



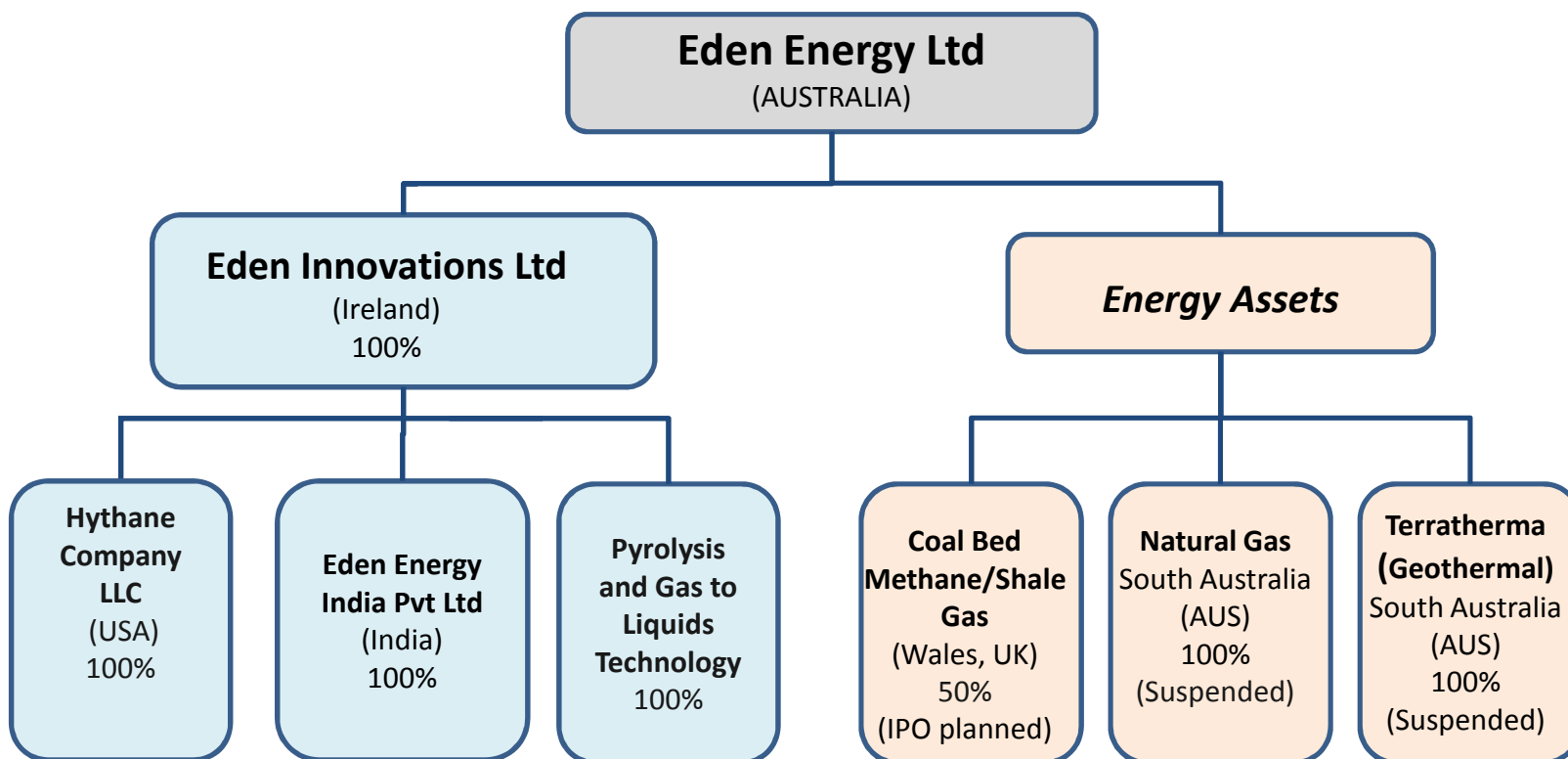
# **AN EMERGING GLOBAL CLEAN ENERGY COMPANY**

## **Roadshow Presentation**

**January 2011**

Greg Solomon  
Chairman

# Corporate Structure



## Current Clean Energy Products

- **Pyrolysis Project - Solid Carbon and Hydrogen Production without CO<sub>2</sub>**
  - Single Walled Carbon Nanotubes (SWCNT) and Multi Walled Carbon Nanotubes (MWCNT) and Carbon Nanofibres (CNF)
- **Hythane<sup>®</sup>**- India and US
- **OptiBlend<sup>®</sup> Dual Fuel** - India and US

