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Submission on the Eddington E-W Link Study

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SUMMARY

The Eddington Report has been a valuable exercise in drawing more public attention to possible solutions to Melbourne's growing problems of accessibility and traffic congestion, exacerbated by ever-rising petrol prices and the imperative of reducing greenhouse gas emissions in this new era of climate change and peak oil.

However, the Report fails to adequately recognise and prioritise what existing research already shows - major mass transit /heavy rail systems operating in parallel with arterial roads and freeways are by far the most sustainable and effective long-term solution for not just mitigating traffic congestion but also to reduce air pollution and boost the effects of agglomeration and economic networking that improve productivity in a thriving city.

Urban rail systems are vital in reducing energy use and minimising greenhouse gas emissions. They are the most energy-efficient transport mode and the most effective at capturing modal share from private transport. Even more importantly from the point of view of congestion remedies, traffic flow paradoxes mean that expanding a road system to reduce congestion is not only ineffective but can also be counter-productive.

Hence, while SOS agrees with most of the overview of the problem as outlined at the beginning of the EWLNA report, we do not support the conclusion that "the number of trips made by car in Melbourne will increase by a substantial amount for the foreseeable future – and the city's road network must be able to cope with this increasing demand in an efficient and sustainable manner".

For economic and environmental reasons, we cannot afford to allow that possibility, let alone plan for it. Instead, we must plan proactively for alternatives, not more of the same "solutions" that have got us into the car-based spiraling congestion conundrum

that Melbourne suffers increasingly from today. The city is already too car-dependent and the history of freeway building here and overseas shows time and again that new freeways induce more vehicular traffic and take modal share away from public transport networks that operate in the same transport corridors. Then, typically in less than a decade, the larger freeway system is congested again.

We have lots of arterial roads and freeways - now we need suburban and outer suburban extensions to the rail network across all of metro Melbourne BEFORE we even consider another freeway, let alone a very expensive long road tunnel. Providing an efficient integrated public transport alternative will attract many road commuters, thus relieving congestion permanently on the road system.

The Monash-CityLink-West Gate transport corridor is probably the single most important trans-city route in the whole metro area and improvements already in the pipeline are expected to boost its capacity over the next four to five years, reaching full capacity within two decades. But by this time, major rail network extensions across the whole metro area could be established, taking sufficient share of commuter travel to ensure that the road corridor never reaches congestion point.

While the Eddington Report is not a list of transport priorities or a broad transport strategy for the whole of Melbourne, the city's serious planning and transport problems need to be addressed citywide if a re-defined version of a metropolitan strategy is going to be able to deliver a compact, sustainable city for the future. The current Melbourne 2030 plan is uncoordinated and under-funded, and does not have enough administrative support or implementation mechanisms to succeed.

The explanation of these conclusions is set out below, beginning with the need to reform the Victorian planning regime (including Melbourne 2030) so our overall urban planning system can provide for the sustainable future of the city.

We then address sustainable transport alternatives and, finally, infrastructure provision and funding mechanisms.

A BACKGROUND - A FLAWED METRO STRATEGY AND A FLAWED PLANNING SYSTEM

As the Eddington Report notes, any long-term attempt to improve transportation in Melbourne must be consistent with planning policies, especially Melbourne 2030, a 30-year plan based on the European model of a more compact, efficient and productive city with higher density development around activity centres at mass transit nodes.

However, the strategy has been poorly implemented by councils, the state bureaucracy and the state government, and poorly integrated with other government policies. From its very introduction in 2002, it was not linked to the state budget process and there was no definition of whole-of-government strategies and responsibilities for its implementation. In particular, the "integrated transport strategy" supposed to underpin activity centre development just consisted of suggestions to "prepare plans" (Mees 2004).

Other than retail floor-space, there was little rationale for the selection of activity centres (DOI 2002). Allowing higher-density development anywhere as long as a few design requirements are met is a very ineffective approach to facilitating development in preferred locations. M2030 also made no distinction between private car-based malls and traditional centres near mass transit nodes. By contrast, in Sydney, proactive land assembly and stronger policy ensured that most major centres were rail-based.

