Residues to Revenues 2011 – Melbourne Event

Australian Federal Government Policy and Programs for Biofuels:

Presenter: Richard Niven

Richard is the Manager of Transport Fuels in the Department of Resources, Energy and Tourism. His team has responsibility for downstream fuel policy matters including oil refining, jet fuel supply, and alternative fuels as well as collecting and maintaining the Australian Petroleum Statistics. In the past the team has had responsibility for a range of alternative fuels programs and is currently developing an alternative fuels Strategy.

Richard has over 20 years experience in the public service including policy and program work relating to tourism, energy, manufacturing and fuels. He has an Arts Honours degree in Geography from the University of Melbourne and a Masters in Management from the Australian National University.

Presentation Outline:

Introduction

I will talk broadly about the rationale for Government involvement in industry and then specific Government action in the biofuels sector. In particular, I will discuss challenges concerning the uptake of biofuels from advanced biofuel processes and the development of the Alternative Fuels Strategy.

The role of Government

Market economists like to talk in terms of the efficient allocation of resources and optimal outcomes. In Australian over the last 30 years or so we have tried to adopt policies to improve our economy, and while the resource boom helps, there has been underlying reform. Part of the decision making in Australia (with a few exceptions) has been to avoid mass government handouts or picking winners. Generally the approach adopted has followed three core questions:

1. Is there a market failure?

   Rare consulting, which are doing work for the Department on the Alternative Fuels Strategy, have identified eight market failures:

   - Price Disadvantage
   - Market Relevance
   - Information Barriers
   - Existing Market Paradigms
   - Enabling Workforce Skills and Development
   - Institutional Barriers
Legislative and Regulatory barriers
Performance Uncertainty
Investment Uncertainty

2. Why assist this sector rather than others. Those in a sector may feel it is important, but the Government will seek to allocate resources in the area of greatest national benefit.

There is also a question of the strategic importance of the industry. The other often unstated factor is public perceptions. This is often simplified into politics, but in economics perceptions can matter, because if people do not want to buy something or irrationally prefer something this produces exogenous impacts. This impacts on the decision making process for the allocation of resources.

3. Once a decision has been made to intervene the question becomes: what is the best form of assistance?

Forms of Government Intervention

Many people would argue that there is not really a market failure from a commercial point of view in the fuel markets. Basically if a fuel can prove itself a competitive alternative you would expect it to be sold. The danger for Government is intervening for the wrong reasons – this has happened in the alternative fuels market in the past where there have been attempts to stimulate the market or support a fuel which have run into problems caused by issues of cost, unresolved technical matters or feedstock availability.

Government intervention at both State and Federal level in terms of biofuels has usually focused on excise concessions, mandates and targets, research assistance, capital cost assistance, venture capital and facilitation

The specific approaches have been:

Concessionary excise
The Biofuels Capital Grants Program ($24.57 million)
The Ethanol Distribution Program ($14.3 million)
The Second Generation Biofuels Research and Development Program ($15 million)

While these programs have to some degree been aligned with the barriers identified by Rare Consulting at a broader level Australian Government policy in regard to biofuels has been driven mainly be ethanol issues and perceptions about increased uptake from ethanol derived from sugar cane.

Work undertaken by the Rural Industries Research and Development Corporation reflects the focus on funding in bioenergy and biofuels that goes to activities associated with sugar. Interestingly research in other areas was significantly boosted by the Gen 2 Program.
While there is nothing intrinsically wrong with this focus on sugar Australia still has only one sugar based ethanol facility, and it is smaller than the other two facilities which are both fed by grain.

**Venture Capital**

I would like to focus on one of the particular challenges of biofuels development and that is in relation to venture capital. In many ways this is a particular challenge for alternative fuels, including second generation biofuels. While research and commercialisation is taking place here and overseas and first generation industry has been able to build market share world wide with Government support, commercialisation of second generation biofuels is generally problematic without large amounts of Government support.

Historically, Australian has not possessed very strong venture capital markets. This is particularly the case for industries in which Australia does not have recognised strengths or in areas perceived as having a higher risk. The Global Financial Crisis did not help in this regard.

