



California Energy Commission Dockets Office  
MS-4; Re: Docket No. 06-AFP-1  
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4 October 2007

<b>DOCKET</b>	
<b>06-AFP-1</b>	
<b>DATE</b>	OCT 04 2007
<b>RECD.</b>	OCT 04 2007

Dear Sir,

**Docket 06-AFP-1**

I am submitting comments on GTL Fuel for the Workshop on Alternative Fuels Transportation Plan on 9th October at the California Energy Commission.

Please find enclosed 10 copies of the submission for your attention.

Yours sincerely  
Shell International Petroleum Company Limited

Sylvia Williams  
Business Development Manager  
Global XTL Development

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# **Alternative Fuels Transportation Plan**

## **Docket no. 06-AFP-1**

### **Comments on GTL Fuel**

The overall goals of AB1007, the State Alternative Fuels Plan, to increase the use of alternative fuels to improve air quality and reduce petroleum dependence while minimising costs are aligned with Shell's commitment to sustainable energy development.

However, the technologies for many of the alternatives recommended are not well developed and the timing and costs of implementation are uncertain. We would therefore advocate a balanced portfolio approach that includes all potential alternative fuels, rather than 'picking winners' at this stage.

One of the alternatives we strongly advocate including is GTL (or gas-to-liquids)<sup>1</sup> which is a commercially proven technology, with large scale plants under construction. As evidence, a GTL diesel blend is currently on sale across Europe and Thailand and has considerable appeal in the light-duty market. Furthermore GTL niche markets are being developed, with government support, in several large cities across the world.

The Shell Bintulu GTL plant has been or exporting 30 million US gallons annually from Malaysia since 1993. Shell is constructing the world-scale Pearl GTL plant in Qatar, which will produce some 1 billion gallons per year around the end of the decade. By excluding GTL from the Plan, California is turning its back on this new alternative fuel. With growing demand for energy worldwide, we believe all commercially proven, new alternative fuels should be included.

The scope of the plan refers to XTL Fuels in only a very limited way. In our view, it incorrectly states 'that they suffer from cost barriers and limited environmental benefit'. This may be a drafting error.

BTL and CTL face cost and technology challenges for commercial scale plants, while GTL is currently commercially produced. The GHG emission profile of each XTL is considerably different, with BTL significantly reducing GHG emissions, GTL roughly comparable to diesel and CTL significantly higher without carbon capture management.

It would be a grave omission for California not to include GTL in its scenarios of possible fuel portfolios, due to the following reasons:

- significantly reducing criteria pollutant emissions of NO<sub>x</sub>, PM, HC and CO and addressing air quality in traffic congested areas
- reduces petroleum dependence and increases fuel diversity
- requires no new infrastructure investment or engine modification
- can be used 100% or in a blend with conventional diesel or bio-diesel
- will have the maximum impact as 100% GTL Fuel in niche markets such as ports, buses, delivery trucks, truck refrigeration vehicles for

maximum impact on local emissions, without impacting GHG emissions.

- Near term availability of new GTL plants and their significant volumes.
- GTL builds the bridge for BTL which offers reduced GHG emissions

There is concern about the lack of process transparency in developing options and scenarios, it is not clear what analytical basis and assumptions were used, and how the plausibility of options was verified.

<sup>1</sup> GTL Fuel is a cleaner diesel-type fuel, one of a range of products made from natural gas using the Fischer Tropsch process. It is virtually free of sulphur and aromatics, and significantly reduces criteria pollutants

### **Comments on Full Fuel Cycle Analysis**

Earlier detailed comments were submitted for the TIAX Full Fuel Cycle Analysis. We contend that the analysis is flawed for new technologies like GTL when looking at periods in the future. GTL is expected to reduce GHG emissions in the next decade through substantial R&D programmes into process efficiency and carbon capture and storage (CCS) - in the same way that the refining industry improved its efficiency over the past decades. We ask for a level playing field in assessing the potential improvements and breakthroughs that are built into other alternative fuels. This illustrates the dangers inherent in taking policy decisions based on today's technology and data.

We would contend that the WTW analysis does not reflect all the environmental benefits of GTL. A GTL plant produces only lighter, cleaner products compared with a complex refinery – no heavy fuel oil or bitumen. The Life Cycle Assessment (ISO14040) methodology recognises that GTL does not produce these high carbon fuels, by using a system approach and assessing the impact from a holistic point of view. The uncertainty illustrated by these two methodologies should caution one against precluding GTL.

### **Other government interest in GTL**

Japan, for example, announced a new energy policy in 2006, "Japan targets decrease of oil dependency in transportation fuels by 20% by 2030. Alternative fuels include Bio-fuels and GTL Fuel." The European Parliament has endorsed "measures to promote alternative fuels.....including synthetic fuels which can help to diversify energy supply, improve air quality and reduce CO<sub>2</sub> emissions" as part of their Renewable Energy Roadmap.

In North Rhine Westfalia, there is Ministerial support for a partnership to assess the impact of GTL Fuel on emissions in this industrial region. The German Chinese Synthetic Fuel Partnership of automotive/fuel companies and Ministries are committed to introduce synthetic fuels in China, initially assessing the impact through demonstration projects, and developing more efficient engines based on synthetic fuel.

Furthermore, cities such as Shanghai are currently using 100% GTL Fuel to cut local emissions in buses. London, Houston and the Netherlands are looking at GTL Fuel as an option for their heavy duty trucks and buses to reduce local emissions of NOx and soot in congested areas.

**Conclusion**

GTL fuel offers an alternative fuel option for the medium term. Given the uncertainties with other technologies, and the need to reduce petroleum dependency, GTL Fuel should be included in California's alternative fuel portfolio as one of the most cost effective options. GTL is a relatively new commercial production process with much potential for reducing GHG levels.

