

Sustainable Dunedin City Incorporated

2 May 2007

The Chief Executive
Dunedin City Council
PO Box 5045
Dunedin

Submission on the Dunedin City Council 2007/2008 Draft Annual Plan

The Society wishes to speak about its submission.

1 Introduction

The Sustainable Dunedin City Society is made up of persons who are interested in the issues of climate change, declining energy security and sustainability, as they affect Dunedin City. The Society is not affiliated with any political party and aims to facilitate a positive, secure and sustainable future for Dunedin City in the face of challenges posed by climate change, declining energy security, and unsustainable resource use.

The Society conducts research and disseminates information on climate change, declining energy security, and sustainability, and promotes awareness of these issues to the wider community. It aims to influence individuals, businesses and governments to adapt their behaviours and policies to reflect the growing importance of these issues.

The Society considers that the Dunedin City Council is not responding adequately to the sentinels of climate change and declining availability of non-renewable energy and submits that the Council has a responsibility to review its plans and policies urgently and before committing to any further substantial expenditure other than essential services and infrastructural needs.

Below, we present some specific areas which need attention.

2 Community Outcomes

The Society notes that one of the city's desired outcomes is for a "sustainable city and environment".

Climate change and forecast decline in available energy sources are major global and local issues as reflected by:

- the evolving central government policies on the matters of climate change and renewable energy¹
- the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report²
- the 2020: Energy Opportunities Report of the Energy Panel of The Royal Society of New Zealand³

Creditable scientific opinion regarding peak oil is not divided on its reality but on just when it will occur. Some commentators believe it will be as late as 2037 (International Energy Agency). On the other hand the Association for the Study of Peak Oil (ASPO) predicts a global peak in 2008. Prime Minister Helen Clark, on 18 March 2006 stated that "*we're probably not too far short of peak (global) production, if we're not already there*". Much depends on which the manner in which it is calculated but one fact is that the oil production from over half the major oil producing countries has already peaked.

The US government commissioned a report titled "*Peaking of World oil production: impacts, mitigation and risk management*" by Robert L. Hirsch, et al. Coming as it does from this source, it has been highly influential in drawing attention to the seriousness of the fossil fuel/oil depletion issue (a bit like the Stern report on Climate Change). The summary of this report, which we see as supporting the direction of this submission, is appended in Appendix A of this submission for convenience. New Zealand is currently 48% dependant on oil for national energy consumption and 98% dependent for transport (Sustainable Energy Forum, December 2006) so this is a very important issue for this country and our community.

Currently, planned capital and operating expenditures allocate only 2% and 3%, respectively, of their budgets to projects/services related to "Sustainable City & Environment" (Draft Annual Plan Summary, p. iv). We believe that most residents of Dunedin City feel that this has been severely under-prioritised. Furthermore, the Community Outcomes as recorded in the LTCCP do not acknowledge the matters of climate change and available energy decline. Clearly, there is a need to review of the Community Outcomes.

This is not identified in the draft annual plan.

¹ http://www.med.govt.nz/templates/ContentTopicSummary_19431.aspx

² <http://www.ipcc.ch/>

³ <http://www.rsnz.org/advisory/energy/>

3 Issues

3.1 Sea Level Rise

Appendix 9c of “The New Stadium Development: Master Plan and Feasibility Report” addresses flooding and stormwater issues as they pertain to the proposed stadium at the Awatea Street Site. Section 5 notes that the design 100 year extreme sea level for Otago Harbour is estimated by NIWA to be 101.9 m (Otago Metric Datum). Allowing for sea level rise, section 7 recommends that the minimum floor level of the stadium should be 103.4 m to provide sufficient freeboard from storm surges.

The Society is concerned that much of South Dunedin, and possibly other areas of the city, lies not only below the recommended floor level of 103.4 m, but also below the 100 year extreme sea level of 101.9 m.

While the sand dunes and possibly Portsmouth Drive lie above 103.4 m, thus theoretically providing protection, the inability to drain low lying areas without pumping, along with increased groundwater levels, suggests to the Society that the City Council should assess the risks posed to low-lying areas due to sea level rise and storm surges.

Failure to objectively assess the risks due to the above could have significant negative effects for the city in terms of its economic and social wellbeing and its desired outcomes as a wealthy community for safe and healthy people.

Action 1: Given the above, the Society submits that the Council should:

- review the District Plan
- review the LTCCP community outcomes and consequential and dependent policy and plans.

