

11 April 2008

The Chief Executive
Dunedin City Council
PO Box 5045
Dunedin

Submission on the Dunedin City Council 2008/2009 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 acknowledges the Symposium on Climate Change and Peak Oil that the Council organised in November last year. However, the Society considers that the Dunedin City Council must build on this initiative and increase the profile of these issues. It submits that the Council has a responsibility to review its plans and policies urgently 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. The Association for the Study of Peak Oil (ASPO) predicts a global peak in 2010. 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*". Some forecasting agencies believe peak will not occur until after 2030, but even organisations that have in the past predicted a late peak, are now being more conservative in their predictions of continued oil supply. The International Energy Agency, for example, is now predicting a 'supply crunch' around 2012. Much depends the manner in which existing reserves are calculated, but Robert L. Hirsh, main author of the 'Hirsh Report' argued that 'the date [of peaking] is almost irrelevant as mitigation will take much longer than a decade to become effective, because of the enormous scale of world consumption.'

The 'Hirsch Report' was a report commissioned by the US government. It was written by Robert L. Hirsh *et al.*, entitled *Peaking of World Oil Production: impacts, mitigation and risk management*, and tabled in 2005. 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.

The Community Outcomes as recorded in the LTCCP do not acknowledge the matters of climate change, the decline in readily available oil, and their associated consequences. 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*

The Stadium Proposal identifies climate change and sea level rise as an issue as they pertain to the proposed stadium at the Awatea Street Site. It notes that the floor has been designed in excess of 1 metre above the NIWA 100 year storm / flood level plus the added estimated sea level rise.

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

While the sand dunes and possibly Portsmouth Drive lie above this level, 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
- ensure no change to land designated as existing or potential productive land within or in close proximity to existing residential areas.

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. Also, households consume resources, such as water, food and other materials, are generators of waste.

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
- provision and promotion of a free public advisory and facilitation service with a database of existing national energy policies and incentives to provide single applicant household solutions to the problem of reducing energy use and building efficiencies, in conjunction with national bodies such as the Energy Efficiency and Conservation Authority (EECA)
- building and facilitating relationships with and between energy industry actors and community bodies with the aim of encouraging micro generative capacity within City boundaries, through such arrangements as ‘buy-back’
- up-grading promotion of household composting systems (such as Bokashi buckets and worm-farms)
- encouraging ‘reduce and re-use’ ethics for both households and businesses by publicly supporting businesses that reduce packaging and improve materials use (ie minimise wastage)
- promotion of rainwater harvesting with financial incentives 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. The Society also submits that the Council should become active in building productive relationships that will build energy literacy and improve consumption behaviour while potentially building energy production capacity. These actions could be undertaken in conjunction with the Regional Council, given its proposed changes to the “*Regional Plan: Air for Otago*”, as well as energy suppliers/industry, and community groups (such as the ‘Waitati Energy Project’).

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 draft annual plan (page 10) states that “...there is a high risk that the estimate of development costs as indicated in this proposal will increase as more detailed work and contractual issues are finalised.” The Society maintains that, in the light of the climate change and energy issues that are being evermore widely recognised and acted upon by the Government, the final cost forecast will not be known until well into project construction. Depending on the final risk profile, cost escalation could significantly increase the risk of the Council 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
- increasing the availability of public transport services
- reviewing the need for expenditure on new roads or traffic infrastructure
- working to reduce the city's reliance on private transport and hydrocarbon fuels.

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 in 2006. This strategy has aspects that directly relate to planning for climate change and reducing energy availability.

It is not clear from 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 Significant Forecasting Assumptions, Uncertainties and Risks

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 2 above 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.

With respect to transportation, the draft annual plan states that "transportation studies confirm Dunedin's transport network generally has sufficient capacity to cater for expected needs over the next 30 years". Given the increasing fuel costs and the increasing publicity about future fuel issues, the Society considers this claim precarious, to say the least.

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,



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Appendix A

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

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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 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 urges the Council to build on this imitative increase the profile of these issue 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.