, demonstration and commercialisation. 5. Develop ‘ICT As Enabler of Energy Productivity’ best practice case studies for business sectors and government. Communicate and disseminate these examples with relevant industry groups.
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9. Enhance site-level energy use measurement as a tool for decision-making

Most businesses have inadequate energy use metering of even major energy using plant. This is a major obstacle to energy productivity improvement across business, because of the need to ‘measure to manage’. Metered usage data is required to build reliable estimates of the return on investment from energy savings projects in order to justify investments. Gaining access to this information e.g. through installing meters and data acquisition, is hard to justify in advance. As a result, government incentives for installing measurement systems could make a significant difference. This could be done through provision of grants, bulk buying of metering equipment to reduce prices, and by demonstrating best practice low cost measurement and data acquisition systems. This initiative would cover measurement of use of electricity, natural gas, diesel, steam, hot water, and refrigerants within facilities. Participation in the 2xEP Challenge Program could give applicants an access advantage to funding.

No.	Measure title	Draft language for initiative
I	<p>Design a site energy use information access program</p> <p>Applicability: Agriculture Manufacturing Mining Commercial buildings Freight transport – Rail, warehousing</p>	<p>COAG will fund an initiative to determine the best way to increase access to sub-metering and measurement and data acquisition to overcome the single greatest information barrier to improving energy productivity and investment decisions for energy productivity plant and equipment. This work will result in specific recommended policy initiatives within three months from commissioning.</p> <p>This feasibility study will cover:</p> <ul style="list-style-type: none"> • Identification of world best practices in affordable site energy monitoring and data acquisition. • Define ways to reduce the cost for end-users of measurement and data gathering, both for electricity and for fluids (natural gas, steam, hot water, diesel, refrigerants). • Determine the feasibility of bulk buying metering

		<p>equipment to reduce the cost of meters</p> <ul style="list-style-type: none"> Justify the introduction of an incentive scheme to encourage companies to improve energy monitoring and data acquisition at equipment level, and define the optimal design of such a scheme, and its costs/benefits. Define where energy intensive plant energy usage monitoring be mandated and its acceptability e.g. energy performance contracts mandating sub-metering for licensed combustion equipment. Design support programs to ensure that companies design and utilise monitoring systems to deliver the most effective outcomes.
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10. Reform national energy markets to enliven the demand side

Energy productivity has long been impacted by a misalignment between the energy supply sector and end-users. As is widely acknowledged, the demand side of the national energy markets has not achieved its potential to make those markets work most effectively. Some recent developments have resulted in perverse outcomes for consumers. Both price increases and elements of tariff restructuring have reduced customer incentives to improve energy productivity.

For example, farmers face significant disincentives to electrification from increased retail prices generally, increased fixed charges particularly and other changes including new forms of cost reflective (time of use) pricing. For farmers seeking to enhance energy productivity the electrification of equipment is a gateway for reliably effective measures such as variable speed drives, high efficiency motors, remote control, monitoring and scheduling.

No.	Measure title	Draft language for initiative
J	<p>Reform energy markets to improve choice and lower costs</p> <p>Applicability Agriculture Mining Built environment Manufacturing</p>	<p>The [Commonwealth/Council] acknowledges that recent changes in the operation of electricity markets may have had unintended consequences for some consumers. Governments are committed to further reform in the interests of all business consumers (including farmers).</p> <p>Governments will consider and report on the impacts of recent changes including price increases and tariff structures (e.g. high fixed charges and other elements that make it hard for users to respond to reduce costs) and their likely future impacts in a bid to better understand and ameliorate negative impacts.</p> <p>Governments will endeavour to ameliorate the potential for negative impacts.</p> <p>Governments will work to ensure that reforms enable demand side participation in the market.</p> <p>Governments will ensure that appropriate information and advice are readily available ahead of changes being effected, and that ‘enabling’ technologies are implemented before changes are made.</p> <p>Governments will endorse and implement reforms recommended by the recent Competition Policy Review</p>

		relating to the regulation of [electricity and gas] networks, including the establishment of an independent access pricing regulator.
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11. Address the nexus between energy and water