3.2 Subdivision

Subdivision throughout the City continues to occur, particularly along the coast and on the Taieri Plans. Such subdivision creates:

- demand on roading services
- potential demand if not direct demand on water and sewerage utilities
- loss of productive land, particularly on the Taieri.

There is a need to review the implications of subdivision both inside and outside the designated urban areas so as to take account of climate change and energy resources. These pressures will make it advantageous to source more of Dunedin's food and water closer to the City. This means innovation in water resources and water management and land for food production. Other matters

to consider include the setting aside/rezoning of public space for community gardens within walking distance of any community and the planting of fruit trees in public spaces.

Action 2: Given the above, the Society submits that the Council should:

- review the District Plan
- review its water, sewerage, waste, and transport strategies.

3.3 Sustainable Homes

Dunedin has many old homes with little or poor insulation and inefficient and polluting fires. There is a need to promote awareness of the benefits of insulation and other features that reduce heating energy requirements in both old and new homes, particularly as these features are applicable to Dunedin.

The Council should stimulate and promote “sustainable homes” for example through:

- a mobile model home that demonstrates building techniques and design features that reduce heating energy in both existing and new homes
- loans at low interest rates for those who invest in home upgrades that reduce heating energy
- dissemination of information that demonstrates the financial benefits of home upgrades that reduce heating energy
- promotion of rainwater harvesting to improve stormwater system resilience and reduce the need for other stormwater infrastructure projects

Action 3: Given the above, the Society submits that the Council should invest in public education and assistance schemes for home improvement, particularly with regard to insulation and clean sustainable heating. This could be undertaken in conjunction with the Regional Council, given its proposed changes to the “*Regional Plan: Air for Otago*”.

3.4 Investments

The LGA lists the purpose of local government as “(a) to enable democratic local decision-making and action by and on behalf of communities; and (b) to promote the social, economic, environmental, and cultural well-being of communities, in the present **and for the future**”.

The annual plan (page 140) states: “*In relative terms the stadium has a large capital cost that increases the City Council’s indebtedness of the long term. It is possible that the Dunedin City Council’s peak debt projections may limit the City’s ability to deal with unforeseen issues that require significant capital contributions in the future. In this situation Dunedin would be more reliant on Central Government for assistance*”. In the light of the climate change and energy issues that are being evermore widely recognised and acted upon by the Government, it is considered that

any actions that lead to greater dependence on Central Government assistance would be an abrogation by the City Council of its responsibilities as it would significantly increase the risk of not being able to provide for the future well being of the Dunedin City Community and accordingly its “duty of care” as a governing body.

The City forefathers invested wisely in such projects as the Waipori Hydropower scheme and the city forests.

Action 4: Given the above, the Society submits that the Council should review its financial investments with a mind to:

- investing in local sustainable infrastructure (e.g. wind farms) that would produce improving financial returns as the effects of climate change and available energy decline develop
- mitigating investment risks that may currently exist as a consequence of effects of climate change and energy decline (e.g. share market instability)

3.5 Transport

Current methods of transport (e.g. private cars, aeroplanes) are high generators of green house gas and are at risk with a decline in available (hydro-carbon based) energy.

It is considered that the current transport strategy does not address adequately the issues that will arise, including:

- reducing the City’s carbon footprint
- potential for carbon tax penalties or carbon quota limits
- reducing reliance on hydro carbon fuels
- increasing need for greater cycling and pedestrian facilities
- reviewing the public transport services and needs
- reviewing the need for expenditure on new roads or traffic infrastructure, the increased reliance on private transport and increasing hydrocarbon fuel usage.

Action 5: Given the above, the Society submits that the Council should investigate and rationalise its public transport infrastructure in terms of route planning and service provision and enhance the transport strategy to account for declining fuel availability and an increasing demand for public transport.

3.6 Waste Management

The Council adopted a Resource Recovery and Waste Management Strategy last year and the LTCCP records a budget of \$250,000 per year for implementation of the strategy. This strategy has aspects that directly relate to planning for climate change and reducing energy availability.

It is not clear from the Annual Report 2006 and the draft annual plan how implementation of the strategy is progressing in measurable terms.

Action 6: Given the above, the Society submits that the Council should:

- increase the profile of the strategy implementation and the information available to rate payers about its implementation
- appoint persons with responsibilities for implementation of the strategy, in such a position as appropriate for persons who work across the entire Council (i.e. the strategy has application in all council areas of operation).

