Environment and Natural Resources Committee
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NORTHERN ALLIANCE FOR GREENHOUSE ACTION

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Inquiry into the Approvals Process for Renewable Energy Projects in Victoria

1. Northern Alliance for Greenhouse Action (NAGA)

The Northern Alliance for Greenhouse Action (NAGA) was formed in 2002 as an alliance of nine northern metropolitan Melbourne councils (Banyule, Darebin, Hume, Manningham, Melbourne, Moreland, Nillumbik, Whittlesea, and Yarra) and the Moreland Energy Foundation Limited (MEFL). The Alliance is representative of approximately 25 per cent of the Melbourne population.

Since its formation NAGA has been at the forefront of effective and innovative regional approaches to community engagement on carbon management and climate change. This has been primarily achieved through the transfer of knowledge, advocacy and through engaging with the community and businesses through a range of projects and programs.

NAGA members have focussed on actions which reduce their own corporate emissions, and have increasingly engaged in actions to reduce greenhouse gas emissions in their community by means of improved planning provisions, efficiency programs directed to stationary and transport energy, promotion of Green Power and decarbonising the energy supply through promotion of renewable and less carbon intensive forms of generation such as cogeneration.

2. Towards Zero Net Emissions in the NAGA Region

In 2008 NAGA commenced the development of "Towards Zero Net Emissions in the NAGA Region" Regional Plan (TZNE). This comprehensive strategy, currently nearing completion, identifies the key sources of emissions generated across the NAGA region, models projections to 2020, and proposes a series of strategies to significantly reduce emissions. These strategies have been based on an overview of the current and emerging policy context at Federal and State level, NAGA members' experience and international best practice. TZNE addresses both efficiency and energy substitution options across the industrial, commercial, residential and transport sectors. In addition, the plan identifies potential to decarbonise energy supply by means of installation of renewables and less carbon intensive forms of supply through cogeneration and trigeneration from biomass and/or natural gas. The TZNE report was prepared by Arup in consultation with NAGA members and supported with funding from the Victorian Local Sustainability Accord.

3. Barriers identified in TZNE

This submission is based on the identification of key barriers in TZNE, and the experience of NAGA members which pertain to the Inquiry's Terms of Reference.

3.1 Central Services Hubs - Cogeneration and Trigeneration

The key strategies identified in TZNE to obtain a significant reduction in carbon emissions in the commercial and industrial sectors (the largest sources of CO2 emissions in the NAGA region), involve the development and provision of non-conventional energy, heating and cooling via 'central services hubs' (CSH). CSH models locate these services within one location, or hub, within a precinct and there are a number of forms that can be considered. The concept of a CSH is not new and there are several examples in Australia, for example, LaTrobe University, Melbourne Airport and Crown Casino. To date CSH models have been confined to campus-style developments.

In terms of carbon emissions reduction, a CSH model has the potential to provide significant reductions with the economies of scale benefits of central plant infrastructure, in comparison with smaller, less efficient and more numerous plant installations. Reductions of 30 – 40 per cent in carbon emissions may be achieved in the application of such a model in the context of non-ferrous metal processing (the highest emitters of stationary carbon emissions in the industrial sector in the northern metropolitan region of Melbourne).

There are various combinations of CSH that can be considered:

- Provision of heated and chilled water to a precinct
- Cogeneration, provision of heat and power
- Trigeneration, provision of heating, cooling and power
- Provision of on-site water treatment to recycle grey and/or black water from adjacent industries.
- Provision of on-site waste treatment through an anaerobic digester.

This emerging model in Victoria faces a number of impediments. While technologies are known and established overseas, and costs are becoming increasingly attractive, the local expertise to develop such a project is limited, and a number of legal and regulatory barriers have been identified in the TZNE report. These include, for example, that it is not possible to require sign-up to a specified supplier (i.e. a CSH electricity supplier). (However it may be possible to incentivise provision of supply from one supplier through economic incentives.) In addition, under current legislation, an exemption is required from Energy Safe Victoria for privately owned cable passing under public roads.

Key difficulties experienced in the establishment of even small-scale cogeneration relate to the lack of impetus or support to CSH or embedded generation models where they involve connection to the grid for back-up supply, infrastructure augmentation or further to supply excess energy back to the grid. The legal and regulatory issues of crossing property boundaries require further investigation.

The City of Darebin has identified a range of technical and approvals barriers and pitfalls relating to the establishment of cogeneration. Chief of these are the need for guidance to prospective installers, improved rules on the connection studies, addressing power sharing barriers across sites and many users, and rules for power buy back exported to the grid.

NAGA draws the Inquiry's attention to the Darebin submission and echoes the fact that these experiences have been mirrored by many councils undertaking cogeneration feasibility studies for public facilities.

3.2 Barriers to the installation of renewable energy

The TZNE report reviews the options and impediments to the expansion of renewable energy in the urban context, and identifies the institutional barriers to installation of low emission and renewable technologies as an area of substantial importance, requiring action at the Victorian Government and COAG levels.

The TZNE report draws on the research undertaken for the Garnaut review, which examined market failures in the national electricity market (NEM) which influence the ability of low emission and renewable energy technologies to enter the market.