The expanding major stand-alone shopping centres in Melbourne are all designated activity centres and mostly car-based. M2030 provided no activity centre implementation strategies to counteract this trend. It failed to extend the necessary mass transit infrastructure, to provide legislation or (dis)incentives, or to regulate retail markets to protect traditional centres from new retail development (Goodman et al 2004)

Although all aspects of M2030 were supposed to carry the same weight, no guidance was provided to balance conflicting policies (such as heritage conservation within an activity centre high-density precinct). Victorian planning reforms in general have been piecemeal with continual “band-aiding” of legislation, which has introduced more complexity, more opportunities for the exercise of discretion and thus greater confusion, more avenues for appeal, and more costly delays - despite the fact that all parties (councils, residents and developers) want more certainty, not less (M2030 IRG 2003).

The launch of the Metropolitan Transport Plan in 2005 (3 years after the release of M2030 itself) was criticised by the Minister’s own M2030 Implementation Reference Group as “*a plan without specific details, timing or funding commitments ... **The current disaggregated approach to transport and land use planning and implementation is not delivering the outcomes it should.***” (M2030 IRG 2005)

CRITICISMS OF VICTORIAN PLANNING SYSTEM - VAGO

In this context the Victorian Auditor-General’s Office (VAGO) has been strongly critical of inefficient and unaccountable state and municipal administration of the planning regime over the last decade. VAGO found that while the new performance-based planning schemes were being introduced in the late 1990s, departmental planning advice to the Minister was inadequate; a significant number of council permit assessments failed to address statutory planning provisions; and no councils measured their performance in meeting service standards under their Customer Service Charters (VAGO 1999).

Nine years later, standards of council accountability and financial viability have not improved (VAGO 2008a & c). Neither have councils developed indicators to measure the quality of their service and planning performance, and the standard of planning administration and senior planning staff oversight of planning activities has worsened:

- 78% (!) of council assessments failed to adequately consider the requirements of the Act and the relevant planning scheme; and
- there is an inadequate standard of planning permit assessments and poor level of documentation of the planning permit process in general; and

- DPCD administration does not allow for proper measurement and monitoring of the overall performance of the planning system; and
- parts of the new format planning schemes have become overly complex and unclear and do not adequately achieve their original intent (VAGO 2008b).
- council performance reporting is 'compliance-centric' - ie, limited to minimal disclosure and legislative requirements - there are no independent, authoritative standards or an accepted conceptual framework for performance reporting (VAGO 2008c).

The situation described above is partly due to continual legislative "band-aiding" of planning schemes and the Planning Act to amend weaknesses in an attempt to improve the operation of the planning regime, which instead has become overly complex and unclear. VAGO recommended a state-wide approach to help councils improve planning management but found that DPCD still does not have the capability to comprehensively measure and monitor the performance of the state planning system (VAGO 2008b).

As the ex-president of PIA (Vic) wrote to then Premier Bracks, "*The Government has the responsibility to do much more to ensure that the rhetoric of (M2030) implementation becomes reality.... (performance-based planning schemes) have created a process whereby nearly anything is possible and practically everything is left to the discretion of the decision-maker. This, coupled with the lack of experienced staff in local government and a sustained period of heightened development activity that now seems to be the norm, has created many of the problems the planning system now faces. A more prescriptive approach on a whole host of matters is required.*" (Budge 2004).

M2030 AUDIT CRITICISMS

The criticisms above were largely but more euphemistically borne out by the first five-year Audit of M2030, which confirmed the failure of the strategy to achieve any of its fundamental aims:

- failure to direct residential growth from the fringe to established urban areas
- lack of significant residential or mixed-use development in large activity centres.
- insufficient resources and capacity to implement activity centre structure planning.
- insufficient provision or even commitment to crucial public transport investments.
- inherent tensions within M2030 itself, with lack of guidance for policy prioritisation.