On top of this, investment in energy is particularly problematic, because compared with, for example, consumer electronics, investments are large and time frames are long, and the existing world market, while well established, is volatile, unpredictable and influenced by external factors in the short to medium term, and by uncertainty regarding suitable and/or affordable supply in the longer term.

The challenges of venture capital have become a significant obstacle to the development of Australia’s capability in renewable energy and biofuels. Not only is it an issue in its own right, but it has become an increasing problem for conducting future grant programs. Most grant funding requires significant level of matching funds from project proponents to demonstrate commitment, wither directly or through financiers. However, the raising of matching funds was a significant issue for a large number of Gen 2 applicants, even though it was alleviated by the ability to use in kind contributions. In recognition of this the Government has announced the Renewable Energy Venture Capital Fund ($100 million) to make early-stage investments that support the demonstration and deployment of renewable energy technologies.

**Government involvement**

The imperative for Government involvement in the development of alternative fuels is probably best demonstrated by the movement of oil prices and by the time frames and investment scale mentioned above. In fuels there has been a view that there has not been a market failure and that over time price rises are not a bad thing as they can lead to investment in further exploration, improved efficiency, and greater competitiveness of alternative fuels.

However, while in most markets costs will flow through to demand and people will make adjustments with purchasing habits, an adjustment in the fuel market can have wider reaching consequences. While a lot of understandable attention was given to the 2008 peak and then drop in the oil market the main relevance is the long term.
trend, which has been masked from Australian consumers by the higher Australian dollar.

The key issue regarding market operations in this case is that because of the very long lead times to develop alternative fuels and build sufficient infrastructure, the Government should do what it can to ensure the industry can develop, while at the same time not trying to dictate what the specific outcomes will or should be. It is a delicate balancing act.

The Alternative Fuels Strategy

The context of the Strategy is improving Australia’s Energy Security

The Government is developing the Alternative Fuels Strategy to identify key issues concerning the development of alternative transport fuels in Australia. It will identify the role of alternative fuels in contributing to public policy objectives and identify barriers, including market failures, to the development of environmentally and economically sustainable fuels. Alternative fuels under this strategy include biofuels, liquefied petroleum gas, compressed natural gas, liquefied natural gas, and synthetic fuels derived from fossil fuel deposits.

The strategy will not examine issues relating to fuel excise, except to include announced settings in price and cost estimates. It will also not directly consider matters relating to vehicle emissions and an emissions trading scheme which are the subject of other Government initiatives. The strategy also recognises the Australian Government’s proposed work program to ensure Australia’s energy markets can support potential large scale adoption of electric vehicles. The strategy will link with this initiative and consider the impact of electric and hybrid vehicles on the total alternative fuel mix.

There are two Activities under the Strategy Terms of Reference:

Activity One. In the context of improving Australia’s energy security position, identify and consolidate the current range of studies and other information in Australia and overseas in relation to alternative transport fuels and undertake additional research concerning:

a) pricing and cost structures relative to mainstream fuels;
b) industry structures (recognising that different alternative fuels operate in different sub markets and supply chains);
c) regulatory frameworks and standards and the environmental sustainability of fuel options;
d) infrastructure requirements and implications; and
e) research and technology activities.

Activity Two. Develop recommendations to address issues identified under Activity One which will facilitate a greater uptake of alternative fuels. The recommendations will:
a) propose cost effective Government measures that address market failures;
b) propose industry led solutions to assist the growth of the industry;
c) facilitate the effective and efficient operation of the fuels market, be economically and environmentally sustainable and include consideration of the effects of a price on carbon;
d) propose solutions which will be transparent and readily understood by industry and consumers;
e) clearly differentiate between research and development; production and investment; and distribution and consumption needs.

The Department has drafted a strategy which will be presented to three advisory groups:

- An Alternative Fuels Strategic Issues Group (AFSIG) consisting of industry representatives including fuel producers, technology providers, fuel users and researchers.
- A Commonwealth Interdepartmental Committee
- A State and Territory Reference Group

Following consultation with this groups and a series of broader forums with industry and government, a final report is expected to be produced by the middle of the year, which will feed into the energy white paper process.
Australian Government
Biofuels Policy

Residues to Revenues 2011- Melbourne

Richard Niven
Manager
Transports Fuels
Department of Resources, Energy and Tourism

The Real Map of the World
Overview

• The Role of Government

• Government Intervention

• The Challenge for Residues

• The Alternative Fuels Strategy

The Role of Government

• Is there a Market Failure?