Improving the energy AND water use-efficiency of irrigation infrastructure for agriculture is absolutely critical to boosting farm level productivity. Energy and water productivity are critical elements of the competitiveness required to help Australia food producers increase output for growing demand from Asia. The relationship between energy and water use and cost is complex. For example, improvements in water use-efficiency often rely on higher energy inputs that can result in increased operating costs. Variability in water availability and cost introduces volatility in the need and cost to run irrigation equipment and, so, the returns on investments. The potential for distributed renewable generation to contribute to improved productivity of both energy and water is largely untapped. The relationship between energy and water has broader policy implications with a view to the sustainability of businesses, communities and the environment. It is essential that there be alignment of policy for energy, water and agriculture as a critical sector of the economy. Water and energy use are also closely aligned in other sectors like food processing where fuel use (and particularly natural gas) is mostly related to use of hot water.

No.	Measure title	Draft language for initiative
K	Better align energy and water policy and programs Applicability Agriculture, priority All, potentially	The [Commonwealth/Council] acknowledges the complex and vital relationship between energy and water for agricultural applications and for competitiveness and sustainability more generally. Governments will consider the potential lift to farm-level energy efficiency for irrigation that could contribute to productivity gains across water, energy and yield including through the application of distributed renewable generation. Governments will consider the remit of the National Water Initiative with a view to better supporting productivity and sustainability improvements at the intersection of water and energy consumption.

12. Deploy best practice minimum performance standards

Example – Appliances: Since 2000, Australian consumers have saved approximately \$10 billion on their energy bills thanks to efficiency standards and labelling managed through the Greenhouse and Energy Minimum Standards (GEMS)¹ program². The average household saves around \$300 per year³, equating to one-sixth of total household energy expenditure⁴. Fewer than 300 Australian businesses have obligations under GEMS⁵, yet over 2 million Australian businesses benefit from the program through lower energy bills⁶. GEMS-related benefits

¹ Previously known as the “Equipment Energy Efficiency Program” and incorporating MEPS (“Minimum Energy Performance Standards”). Also includes “Energy Ratings” - <http://www.energyrating.gov.au/>.

² George Wilkenfeld, Impacts of the E3 program: Projected energy, cost and emission savings (Fifth impacts study), Department of Industry, March 2014.

³ Alan Pears, Energy-smart appliances cut Australian power bills by billions, RMIT University, April 2014, p.1.

⁴ 2009-2010 Household Expenditure Survey Summary of Results, p79.

⁵ Number of Unique ABN /ACN Suppliers by Product Type, Department of Industry, August 2014, p.1.

⁶ 8165.0 - Counts of Australian Businesses, including Entries and Exits, Jun 2009 to Jun 2013, ABS.

outweigh costs by a ratio of 4.6 to 1⁷. The 2xEP Steering Committee supports actions to strengthen existing minimum energy performance standards (MEPS) and appliance energy labelling to put them in line with international best practice and avoid dumping of lower efficiency equipment in Australia. We also support extending MEPS to residential lighting and additional equipment types where this can be shown to be beneficial for consumers. We also support resourcing standards bodies to ensure that they can enforce compliance and maintain a level playing field.

No.	Measure title	Draft language for initiative
L	Enhance energy performance standards for appliances Applicability All	<ul style="list-style-type: none"> • Governments will support innovation and productivity by developing minimum energy performance standards for appliances in line with leading practice • Governments will extend MEPS to residential lighting and additional equipment types where this can be shown to be beneficial for consumers. • Consideration will be given to justification and implications for the phasing out of sale of halogen lamps in particular, but also other residential lighting equipment that does not meet a new residential lighting standard. • Governments will ensure that standards bodies are adequately resourced to ensure that they can enforce compliance and maintain a level playing field.
M	Enhance energy performance standards for all buildings	<ul style="list-style-type: none"> • Governments will support innovation and productivity by developing minimum energy performance standards for buildings in line with leading practice
N	Enhance energy performance standards for light vehicles	<ul style="list-style-type: none"> • Governments will support innovation and productivity by developing minimum energy performance standards for vehicles in line with leading practice

13. Engage with consumers about energy productivity

There is value in increasing public awareness of energy efficiency and energy productivity to reduce costs, improve comfort and as a solution to greenhouse gas emissions as there has been very little positive communication on being a smart energy consumer in the past three years. There is also a need for more specific communications in sectors like passenger transport. Whether at the point of sale when buying a car, when planning a route to work, or deciding what time is best to take the bus, the choices made by consumers affect the productivity of the economy; upstream to requirements for fuel imports and downstream to the length of time taken for a particular trip. Efforts to improve energy productivity in passenger transport must be cognisant of the role of consumers as enablers. Consumers - of cars, fuels, train trips – must be engaged in processes to understand the issues and opportunities, to plan and implement required reforms.