## **Specific Comments on the Committee Draft Report**

### **Page ES-4**

1<sup>st</sup> paragraph, *"The Plan identifies optimal alternative fuel mixes, which will change and evolve over the near term "*

We find no substantiation as to how the "optimal alternative fuel mixes" were determined especially one that illustrates how GTL was justifiably excluded from the Plan.

2<sup>nd</sup> paragraph : *Achieving the state's petroleum reduction.....will require substantial investment in fueling infrastructure.....*

Using GTL Fuel would be minimise or reduce costs, since GTL Fuel can be used in existing infrastructure and engines either as a blend or 100%.

4<sup>th</sup> paragraph : *In addition the use of blends, such as.....biomass to liquids, and gas to liquids, can have significant short term advantages.*

GTL Fuel can also be used 100% in niche markets such as the early adopter market niches (ports, HD trucks) also referred to in the 6<sup>th</sup> paragraph.

### **Page ES-6**

2<sup>nd</sup> bullet : *Second generation biofuels ....should refer to BTL.*

XTL fuels have identical properties regardless of feedstock, GTL Fuel can be used as a bridge to renewable BTL – developing logistics and markets with GTL in preparation for when BTL is commercially available.

5<sup>th</sup> bullet: *Market niches* should include reference to GTL Fuel.

### **Page ES-7**

*'Except for ethanol and hydrogen, all other fuels are less costly today than gasoline and diesel....'* This comparison should be made before tax and credits and other funding mechanisms eg citing the temporary (expired September 30, 2009) Volumetric Excise Tax Credit for Alternative Fuels (CNG, LNG, LPG),<sup>1</sup> and for vehicle conversion. Again GTL Fuel would be attractive from a cost viewpoint.

### **Page ES-8**

*'While XTLs offer attractive alternative feedstocks, they suffer cost barriers and limited environmental benefit potential.'* This statement is misleading.

All XTLs are not the same from a cost or environmental point of view.

GTL is commercially available. GHG emissions from a GTL system are comparable to a refinery system on a life cycle basis. BTL is at the early stages of technical development, and like other advanced biofuels, may be limited by biomass availability, and faces cost challenges. CTL faces both cost and environmental challenges - without CCS or co-feeding with biomass.,

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<sup>1</sup> H.R. 3-803 Subtitle B – Excise Tax Reform and Simplification Part 1. Highway Excise taxes.

#### **Page 4**

Paragraph 3; *'..expanded use of non-petroleum fuels...will be invisible to consumers. A major objective of the plan is to provide vehicle technologies that will allow consumers to choose between fuel types.....Such choice ...will have a moderating effect on fuel prices'*

This conclusion may be simplistic in excluding the cost to the economy of developing and purchasing separate vehicle technologies, the global oil price and the captive market for fuel from these fuel specific vehicles.

Bottom of the page: *'.....the state cannot afford to pick winners'. All reasonable non-petroleum fuel.....must be provided the opportunity to compete in the evolving transportation fuels market.*

This would support including GTL Fuel in the list of options for California's future fuel portfolio.

#### **Page 6**

2<sup>nd</sup> paragraph: GTL should be included in the list of options identified.

#### **Page 10**

GTL supports the first two policy goals of the Alternative Fuels Use strategy:

- *Promote alternative fuel blends with ...diesel in the near and mid term*
- *Maximise alternative fuels in early adopter market niches such as heavy-duty fleets, off-road and ports in the near and mid-term.*

#### **Page 15**

##### ***Renewable Diesel and Biodiesel Actions***

*'1. Develop renewable diesel and biodiesel production plants in California to displace 1 billion gallons of diesel over 10 years'*

It will take a considerable time to develop 1 bn gals of renewable diesel eg BTL. For example, in Germany, there is a BTL plant under construction to demonstrate the technology can be commercial. It will produce approx 6 million gals pa. When the technology is proven, it will take a further 5 years to develop a larger plant of approx 80million gals pa. In the medium term, California should recommend developing the market for BTL by importing GTL – an identical product with the same pollutant emission benefits.

We recommend to add:

3. Establish a tax credit or subsidy to attract GTL Fuel into California to develop the market for BTL, and encourage the development of BTL plants in California

#### **Page 25 Criteria Pollutant and Air Toxics Emissions**

2<sup>nd</sup> bullet: *'Some fuel blends such as biodiesel and GTL/BTL may result in decreased criteria pollutant emissions if used in today's vehicles'.*

In our view, GTL/BTL should be inserted.

Reference should also be made in the list of bullet points, to the significant reduction in criteria pollutants from GTL. A trial with Yosemite Waters delivery trucks showed that over the CSHVR cycle, for example, the 100% GTL Fuel (no filter) reduced the NO<sub>x</sub>, HC, and PM emissions by 13%, 26%, and 41%, respectively from CARB diesel. (SAE paper 2004-01-2959)

**Page 38**

Footnote – We expect CNG and LNG have a price advantage due to tax and vehicle conversion benefits. All comparisons should be made on a level playing field pre-tax.

**Page 44 & 48**

If GTL and BTL were included in all three scenarios, there would be a reduction in costs and a positive impact on criteria pollutants.

**Page 55**

Paragraph 6 : *'Petroleum reduction and GHG emissions benefits are limited by how fast the vehicles are introduced into the market'...*this is not the case with GTL and BTL.

**Page 66**

*Societal Cost effectiveness*

*'The analysis reveals that the three alternative fuel examples ....are likely to save money in the long term'. GTL provides an intermediate alternative fuel to bridge from today's conventional fuels to renewable fuels such as BTL in the future.*

**Page 69**

While Example 2 is the most cost effective scenario, it is also the most technologically uncertain. This supports the need for a portfolio of options, some more certain and near term, others more challenging and long term.