• Why assist this sector?
  – national benefit
  – strategically important
  – public perceptions
Public Perceptions

- Feed the World

Charismatic Vertibraic Megafauna
Hug a Tree

• Instructions available on the internet
• Instructions include:
  – Walk amongst the trees until you feel comfortable
  – Absorb the life energies
  – Vertical tree hugs, full body tree hugs and up in the air tree hugs
  – Trees are good listeners

Is there a Market Failure?

• Real market failure?
• Structural
• Barriers to Entry
• Disbursement of benefits
• Failure of capital markets
Government Assistance Measures

- Lower excise/implied subsidy
- Targets/mandates
- Research assistance
- Commercialisation
- Venture capital

Excise

- Biofuels currently pay excise
- Fully refunded for domestically produced ethanol
- Imported biodiesel also refunded.
- Excise phased in from 1 July 2011
- Five year phase in for alternative fuels but 10 years for ethanol
- Energy banded
- 50% discount for alternative fuels
Targets and Mandates

- Renewable Energy Target
- 350 ML Target
- NSW Ethanol mandates

Technology Barriers

- Second Generation Biofuels Research and Development Program (Gen 2)
  - Six successful projects
  - Two Algae projects:
    - University of Melbourne (with Biofuels Pty Ltd) - $1.2m
    - Algal Fuels Consortium (SARDI, CSIRO etc) - $2.72m
  - Two Sugar related projects:
    - Bureau of Sugar Experiment Stations (CSIRO) - 1.33m
    - Microbiogen Pty Ltd - $2.54m
  - One Pyrolysis project:
    - Curtin University (Spitfire Oil, CSIRO etc) - $2.5m
  - One lignocellulosic (biomass) to bio-oil (Bio-crude oil) Project
    - Licella Pty Ltd - $2.29m
Investment Uncertainty

• Biofuels Capital Grants Program;
  – $24.57 million

• Ethanol Distribution Program.
  – 14.3 million

Commercialisation and Venture Capital

• Funding a big Issue in Australia

• GFC still having an effect

• Gen 2 Program
ACRE Programs

- Renewable Energy Capital Fund ($100m)
- Emerging Renewables Program ($40m)
- Australian Biofuels Research Institute ($20m)

The Challenge for Residues

- Investment
- Competing Uses
- Which Technology?
- This can all add up to doubts!
Crossing the Valley of Death

Competing Uses

- Biofuels
- Bioenergy
  - electricity (and then cars?)
- Biorefineries
  - report of the Pulp and Paper Industry Strategy Group
  - 9 February Pulp and Paper Industry Council meeting
  - Support for development of a biorefineries R&D roadmap
- Various Combinations
Technology Options

• Bio – Chemical
• Thermo – Chemical
• Combinations and variations (as usual)
• Multiple feedstock projects

Technology Challenges

• Lignocellulosic
• Transesterification
• Hydrogenation
• Pyrolysis
• Torrefaction
An Alternative Fuels Strategy

The National Energy White Paper

- Maintain energy security and prosperity
- Ensure a secure, competitive, efficient and sustainable energy sector to 2030 and beyond
- Ensure prosperity and economic growth
- Development optimises return to the community
EWP Principles

• Economic development is sustainable and efficient

• Effective operation of competitive energy markets is promoted

• The need and scope for Government intervention on the basis of market failure is identified

• International and national interests and obligations are met

EWP Core Inputs

• The National Energy Security Assessment

• Independent Review of Investment Activity in the Australian Electricity Generation Sector

• The Review of the Development of Australia’s Gas Resources

• The Alternative Fuels Strategy Assessment

• The Response to the Report of the Prime Minister’s Task Group on Energy Efficiency