Attachments:

⁷ George Wilkenfeld, loc. cit.

No.	Measure title	Draft language for initiative
O	Consumers are the drivers: Engagement is the key Applicability: All	The Commonwealth/ Council acknowledges that it needs to continue to educate consumers on energy efficiency/productivity as the decisions that they make are central to the energy efficiency improvement task. Governments commit to engaging thoroughly with consumers, and to develop and implement approaches for enhanced information, communication and engagement.

14. Lead the way: Governments as consumers

Governments at all levels are significant consumers of goods and services of all kinds. As significant consumers, governments are powerful consumers. Through approaches to procurement they can affect the markets for goods and services ranging from generic appliances and equipment through commercial building space to a wide range of vehicle types. And, also, to energy products and services. If governments lead the way by mandating the procurement and supply of high efficiency goods and services markets, will likely follow.

P	Governments leading the way: Procurement as policy	<ul style="list-style-type: none"> • Governments at all levels will mandate that the appliances and equipment they buy, lease and use are at the highest reasonable standards of energy efficiency • Governments will report on the energy efficiency of the appliances and equipment they use and programs intended to improve energy productivity • Governments at all levels will mandate that the premises they build, lease and occupy are at the highest reasonable standards of energy efficiency • Government will set energy productivity improvement targets for their own facilities and will develop plans to meet those targets. • Governments will report annually on the energy productivity of the premises they occupy and their progress towards meeting their targets. • Governments at all levels will mandate that the vehicles they purchase, lease and use are at the highest reasonable standards of energy efficiency • Governments will report on the energy productivity of vehicles they use and programs intended to improve the energy productivity of government transport
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15. Foster coherence: Planning, precincts, resources

An energy productive built environment sits at the intersection of economic development, urban design, infrastructure investment, technological advances and demographic trends. Isolated investments are unlikely to deliver an energy productive built environment. Productivity improvement in such a complex system requires co-ordinated action. The outcome is multiple dividends in terms of increased employment, more affordable housing,

reduced household and business costs, reduced health costs, and improved accessibility, amenity and equity

Effective integrated planning can optimise the location of employment opportunities, residences and services within a walkable distance or reach of efficient public transport. Effective considerations of energy productivity can result in long-term benefits from energy system (supply) optimisation. If executed with appropriate consideration to energy productivity, the benefits to individuals and the economy as a whole are likely to be significant – measured in dollars, health and the liveability of cities. Distributed renewable energy can play a significant role in improving the energy (and other resource) productivity of precincts.

The [Commonwealth/Council] acknowledges the potential for energy productivity to be improved by coordinated approaches to the redevelopment of established districts and to new developments, the need for energy and transport infrastructure to be considerate of existing and intended uses and users.

No.	Measure title	Draft language for initiative
Q	Coordinated approaches to planning	<ul style="list-style-type: none"> • Governments acknowledge that processes for planning and development must be coordinated and must consider energy use and energy productivity
R	Distributed renewable generation: shaving peaks and shaving bills	<ul style="list-style-type: none"> • Governments acknowledge that distributed renewable generation can play a significant role in increasing the energy productivity of buildings and precincts • Governments will actively support the application of distributed renewable generation that cost-effectively complements network delivered energy

Sector-specific issues and responses

Agriculture

16. Enliven communities of practice: Training, extension and culture

There is a classic market failure in information in energy productivity so that farmers struggle to make optimal choices in the context of business planning. The information available can be difficult to interpret and confusing absent sufficient levels of technical understanding and competence. The task of estimating the costs, benefits and rates of return for different technologies in particular (unique) circumstances is complex. There is often a plethora of competing interests and priorities. Independent professional advice is often expensive and hard to source, apart from that driven by sales objectives for commercial products. The outcome is limited innovation and stifled productivity. Training in extension can be a catalyst for helping establish a more innovative workplace culture focused on energy, waste and water efficiency.