The Audit also noted that the population of Melbourne has increased faster than predicted, that climate change is now an accepted reality, and that congestion and rising petrol costs have made increased travel efficiency more urgent. It concluded that "...there is now an even greater urgency to implement the many initiatives of Melbourne 2030 if Melbourne's development is to be sustainable and the city is to remain livable."

Clearly, these major negative issues detailed so far must be addressed if sustainable planning policies for Melbourne have any chance of being successfully implemented.

Consequently, a thorough overhaul of the vision, the implementation and the funding of M2030 and its associated infrastructure (particularly a metro-wide integrated rail

network) is urgently required. This will necessitate a whole-of-government and departmental commitment to addressing the deficiencies identified above as the highest government priority, given the need to urgently implement planning policies that address minimisation of greenhouse gas emissions and reduce fossil fuel use in the peak oil era.

B SUSTAINABLE TRANSPORT ECONOMICS - RAIL VS ROAD

The M2030 Audit found that significant investment in public transport is a high priority and recommended integrated transport plans for major new developments, to be mandatory for relevant planning proposals - ie, in or near activity centres. Failure to integrate development with transport planning results in low-density land use with cars being the dominant form of transport (Audit 2008, Ch.4).

The most effective way of building a 'transit metropolis' is to tightly integrate dense, mixed-use development around stops on a fixed-route transit network, maximising walk-up patronage and multiple trip making. This is the approach taken in Curitiba, Ottawa, most European cities and modern Asian cities such as Japan, Hong Kong and Singapore. Bus or light rail feeders to the main rail system are also widely exploited.

Lower income cities typically provide comparatively high levels of transit service, but most of it is inferior bus services that operate within general road traffic congestion, thus losing market share to cars and motor cycles. This is similar to the situation with Melbourne's middle and outer suburban bus services, touted as an "effective" greenhouse and anti-congestion approach.

Low density, sprawling, residential land use is particularly strongly associated with high transport energy use and CO₂ emissions, as exemplified in Melbourne's sprawling outer suburbs. Conversely, urban freeways and high levels of parking in the CBD correlate with higher energy use and greenhouse emissions in cities.

Denser urban form is a critical factor in creating sustainable, energy-efficient urban transport systems - ie, reduced car use and increased public transport and non-motorised mobility. Urban rail systems are vital in reducing energy use and greenhouse gas emissions. Rail is the most energy-efficient transport mode and the most effective at capturing modal share from private transport (Kenworthy 2003).

There is substantial energy and greenhouse conservation potential in compact, mixed land use cities, with extensive highly-accessible transit systems operating on a backbone of rail. Limits on freeway construction and parking in central city areas help create less auto-dependent cities with lower built-in energy demand and less greenhouse emissions.

Attempting to reduce congestion through freeway building rather than targeting non-auto modes to avoid congestion doesn't reduce energy or CO₂ emissions but increases these factors and their attendant negative environmental impacts (Kenworthy 2003).

Changing economic densities by reducing travel times or costs can induce productivity gains from agglomeration economies (Graham 2007, p.4). However, comparison of estimates indicates that urban road traffic congestion plays a significant role in 'constraining' the benefits of agglomeration, and consequently, it can reduce achievable levels of urban productivity (Graham 2007, p.26)

Conversely, new mass-transit rail systems generate substantial new patronage, which can enhance agglomeration effects in major urban concentrations, leading to productivity increases and generating substantial additional benefits (Shefer 2005).

Where public transport and roads compete, expanding road capacity is a two-way loser. It attracts additional traffic, eventually making road conditions worse. It also reduces public transport patronage, making public transport less attractive as well. Conversely, improving public transport can improve travel times for both public transport and road users. Vancouver in Canada has built no freeways for decades, but invested in public transport instead and average travel times have decreased as a result. This widely recognised phenomenon has been dubbed the Downs-Thompson Paradox.