The Garnaut Review assessed[1] the issues faced by low emission and renewable technologies in relation to the NEM to be based on market failures and specifically the failure of the market to account for the marginal benefits associated with these sources of energy generation. This is related to the NEM's historical development and that it is only recently that knowledge around the marginal benefits in terms of emission reductions has been appreciated. It is noted however that ***to resolve these issues is considered to require minor changes to rules and regulations*** (our emphasis). The assessment commissioned for the Garnaut Review is contained in *NEM Market Failures and Governance – Barriers for New Technologies*[2]

NAGA has identified a number of the failures and policy options (technology, externalities, monopoly networks and regulatory failures) listed in the *NEM Market Failures report* as pertinent to this inquiry.

Market Failure	**Effect of Market Failure**	**Policy Option to Correct for Market Failure**
Neutrality of technology *Renewable technology and embedded generation can compete with more established fossil fuel fired generation technology in accessing the market without assistance.*	Inconsistent technical requirements Ancillary service Control equipment	Review of rules
Externalities *Externalities refer to the costs and benefits that are not factored into consumption and production decisions.*	Benefits of embedded generation not fully recognized Network benefits Loss reduction	Recognize externalities of embedded and distributed generation
Monopoly networks *When only one or a small number of providers exist and as a result control the network.*	High cost standby arrangements Non transparent network planning arrangements Asymmetric information	Independent network planning body to produce annual statements that provide transparent value propositions for network augmentation including non-network solutions
Regulatory failures Inappropriate incentives Transmission Use of System arrangements Demand side participation	Network solutions preferred over potentially more efficient non-network solutions including embedded distributed generation and demand side alternatives.	Independent network planning body to produce annual statements that provide transparent value propositions for network solutions.

In all of the above cases, the Victorian Government could drive solutions to these market failures through COAG.

Other costs and risks:

Other disincentives, their associated impacts and proposed solutions with respect to 'free riders' and achieving economies of scale, will require development of proactive approaches to support early adopters, and promote wider uptake.

[1] McLennan Magasanik Associates (2008) *Final Report to Garnaut Climate Change Review: NEM Market Failures and Governance – Barriers for New Technologies* Accessed on 21 November 2008 from http://www.garnautreview.org.au/index.htm
[2] *Ibid*

Market Failure	Effect of Market Failure	Policy Option to Correct for Market Failure
Free rider Those that delay the development of their investment in the hope of taking advantage at least partially, of network extensions.	Suboptimal network investments Access difficulties for embedded generation	Nodal pricing Feed-in-tariffs. The Victorian Government has established a feed in tariff for photovoltaic applicable only to the residential sector. There is the potential for this to be expanded to other low emission and renewable technologies and to apply a Gross Feed In Tariff to the commercial and industrial sectors. Financial transmission rights
Loss of economies of scale in network The initial developer will have no incentive to fund the installation of network capacity greater than its needs.	Investment in suboptimal network capacity	Funding during initial period

3.3 Planning Guidance *for low emission and renewable embedded generation*.

The widespread establishment of embedded generation, with the exception of solar thermal water heating, is still in its infancy within Melbourne and the NAGA region. The report, *The Viability of Domestic Wind Turbines for Urban Melbourne*[3] notes that councils will create guidelines once a critical mass of people commences installing a certain technology. It notes however that efforts for the installation of Vertical Axis Wind Turbine (VAWT) would benefit from an overarching, consistent approach of planning guidance. The report suggests State Government provides this guidance. It is noted that the interaction between heritage values as represented by planning scheme heritage overlays and proposals for energy initiatives, such as the installation of solar PV is unclear. Guidance on how to manage this interplay is also required in the planning guidance document.

Preparation of information regarding resource potential within the NAGA region would provide invaluable, consistent guidance to planners and developers if it included analysis and information on:

- Wind and solar radiation resource[4]
- Suitable surfaces for technology installation
- Suitable land zoning for specific technologies
- The distribution and transmission network to inform potential grid access points and areas of capacity and constraint.
- Cogeneration opportunities

[3] Alternative Technology Association (2007) *The Viability of Domestic Wind Turbines forUrban Melbourne* (Sustainability Victoria: Melbourne) June 2007 pp35.
[4] While anemometer readings provide the only accurate readings, further analysis could be made through consideration of building wind heights and by linkages with research being undertaken by Sustainability Victoria.

RMIT's 'Carbon Neutral Communities' study has developed and applied a methodology in the City of Manningham, where renewable energy resources, including solar and wind, have been mapped. Renewable Energy Resource Potential Assessment for Manningham City Council - Overview Report[5] demonstrates the potential for the application of GIS to inform siting of technologies by mapping north facing rooftops and potential land uses.

3.4 Freight Transport – Compressed Natural Gas

TZNE has identified that the relocation of the Melbourne Wholesale Market to Epping has the potential to provide the initial point for the establishment of a northern Melbourne compressed natural gas (CNG) fuel network. This provides the opportunity for the establishment of the fuelling station for forklifts to be propelled by CNG. Once established there is potential for the fuelling station to be used for freight vehicles as well as the Wholesale Market forklift fleet. The City of Whittlesea has undertaken some initial studies outlining the potential benefits.

This decision rests primarily with State Government to enable and support the development of an organisation to drive its establishment.

4. Conclusion

There are a raft of opportunities to increase the supply of low emissions and renewable energy within the urban environment. The Towards Zero Net Emissions in the NAGA Region Strategy has identified key barriers which are impeding the introduction of known technologies in metropolitan Melbourne. Key barriers relate to the need for legal, regulatory and systemic change to enable their uptake.

[5] Hamilton C, Kellet J and Moore T (2008) *Renewable Energy Resource Potential Assessment for Manningham City Council-Overview Report.* Accessed 16 June 2009 from http://mams.rmit.edu.au/lf9zbqrc6v6cz.pdf