There is a pressing need to provide tailored extension activities addressing energy productivity in the context of the farm business. Based on case studies and practical demonstration of solutions in representative farming systems, such a program would adopt a collaborative “community of practice” model to build knowledge and capacity around whole-of-farm energy productivity. Focus areas would be electrification of irrigation pumping, farm vehicle efficiency, renewable energy options including solar in irrigation and waste-to-energy in intensive animal production, and optimisation through deployment of smart automated control systems.

A community of practice that engages equipment providers, governments, research bodies and peer leading farmers, is needed to go beyond recent programs and current knowledge resources (such as that represented by the NSW Farmers “Agriculture Innovators” web portal linked [here](#)). The aim would be to help farmers improve integrated whole-of-farm energy productivity solutions - to reduce both energy and waste costs through improved whole of farm planning and decision making on investment in energy/water efficiency and demand management and onsite renewables for different agriculture sub-sectors.

No.	Measure title	Draft language for initiative
S	Capacity building for farmers on energy productivity	<p>The [Commonwealth/Council] acknowledges the need for appropriate and accessible information to underpin decision-making towards energy productivity improvement.</p> <p>Governments acknowledge the essential role of communities to support changes in practice, develop skills and encourage innovation. Governments acknowledge the recent efforts and success of communities of interest in driving change.</p> <p>Building on these experiences governments will support the establishment of training and extension platforms among farmers to optimise engagement with programs established to deliver energy productivity gains. Elements may include:</p> <ul style="list-style-type: none"> • Training used to target specific needs identified by the learnings of the ‘communities of practice’ developed through EEIG • A train-the-trainer component to identify key skills sets among regional networks to provide ongoing support, possibly focused on service providers and merchandisers. • Design of new qualifications and skills sets as well as

		<p>identification of high quality non-accredited training which allows further funding to flow through federal and state government skills programs as well as programs supporting capacity building for business.</p> <ul style="list-style-type: none"> • Ongoing mentoring and support after training • A focus on existing innovators and younger generation – with focus on peer leadership • Multichannel communication and outreach built on case studies and innovation programs that demonstrate feasibility of solutions, in the context of broader business planning • Approaches to sharing information about approaches to project assessment, technology choice and financing solutions.
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Built environment

17. Support the market for high performance housing through disclosure

The built environment consumes well in excess of 40% of all of Australia’s final energy⁸. Over recent years there have been significant energy productivity gains in this sector of the economy driven by the imperative of price increases for electricity and gas, the availability of new technologies, the effectiveness of regulatory regimes and incentives such as energy savings certificate schemes. There are, however, significant opportunities for further improvement that are cost effective, long lasting and bring multiple benefits.

The ABS reports that there are currently more than nine million dwellings in Australia. Research conducted for COAG in 2012 estimated that the floor area of non-residential buildings in Australia would increase from 208 million square meters in 2010 to 246 million square meters in 2020. The potential for energy productivity improvement lies both with retrofits for existing stock and in ensuring that new stock is designed and built to be as efficient as possible. The [Commonwealth/Council] acknowledges the historical and potential contribution to energy productivity improvement from arrangements that enhance building and precinct performance through policy, procedure and regulation.

No.	Measure title	Draft language for initiative
T	Encourage awareness of residential energy productivity	<ul style="list-style-type: none"> • Governments will develop and promote a robust and nationally consistent framework for the assessment and reporting of efficiency of residential buildings • Governments will consider approaches to promoting the voluntary use of ratings disclosure and publication

18. Strengthen building codes

Decisions about the construction of new buildings result in long lasting outcomes for energy consumers and for energy productivity. Building technologies are advancing rapidly and new approaches offer the potential to significantly reduce energy consumption, maintain or improve amenity and boost energy productivity (at a particular site, in the environment where it sits and along the energy supply chain).