Supply-side policies are not effective in reducing urban traffic congestion because urban commuting is subject to the theory of "triple convergence." In response to a capacity addition, three immediate effects occur (Downs 2004). First, drivers using alternative routes begin to use the expanded roads. Second, those previously travelling at off-peak times (either immediately before or after the peak) shift to the peak time. Third, public transport users shift to driving their vehicles. Because of triple convergence and a potentially large induced demand, it is difficult to remove peak-hour congestion from highways by creating more road capacity (Sing et al).

Transportation researchers have identified three traffic paradoxes showing that expanding road systems to remedy congestion is not only ineffective but also counter-productive under some conditions (Murchland 1970; Arnott and Small 1994; Braess et al 2005).

Specifically, the Pigou-Knight-Downs paradox states that adding extra road capacity does not reduce travel time. The Downs-Thomson paradox states that the equilibrium speed of car traffic on the road network is determined by the average door-to-door speed of equivalent journeys by public transport. Consequently, increasing road capacity can actually make overall congestion on the road worse.

Finally, the Braess paradox states that adding extra capacity to a network, when the moving entities selfishly choose their route, can in some cases reduce overall performance and increase total commuting time.

Increasing road capacity can actually make overall congestion on the road worse when the shift from public transport causes a dis-investment in the mode such that the public transport operator either reduces frequency of service or raises fares to cover costs. This shifts additional passengers into cars. Ultimately, congestion on the road gets worse and the total commuting time increases (Ding et al).

So expanding a road system as a remedy to congestion is not only ineffective but often counterproductive. This “Lewis-Mogridge Position” was extensively documented by Martin Mogridge in his case-study of London “Travel in towns: jam yesterday, jam today and jam tomorrow?”.

Thus, with increased traffic congestion and tolls from more freeways, plus externalities like worse air pollution and greenhouse gas production, economic agglomeration benefits could be best delivered by upgrading mass transit routes that serve the same transport corridors. This would siphon off a significant number of commuters onto mass transit, improving their travel time and that of the reduced number of motorists left on the freeways (Graham 2007).

However, adopting this approach in Victoria would mean overcoming the state’s institutional bias towards road and freeway construction, well illustrated by the Scoresby Freeway project where the government's own consultants found that shifting just 2% of car trips to public transport would relieve more congestion than building the freeway. But the public transport alternative was not even considered because without a freeway, it failed to fit the state definition of 'integrated' transport.

The message for both State and Federal Governments is clear - substantial upgrading of rail networks with NO new freeways will not only reduce existing road congestion and travel times, it will also permanently reduce the emission of greenhouse gases and air pollution generally. It will also save large numbers of outer suburban commuters from living in a “public transport desert” where each adult member of each family is at present totally car dependent and hostage to rising petrol prices.

While rail extension services are being constructed, other measures to reduce peak hour gridlock could include priority car pool and bus lanes, differential vehicle registration charges and a congestion tax for commuters to the Melbourne CBD. Such a tax is increasingly supported by academics and business and environment groups.

C IMPLEMENTING A SUSTAINABLE METROPOLITAN STRATEGY

The global warming crisis now appears likely to be far worse than official reports and national governments have indicated, implying widespread economic, social and environmental dislocation unless actions to significantly reduce greenhouse gas emissions are undertaken worldwide within the next year or so (Sutton 2008).

Consequently, planning for Melbourne in the 21st century will mean urgently adopting strategies to deliver a more compact and efficient city that conserves water and energy and reduces greenhouse emissions, petrol dependence and traffic congestion (minimising road use by commuters and freight), as well as meeting the spiraling need for affordable housing (levies or a proportion of new residential development).

INFRASTRUCTURE PROVISION - PUBLIC OR PRIVATE FUNDING?

Given population growth, global warming and peak oil, triple-bottom-line benefits from development and infrastructure provision must be the primary state goal of a re-

vamped metro strategy. Innovative implementation funding mechanisms will have to be adopted that extend beyond traditional state or private sector funding (Audit 2008).