• The ACRE Strategic Directions
## Strategic Context

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<th>Key strategic considerations</th>
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<td>1. Forecast future fuel demand (2030)</td>
<td>Import more conventional fuels</td>
<td>- International availability of conventional fuels&lt;br&gt;- Future price outlook&lt;br&gt;- Energy security&lt;br&gt;- Balance of trade&lt;br&gt;- National competitiveness</td>
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<td>2. Transport Energy Security (2030)</td>
<td>Develop domestic alternative fuels</td>
<td>- Domestic sourcing &amp; production&lt;br&gt;- Cost of development &amp; commercialisation&lt;br&gt;- Timing for market scale&lt;br&gt;- Greenhouse emissions (relative to alternatives)&lt;br&gt;- Fuel price differential (relative to conventional)&lt;br&gt;- Competition from stationary energy sector</td>
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<td>3. Forecast future fuel supply (2030)</td>
<td>Improve vehicle fuel efficiency</td>
<td>- Potential quantum of benefits&lt;br&gt;- Future timing of improvements&lt;br&gt;- Greenhouse performance of drive train solutions&lt;br&gt;- Technology take-up/limitation&lt;br&gt;- Competition from stationary energy sector&lt;br&gt;- Larger road freight vehicles&lt;br&gt;- Accommodating projected future growth in freight&lt;br&gt;- Future development of transport infrastructure&lt;br&gt;- Greenhouse performance of alternative modes&lt;br&gt;- Limitations in behavioural change&lt;br&gt;- Institutional constraints&lt;br&gt;- Freight pricing practices</td>
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<td>4. Shift transport task to other modes</td>
<td></td>
<td>- The nature of freight in Australia&lt;br&gt;- Potential improvements in freight logistics&lt;br&gt;- Intermodal infrastructure development&lt;br&gt;- Community-based behavioural change&lt;br&gt;- Changes to urban form and transport infrastructure</td>
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<tr>
<td>5. Reduce transport demand</td>
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<td>- Residues to Revenues 2011&lt;br&gt;- Changes to urban form and transport infrastructure</td>
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## Strategic Framework

**WHY?**
- Management of emerging national risk and opportunity costs
- Increasing uncertainty surrounding the future supply and price outlooks for liquid transport fuels creates risk
- Failure to consider the role of alternative fuels in Australia’s future may also generate opportunity costs for Australia

**WHAT?**
- A plan for diversification of Australia’s transport fuels
- The strategy will identify scenarios and options to address regulatory and market barriers to diversification of the transport fuels mix to 2030 and beyond

**HOW?**
- Establishment of diversification scenarios and joint action on barriers to uptake
- Assessment of issues and identification of solutions
The Oil Price

Forecasts
What will really happen?

Why Fuel is Different

- Fuel underpins our economy
- Change will take a long time
  - supply challenges
  - technology challenges
Eight Barriers to the Adoption of a New Vehicle Fuel or Drive Train Technology

- Economic viability
- Technology development
- Consumer perception
- Skills and service capability
- Distribution and infrastructure
- Product availability
- Policy and regulation
- Investment uncertainty

Alternative Fuels Strategy Assessment

**SCOPE**

**Issues Covered**
- Industry Structure
- Technology
  - Electric Vehicles
- Infrastructure Challenges
- Public Acceptance
- Regulatory Impediments

**Other Processes**
- Other EWP Core Inputs
- Mandatory CO₂ standards for new light vehicles
- Carbon Tax
- Alternative Fuels Excise

Residues to Revenues 2011
Terms of Reference

- Develop recommendations to facilitate a greater uptake of alternative fuels. The recommendations will:
  - Propose cost effective Government measures that address market failures
  - Propose industry led solutions to assist the growth of the industry
  - Facilitate the effective and efficient operation of the fuels market, be economically and environmentally sustainable and include consideration of the effects of a price on carbon
  - Propose solutions which will be transparent and readily understood by industry and consumers
  - Clearly differentiate between research and development; production and investment, distribution and consumption needs.

Consultation

- AFSIG
- Commonwealth IDC
- State/Territory Reference Group
- Fuel Forums
Alternative Fuels Strategic Issues Group

- First Meeting on 1 April.

- Fuel Suppliers
  - Technology Providers
  - Fuel Users
  - Researchers

We want to be all inclusive
Residues to Revenues 2011

Australian Government
Biofuel Policy

Thank You