⁸ (excluding petroleum based products that are primarily used for transport)

U	Strong building standards and codes for future proofing	<p>The [Commonwealth/Council] acknowledges the need for modern and strong codes for the construction of all kinds of buildings. .</p> <ul style="list-style-type: none"> • Governments at all levels will cooperate to enhance building codes in line with high efficiency, cost effective performance standards • Governments at all levels will work to ensure compliance with codes and that as ‘as built’ is ‘as designed’ • Governments will consider the development of approaches to rectification and consequences for instances of non-compliance with codes
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Transport

19. Introduce fuel efficiency standards for light vehicles

Fuel efficiency standards for new light vehicles (passenger and commercial) are widely acknowledged as one of the most cost effective measures of any sector, with total energy savings far outweighing costs. The Global Fuel Economy Initiative (GFEI) suggests that the costs associated with a 50% improvement in fuel efficiency could be paid back with fuel savings in less than three years. Independent studies by ClimateWorks Australia and the Climate Change Authority show that an ambitious fuel efficiency target for all new light vehicles in Australia could achieve annual fuel savings greater than \$800 per vehicle for operators by 2025, or \$7.9 billion in fuel savings across the national fleet.

Given that the market for vehicles is increasingly global, the goals for improved fuel efficiency for light vehicles should be set in line with those proposed by GFEI and widely supported in the international community. The goal set by GFEI is a 50% improvement in the average fuel consumption of *all* vehicles by 2050.

The detail of standards and a pathway to implementation should be the subject of further research, analysis and consultation. The suggested timing for commencement and introduction is in 2018 when local manufacturing of passenger vehicles will cease – a significant barrier to adopting standards in the past. Australia should target a 50% improvement in the fuel efficiency of all *new* vehicles by 2025.

Attachments:

No.	Measure title	Draft language for initiative
V	<p>Light vehicle fuel efficiency standards</p> <p>Applicability: Passenger and light freight transport</p>	<p>The [Commonwealth/Council] acknowledges the significant benefits available from improving the efficiency of the light vehicle fleet in Australia. Independent analysis has shown that ambitious standards could generate nearly \$8 billion in annual fuel savings within 10 years; and that the payback on higher costs for more efficient vehicles is typically less than three years. Benefits for the broader community include reduced air pollution, lower carbon emissions, and improved fuel security.</p> <p>The Commonwealth subscribes to the goals set out through the Global Fuel Efficiency Initiative: a 50% improvement in the average fuel consumption of <i>all</i> vehicles by 2050.</p> <p>The Commonwealth will immediately subscribe Australia to the</p>

		<p>GFEI '100 countries for 50by50' program.</p> <p>Governments will work with stakeholders to develop a pathway for the implementation of standards required to meet these goals. Standards will be introduced for the sale of all new vehicles from July 2020.</p> <p>Governments will mandate fuel consumption standards for all future own-use fleet purchases effective from July 2016.</p>
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20. Optimise systems: Demand management for improved capacity utilisation

Summary: Road traffic congestion is estimated to have cost the national economy in the order of \$13 billion in 2010⁹. Road traffic congestion contributes to poor fuel use-efficiency, higher fuel consumption and, so, higher imports of petroleum products. Road traffic congestion is a significant contributor to greenhouse gas emissions. Public transport systems in many of Australia's cities are stretched to meet need, particularly in peak periods. There is a correlation between road traffic congestion and public transport effectiveness at least to the extent of public buses being made less efficient as a result of road traffic congestion. The issue of future transport infrastructure needs is currently exercising governments at all levels. A fundamental consideration for existing and future systems is the potential to improve capacity utilisation. There are opportunities to work with system users to improve efficiency, reduce costs and enhance the transport experience.

Providers of public transport have for some time adopted time-of-use pricing to manage system loads (i.e. through differential peak and off-peak fares) and in some cases to actively encourage public transport as a choice (e.g. low weekend fares). As technologies develop it may be possible to further affect consumer behaviours including through decisions about travel mode, time and route.

Some factors that contribute to congestion, or frustrate solutions to congestion, are the fragmented nature of main road ownership and management, a misalignment of interests and uncoordinated approaches to tolling. The combination of these factors can result in poor outcomes for the economic productivity of roads when they are understood as an integrated network.