Multi-unit high rise residential projects are more expensive to build than traditional suburban project homes so market forces alone won't develop this desperately needed accommodation for lone people and couples. Activity centre development is also more expensive due to land tax, stamp duty, authority charges and municipal rates. To counteract this, the M2030 Audit detailed the following alternative funding the state will need to commit to, just to achieve sustainable implementation of M2030:

- locating/investing in activity centres through the provision of facilities or housing.
- funding public infrastructure.
- waiving stamp duty and land tax in activity centres and redevelopment areas

State funding will also be necessary to help with compulsory acquisition of property, waiving developer costs, levies or works charges for major road works, and infrastructure works in activity centres. Councils will need state assistance to help focus development where it is most needed in return for major project investment that conforms to planning controls democratically designed through local community consultation (Audit 2008).

Implementing a sustainable M2030 policy means providing “an estimated \$5 billion worth of infrastructure over the next 5 years” (Audit 2008, Ch.4). However, given the scope of the problem and the need to act swiftly on a large scale, this should probably be tripled, given that the current meagre improvements to Melbourne's transport system alone (*Meeting Our Transport Challenges*) are budgeted at around \$1.25 billion per year (\$10.5 billion until 2016).

Consequently, the state must re-consider debt funding of infrastructure projects. Equity markets are interested in stable returns that allow communities to invest in their own futures (Audit 2008) so industry is likely to prefer funding public infrastructure by government debt rather than taxes and user charges, because debt financing delivers broader economic benefits like employment without impacting on good management.

These strategies match costs to community benefits over time. Recent quantitative analysis by Allen Consulting (Allen 2004) indicates that:

- *Government at state and local levels should acknowledge that re-capitalising our cities is essential to maintain and enhance economic, social and environmental sustainability.*
- *The case for the greater use of government debt is strong.*
- *Fundamental public finance arrangements need to be revisited.*
- *The trend towards ad hoc and wasteful infrastructure funding techniques should stop.*

However, current fiscal policy still eschews debt and tax increases, with neo-conservative economic theory suggesting that fluidity in international capital markets enforces major disciplines on macro economic policies. This reluctance to maintain or increase traditional public borrowing has opened the way for public-private partnerships (PPPs).

Still, there is a tendency towards natural monopoly public sector provision and regulation of urban infrastructure, given its public good characteristics and capacity to generate externalities, which can include positive health impacts, facilitating international competitiveness amongst regional firms and shaping development patterns in preferred ways. Infrastructure investment would be sub-optimal if left to the market (SGS 1999)

Some authors go further and state that there is no rationale for State governments not to borrow, and that there is no straightforward relationship between public debt and interest rates. PPP policies can thus be viewed as being due to political pressure from private vested interests seeking secure public finance. Most PPPs are really just conventional principal-agent contracts - not real 'partnerships' but a recession-proof form of corporate welfare. PPPs can only be profitable if service quality is reduced, taxpayers get gouged, or large-scale efficiency gains are found (Sheil 2002).

The Australian Institute of Project Management concurs, stating that PPP projects are not delivering their promised benefits to society. Community and social obligations are being ignored and further PPP projects should be stopped (AIPM 2005).

Allen Consulting warns that reluctance to use government financing could prove very expensive over time because there is more risk to economic prosperity and personal safety from under-investment in infrastructure. Failure to mobilise resources into public infrastructure will constrain economic opportunities and thus impact on the livability of urban areas central to competitiveness and sustainability (Allen 2004).

ACTIVITY CENTRE FUNDING AND IMPLEMENTATION

In the 1980's and 1990's, strategic metropolitan planning contained activity centre and retail and office development policies based on managing centres for net community benefit. Current State planning policy ignores this crucial issue but the capacity of infrastructure in activity centres needs to be assessed as part of the structure planning process (Audit 2008). More transparent criteria for defining activity centres need to be developed to re-classify them primarily with regard to how well they are (or will be) served by various modes of public transport, particularly mass transit (rail).