## Current Energy Projects

### UK- CBM

- Coal Bed Methane JV-50% (1400km<sup>2</sup>)
- Coal Bed Methane JV-5% (400km<sup>2</sup>)- Centrica

### UK- Shale/

- Shale Gas/Conventional Gas JV-50% (1800km<sup>2</sup>)

### Conventional

### SA Natural Gas

- Untested natural gas target (100km x 10km)
- 100% -Obligations suspended for 12 months

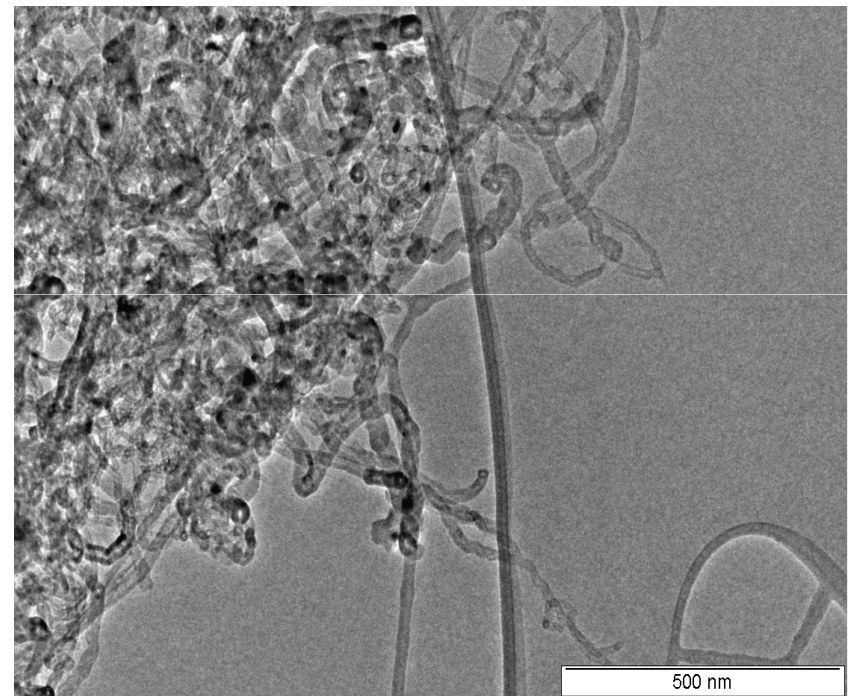
### SA Geothermal

- 100% -Obligations suspended 12 months

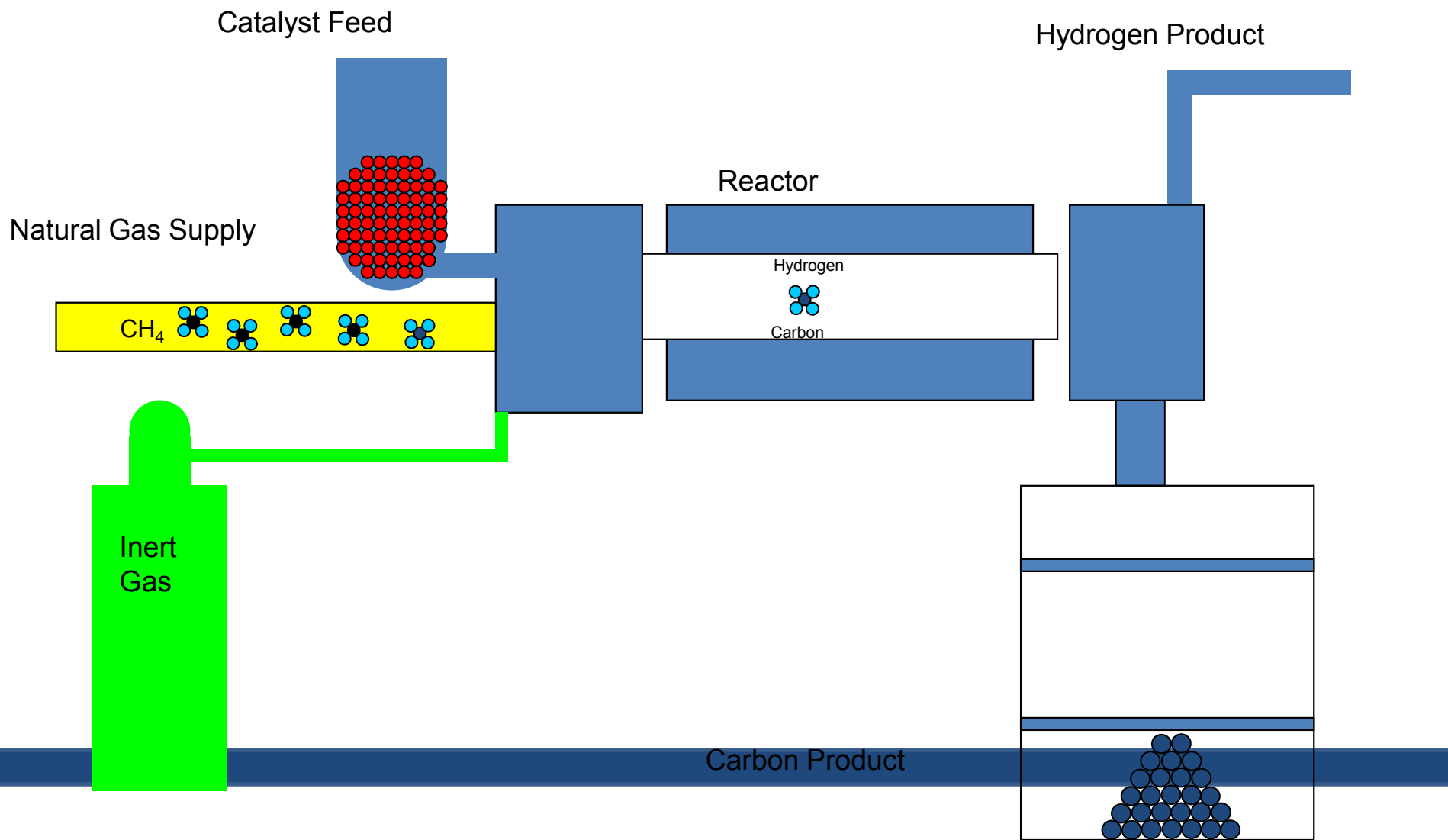
## Pyrolysis Project – Eden 100%

### Low Cost Production of Carbon Fibres/Nanotubes and H<sub>2</sub> from CH<sub>4</sub>

- Eden 100% - New process developed with UQ
- Patent applications lodged -over 50 countries
- No CO<sub>2</sub> – H<sub>2</sub> becomes a high value byproduct
- Produces hydrogen and single /multi-walled carbon nanotubes and carbon fibres
  - tensile strength up to 200-300 times steel
  - approx 17% the weight of steel
  - structural and electrical qualities – large market potential to replace steel/ aluminium
- Scale -up by Eden in US - encouraging results
- Commercial prototype targeted for completion by end 2011