No.	Measure title	Draft language for initiative
W	<p>Improve the use-efficiency of existing infrastructure</p> <p>Applicability: Passenger and freight transport</p>	<p>The Commonwealth/ Council acknowledges the significant negative financial and other impacts of road traffic congestion in urban areas and the potential to address these impacts by improving capacity utilisation.</p> <p>Governments commit to the development of a framework for transport network efficiency and for the improved integration of private and public resources. Governments will work together and with stakeholders towards improved management of main road networks including through the coordination and harmonisation of approaches to tolling.</p> <p>Governments commit to the development of a framework for improved integration of private vehicle use with public and active transport.</p> <p>Governments will further investigate the potential for</p>

⁹ Tourism and Transport Forum, The Benefits of Public Transport, May 2010, p. 1, <http://www.ttf.org.au/Content/benefitsofpublictransport.aspx> (accessed 5 March 2014).

		<p>congestion charging, including time-of-use charging, as a demand management tool.</p> <p>Governments will prioritise system optimisation – ie maximising capacity utilisation of existing infrastructure - as a dimension of infrastructure needs assessment. Demand management systems will be designed into future infrastructure projects.</p>
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21. Reduce urban congestion through better public transport

As noted above, road traffic congestion results in significant costs to the economy. There is considerable scope for energy productivity improvement through improvement in public transport. The Grattan Institute observes in a recent submission to The Senate that “public transport capacity has a critical role to play in increasing the productivity of Australia’s cities, and of the nation. Increased public transport reach and capacity would give firms access to more workers, making them more productive. Better access to public transport would also give more people opportunities to find rewarding jobs.”

No.	Measure title	Draft language for initiative
X	<p>Improve public transport and reduce traffic congestion</p> <p>Applicability: Passenger transport</p>	<p>The Commonwealth/ Council acknowledges the significant negative financial and other impacts of road traffic congestion in urban areas and the potential to address these impacts by improving public transport.</p> <p>Governments will consider adopting recommendations made by The Senate Rural and Regional Affairs and Transport References Committee in its recent inquiry ‘Role of public transport in delivering productivity outcomes’.</p> <p>Governments will consider adopting the recommendation of Infrastructure Australia to develop an Urban Transport Infrastructure Strategy that would “address the present lack of a widely accepted, national framework for planning, financing and managing urban transport infrastructure” and “target improved city planning, better use of transport services, and better investment in road and rail infrastructure”.</p>

22. Develop an integrated energy productivity strategy for freight transport

This recommendation is intended to progress energy productivity planning in the freight transport sector to the same level it has progressed in other sectors. Despite transport being the second largest consumer of energy in the economy (27%), and freight transport contributing almost 30% of that energy use, there is no existing energy productivity plan for this sector.

The potential economic benefit that justifies this work being conducted at this time is significant, as there is potential for improving road freight energy productivity by at least 15%, rail by at least 30% and from switching from road to rail some 60%. So the maximum potential savings could be as much as \$2 billion/year.

While elements of this information exist, they do not address all modes in a consistent manner and are not integrated. Additional work is therefore required to complete identification, analysis and prioritisation of energy productivity opportunities.

The working group for the sector developed a shortlist of preferred policies and actions for each freight mode (road, rail, shipping). This work included initiatives that can be progressed by industry alone, and others that will require government input or support are listed in the attached Excel file. However, work is required to fully analyse the priority opportunities, to develop an integrated sector strategy.

No.	Measure title	Draft language for initiative
Y	<p>Development of an integrated energy productivity strategy for freight transport.</p> <p>Applicability: Freight transport</p>	<p>With the freight task projected to grow by 80% from 2010 to 2030, energy productivity will become increasingly important. The [Commonwealth/Council] acknowledges the need to improve energy productivity in the freight transport sector to remain internationally competitive and to reduce freight and energy costs for business.</p> <p>Funding support will be provided to the 2xEP freight transport working group to identify and prioritise a suite of cost-effective initiatives that can significantly improve the sector's energy productivity. These initiatives can then become future recommendations to the NEPP.</p> <p>A budget (say \$75k) will be allocated to the working group, to be matched with in-kind support from the working group participants and the wider freight transport industry. The work should be completed within a period of three months.</p>

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