Infrastructure provision needs to be seen as a seeding mechanism to encourage developer interest in activity centre. The cost of new infrastructure for both infill and green-field developments has traditionally been met by governments but the past decade has seen a higher proportion of infrastructure costs passed on as up-front costs to developers. However, this trend to development contributions involves complex inequities with considerable administrative costs and potentially significant disputation and litigation (Allen 2004). Thus there is a strong case for public funding of maintenance and upgrading of infrastructure like stormwater and power supply systems (Audit 2008).

Overseas cities use methods like land designation, legislation, Business Improvement Districts, tax increment financing, urban renewal bonds, state government funds in conjunction with private sector capital and even planning controls that restrict development of alternative sites. Without such positive implementation mechanisms,

land cost and availability will prevent the transformation of many activity centres. As well as policy and regulation, these measures give government the tools to influence planning outcomes by guiding appropriate development to desired locations.

All this is going to require very large amounts of public funding which should eliminate further investment in any new roads, except for maintenance of existing roadways and the provision of some grade separations to improve safety.

A CENTRAL IMPLEMENTATION AUTHORITY TO DRIVE M2030

Voluntary central coordination in Victoria has failed to provide any driving force to unite the government bureaucracy (and Treasury in particular) behind the implementation of M2030, largely because of a lack of expertise, vision and political will. This is clear from the documented failure of M2030 to achieve its goals, in particular the lack of progress over the last five years towards serious planning (let alone funding or implementation) for an extended integrated rail network to serve the outer metro area and growth corridors.

Strong state government leadership and a new collaborative culture between government departments and agencies is needed to implement a reformed M2030. This will require a new statutory authority to coordinate the creation of a compact city with greatly improved public transport and reduced private commuting and to ensure efficient provision of infrastructure into growth and intensification areas (M2030 IRG 2004).

The M2030 Audit also concluded that State and local budgets need to dovetail with implementation priorities and that far greater leadership than demonstrated so far will be required to push the strategy. It suggested several options to drive an effective sustainable M2030 strategy: implementation coordinated by the Department of Premier and Cabinet; a Metropolitan Planning Authority; a Ministerial Advisory Council; an inter-departmental coordination committee; or by a specialised implementation group in DPCD.

Despite the Audit warning that the last option would not be expert or visionary enough, the Government has chosen this least effective leadership option (DPCD 2008).

D CONCLUSION

This decision to coordinate the future implementation of M2030 by a committee within DPCD must be revisited to enable the establishment of an independent statutory metropolitan planning authority that can draw on a wide range of external expertise (and preferably be headed up by an influential visionary like Professor Peter Newman). The new authority would need the full support of Treasury and a mandate to implement a re-defined, more prescriptive, sustainable metro strategy, in consultation with local communities and taking account of the criticisms above.

Existing discretionary planning guidelines have produced confusion and lack of accountability. Instead, mandatory regulation (although less flexible) is more efficient in terms of transparently achieving goals with minimum wastage of time and staff resources. If planning is to become as focussed and effective as it must be to achieve any vision of coordinated sustainable metropolitan growth, mandatory democratic planning rules (developed in consultation with local communities) will be necessary (as well as incentives and disincentives) to quickly begin to reduce the costs and uncertainty of development and focus it in activity centres to minimise the outer suburban sprawl.

There have been no significant efforts to fully coordinate and deliver the M2030 strategy, as recommended three years ago by the Minister's own M2030 Implementation Reference Group (M2030 IRG 2005) and now by the M2030 Audit. This lack of vision and determination to effectively drive the metro strategy is reflected in the Government's decision to leave the implementation of M2030 up to a specialised group within DPCD.

Other evidence that bureaucratic thinking is still rooted in the traditions of the past includes recent anti-road congestion measures - in the new "Keep Melbourne Moving" anti-road-congestion initiative launched in May, the only provisions directly related to improving public transport services seem to be two tram stops and improvements to two tram routes - \$5million out of \$113million, just over 4%! (VicRoads 2008).