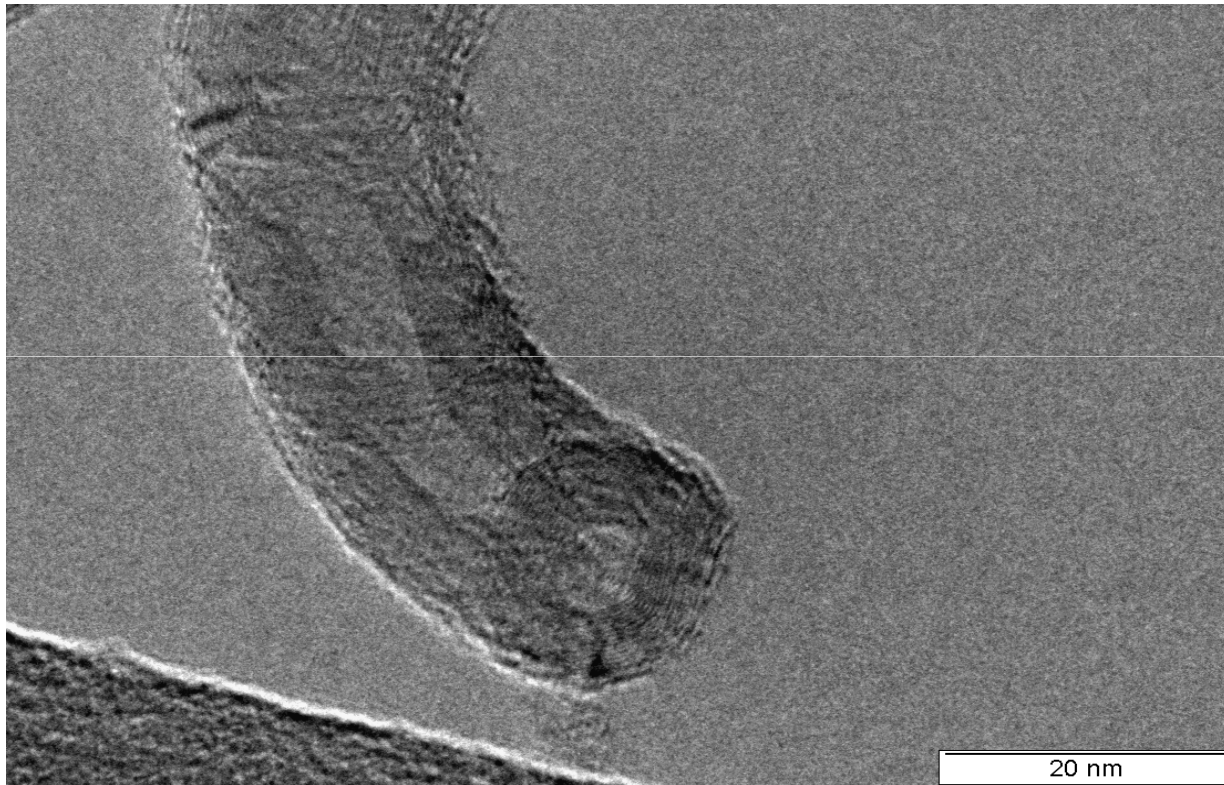


# Eden Energy CNT Production



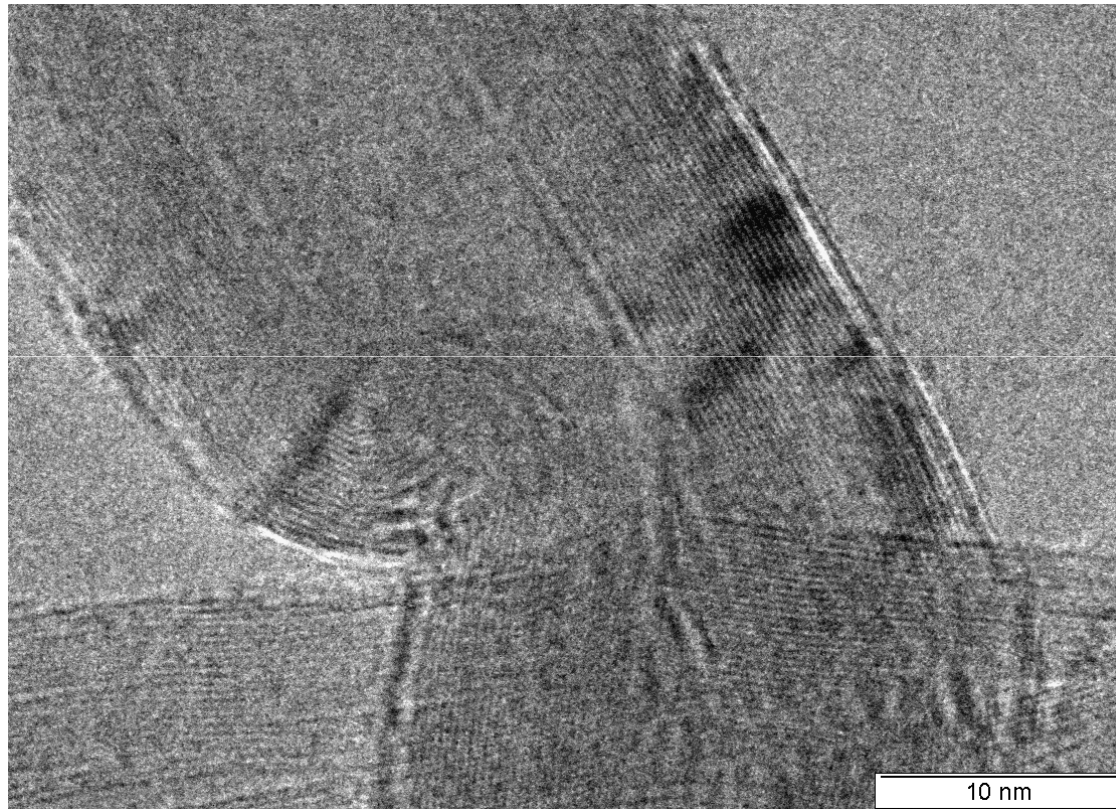


## Production of H<sub>2</sub> and Carbon Nanotubes from CH<sub>4</sub>



TEM image of MWCNT produced at Hythane Co in Denver

## Production of H<sub>2</sub> and Carbon Nanotubes from CH<sub>4</sub>



TEM image of MWCNT produced at Hythane Co in Denver



## Pyrolysis Project Summary

- New Cost Competitive Technology being developed in US
  - Catalyst Formulae and production capability for MWCNT and CNF
  - Reactor designs and know-how