3.7 Environmental Education

It is clear that citizens, governments and business are increasingly being called upon to behave in environmentally sustainable ways. Therefore, it is important that the City Council continually improve its own commitment to environmental sustainability and promote environmental sustainability to its citizenry.

It is understood that the current Education and Promotions Officer is based within the water and waste department. It is considered that such a role is over arching many departments and should be a stand alone role, possibly in conjunction with the persons identified in section 3.6.

Action 7: Given the above, the Society submits that the Council should bolster its commitment to environmental auditing and self-review and to its environmental education office.

3.8 Asset & Risk Management

It is assumed in the Draft Annual Plan that global warming will not significantly impact on asset management strategies of Council services over the ten year planning period. We submit that the management of assets must consider risks over the lifetime of current and future assets and not just over the 10 year financial period. Failure to do so, could lead to significant negative effects for all of the city's desired outcomes.

From our review of the draft annual plan, we understand that the matter of declining fuel availability is not considered a risk for Dunedin. We refer to the points noted in section 2 and also to an Australian Senate's Standing Committee report "*Australia's Future Oil Supply and Alternative*

Transport Fuels". The report recommends that the Australian government takes into account the concerns expressed in the IEA's "*World Energy Outlook 2006*", namely –

- current trends in energy consumption are neither secure nor sustainable;
- energy policy needs to be consistent with environmental goals, particularly the need to do more to reduce fossil fuel carbon dioxide emissions.

Action 8: Given the above, the Society submits that the Council should:

- review its policy with respect to risk by considering the whole life of assets when assessing risks from global warming
- develop a climate change and energy security policy taking into account the above concerns of the IEA.

We thank you for your attention to this submission.

Yours sincerely,

Jocelyn Harris (Co-chair)

Submitter's Name: Sustainable Dunedin City Inc. (Attn. Jocelyn Harris)
Address: 28 City Road, Roslyn
Phone (day): 477 7187
Phone (evening): 477 7187
Email: jocelyn.harris@stonebow.otago.ac.nz

Appendix A

Peaking of World oil production: impacts, mitigation and risk management

Robert L. Hirsch, SAIC, Project Leader
Roger Bezdek, MISI
Robert Wendling, MISI
February 2005

Executive Summary

The peaking of world oil production presents the U.S. and the world with an unprecedented risk management problem. As peaking is approached, liquid fuel prices and price volatility will increase dramatically, and, without timely mitigation, the economic, social, and political costs will be unprecedented. Viable mitigation options exist on both the supply and demand sides, but to have substantial impact, they must be initiated more than a decade in advance of peaking.

In 2003, the world consumed just under 80 million barrels per day (MM bpd) of oil. U.S. consumption was almost 20 MM bpd, two-thirds of which was in the transportation sector. The U.S. has a fleet of about 210 million automobiles and light trucks (vans, pick-ups, and SUVs). The average age of U.S. automobiles is nine years. Under normal conditions, replacement of only half the automobile fleet will require 10-15 years. The average age of light trucks is seven years. Under normal conditions, replacement of one-half of the stock of light trucks will require 9-14 years. While significant improvements in fuel efficiency are possible in automobiles and light trucks, any affordable approach to upgrading will be inherently time-consuming, requiring more than a decade to achieve significant overall fuel efficiency improvement.

Besides further oil exploration, there are commercial options for increasing world oil supply and for the production of substitute liquid fuels: 1) Improved Oil Recovery (IOR) can marginally increase production from existing reservoirs; one of the largest of the IOR opportunities is Enhanced Oil Recovery (EOR), which can help moderate oil production declines from reservoirs that are past their peak production; 2) Heavy oil / oil sands represents a large resource of lower grade oils, now primarily produced in Canada and Venezuela; those resources are capable of significant production increases; 3) Coal liquefaction is a well-established technique for producing clean substitute fuels from the world's abundant coal reserves; and finally, 4) Clean substitute fuels can be produced from remotely located natural gas, but exploitation must compete with the world's growing demand for liquefied natural gas. However, world-scale contributions from these options will require 10-20 years of accelerated effort.

Dealing with world oil production peaking will be extremely complex, involve literally trillions of dollars and require many years of intense effort. To explore

these complexities, three alternative mitigation scenarios were analyzed:

- Scenario I assumed that action is not initiated until peaking occurs.
- Scenario II assumed that action is initiated 10 years before peaking.
- Scenario III assumed action is initiated 20 years before peaking.