There still seems to be no understanding within government or the bureaucracy that the only permanent solution to road congestion is to get commuters out of cars and into trains (especially since trams and buses add to peak congestion). The most obvious example is the urgent need for a rail link to Doncaster and beyond, to alleviate commuter traffic congestion at the city end of the Eastern Freeway, to make Doncaster Shoppingtown functional as a principal activity centre and to serve suburbs en route. The DART bus link to Doncaster is not a feasible mass transit alternative for the reasons outlined above.

Given the present Victorian Government's failure to provide enough funding for extra necessary infrastructure and maintenance of existing facilities - even for regional roads (VAGO 2008d) - there will need to be a major paradigm shift in government thinking if an effective, sustainable metro development and transport strategy is to be delivered.

The funds that might be spent on another road tunnel are desperately needed instead for implementing a re-structured triple bottom line approach to urban planning in Melbourne, primarily extending and fully integrating a metro-wide heavy rail network. Statutory controls must also ensure that ESD principles (environmentally sustainable design - eg. water sensitive urban design, storm-water management, and third pipe infrastructure) are incorporated in planning amendments and at the strategic planning and subdivision design stage of new projects. Major gains in building performance can only be made by optimising the orientation and layout of building envelopes, including floor plans, elevations, location of open space, window placement and orientation, etc.

These factors all need to be addressed at the planning stage, under our present fragmented planning regime. The extra resources involved in requiring all development applications to undergo an ESD assessment could be provided by simply making Rescode amenity standards and planning scheme zone and overlay provisions mandatory. This would cut out most of the time-consuming exercise of discretion involved in all development applications and reduce the number of VCAT appeals by providing much of the greater degree of certainty that councils, residents and most developers have already said they want (M2030 IRG 2003). This would also effectively remove the present incentive for unscrupulous developers to submit ambit claims.

After this regulatory preparation, the Government should provide amortised loans for energy conservation building retrofits (mandatory for new homes, commercial buildings and upon the sale of pre-existing buildings) and financial incentives for installing green roofs, solar hot water and photovoltaic systems on domestic, commercial and industrial buildings (with rebates to include unlimited re-sale of power back to utilities). The benefits of such greenhouse initiatives would include permanently reduced energy demand and less or no need for new fossil fuelled-power stations.

Political leaders at all levels need to immediately focus on tighter efficiency standards for homes, offices and industry; a massive energy conservation effort to boost the efficiency of industry and expand cogeneration; financial incentives to encourage adoption of efficient low-pollution cars; and aggressive investment in renewable energy technologies.

It can be done. In California, three decades of focus on clean energy technologies and energy-efficiency have seen amortized investment costs remain flat while power consumption and carbon emissions plunged (Romm 2006).

Worldwide photovoltaic (PV) production has grown 50% each year since 2002. Over a gigawatt of solar power was installed in 2006 in Germany alone, where annual private PV installations have exceeded those in all other countries combined since 2004 (Dorn 2007).

London has embarked on an ambitious plan to cut greenhouse emissions by 60% within 20 years, using measures like cut-price insulation and cogeneration (BBC 2007).

Vegetation cover for land and building surfaces can mitigate urban heat island effects, with implementation costs outweighed by energy savings and reductions in greenhouse gas emissions, stormwater runoff and air pollution, especially ozone and nitrogen dioxide (Solecki 2004). In Europe, green roofing systems have become well established after government legislative and financial support (Burton 2005). In the US, the Portland Oregon city zoning code allows larger buildings if they have eco-roofs (Dawson 2002), and studies in Toronto show that widespread green roof technology would provide significant economic benefits, particularly stormwater management and reduction of the urban heat island effect and associated energy use (Ryerson 2005).

Sustainable triple-bottom line initiatives require infrastructure funding. In the context of the need for these positive responses to the twin crises of climate change and peak oil, earmarking any amount of funding for a major new road project that would increase greenhouse emissions and prolong oil dependence is insanity!

We don't need more studies or more prevarication. Let's just start implementing what is clearly necessary and what the majority of the community has been demanding for years now - a reliable, metro-wide, fully integrated public transport rail network that can cut back our car dependence and ensure the future viability of Melbourne.

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