For this analysis estimates of the possible contributions of each mitigation option were developed, based on an assumed crash program rate of implementation. Our approach was simplified in order to provide transparency and promote understanding. Our estimates are approximate, but the mitigation envelope that results is believed to be directionally indicative of the realities of such an enormous undertaking. The inescapable conclusion is that more than a decade will be required for the collective contributions to produce results that significantly impact world supply and demand for liquid fuels.

Important observations and conclusions from this study are as follows:

1. When world oil peaking will occur is not known with certainty. A fundamental problem in predicting oil peaking is the poor quality of and possible political biases in world oil reserves data. Some experts believe peaking may occur soon. This study indicates that “soon” is within 20 years.

2. The problems associated with world oil production peaking will not be temporary, and past “energy crisis” experience will provide relatively little guidance. The challenge of oil peaking deserves immediate, serious attention, if risks are to be fully understood and mitigation begun on a timely basis.

3. Oil peaking will create a severe liquid fuels problem for the transportation sector, not an “energy crisis” in the usual sense that term has been used.

4. Peaking will result in dramatically higher oil prices, which will cause protracted economic hardship in the United States and the world. However, the problems are not insoluble. Timely, aggressive mitigation initiatives addressing both the supply and the demand sides of the issue will be required.

5. In the developed nations, the problems will be especially serious. In the developing nations peaking problems have the potential to be much worse.

6. Mitigation will require a minimum of a decade of intense, expensive effort, because the scale of liquid fuels mitigation is inherently extremely large.

7. While greater end-use efficiency is essential, increased efficiency alone will be neither sufficient nor timely enough to solve the problem. Production of large amounts of substitute liquid fuels will be required. A number of commercial or near-commercial substitute fuel production technologies are currently available for deployment, so the production of vast amounts of substitute liquid fuels is feasible with existing technology.

8. Intervention by governments will be required, because the economic and social implications of oil peaking would otherwise be chaotic. The experiences of the 1970s and 1980s offer important guides as to government actions that are desirable and those that are undesirable, but the process will not be easy.

Mitigating the peaking of world conventional oil production presents a classic risk management problem:

- Mitigation initiated earlier than required may turn out to be premature, if peaking is long delayed.
- If peaking is imminent, failure to initiate timely mitigation could be extremely damaging.

Prudent risk management requires the planning and implementation of mitigation well before peaking. Early mitigation will almost certainly be less expensive than delayed mitigation. A unique aspect of the world oil peaking problem is that its timing is uncertain, because of inadequate and potentially biased reserves data from elsewhere around the world. In addition, the onset of peaking may be obscured by the volatile nature of oil prices. Since the potential economic impact of peaking is immense and the uncertainties relating to all facets of the problem are large, detailed quantitative studies to address the uncertainties and to explore mitigation strategies are a critical need.

The purpose of this analysis was to identify the critical issues surrounding the occurrence and mitigation of world oil production peaking. We simplified many of the complexities in an effort to provide a transparent analysis. Nevertheless, our study is neither simple nor brief. We recognize that when oil prices escalate dramatically, there will be demand and economic impacts that will alter our simplified assumptions. Consideration of those feedbacks will be a daunting task but one that should be undertaken.

Our study required that we make a number of assumptions and estimates. We well recognize that in-depth analyses may yield different numbers. Nevertheless, this analysis clearly demonstrates that the key to mitigation of world oil production peaking will be the construction a large number of substitute fuel production facilities, coupled to significant increases in transportation fuel efficiency. The time required to mitigate world oil production peaking is measured on a decade time-scale. Related production facility size is large and capital intensive. How and when governments decide to address these challenges is yet to be determined.

Our focus on existing commercial and near-commercial mitigation technologies illustrates that a number of technologies are currently ready for immediate and extensive implementation. Our analysis was not meant to be limiting. We believe that future research will provide additional mitigation options, some possibly superior to those we considered. Indeed, it would be appropriate to greatly

accelerate public and private oil peaking mitigation research. However, the reader must recognize that doing the research required to bring new technologies to commercial readiness takes time under the best of circumstances. Thereafter, more than a decade of intense implementation will be required for world scale impact, because of the inherently large scale of world oil consumption.

In summary, the problem of the peaking of world conventional oil production is unlike any yet faced by modern industrial society. The challenges and uncertainties need to be much better understood. Technologies exist to mitigate the problem. Timely, aggressive risk management will be essential.