  - Testing capability to be developed
  - Provisional patent application being prepared
- Products – (from natural gas with catalyst)
  - MWCNT > 200-300 times tensile strength of steel
  - CNF – compressive strength/ electrical qualities
  - Hydrogen

## CNT Market Projected Growth

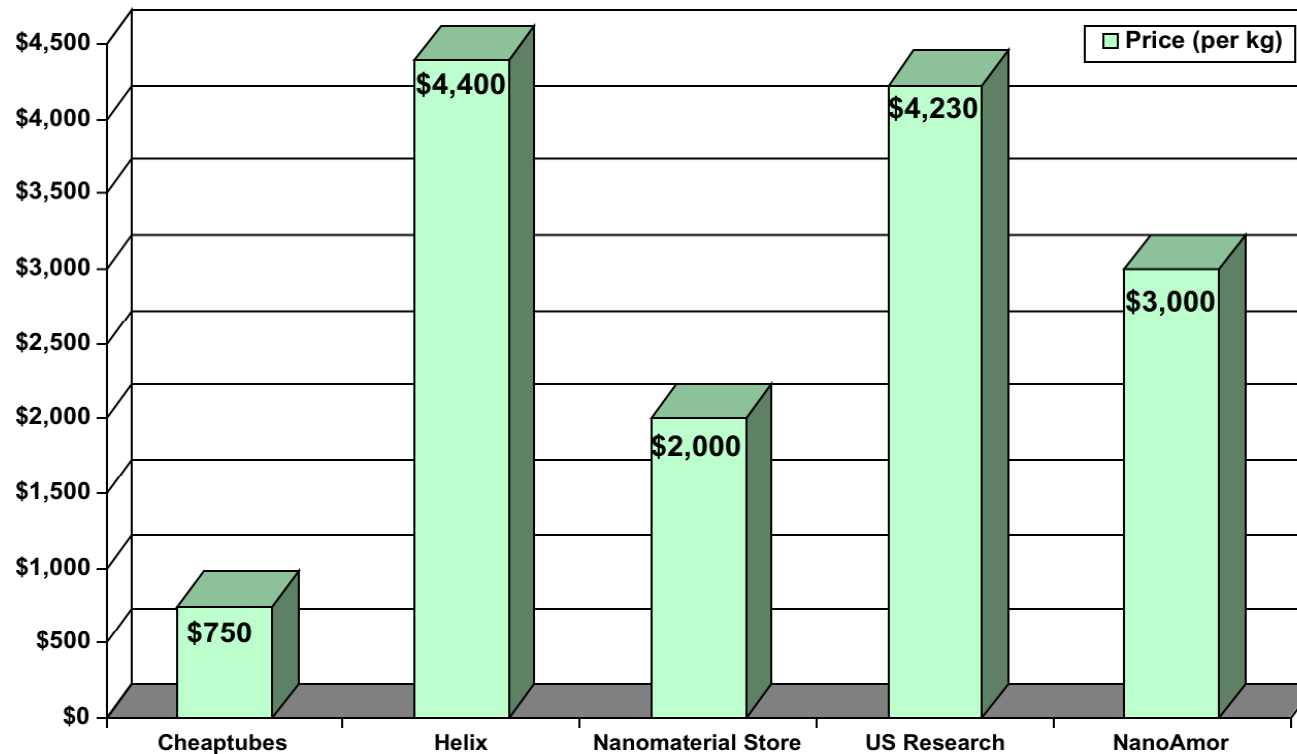
- Current- estimated at approx 2000 tpa
  - Largest producer- 500tpa
  - 3 producers – 200 tpa each
  - One US producer plans 1000tpa
- Many new emerging applications
  - Structural (composite materials/ concrete/ tyres)
  - Electrical ( conduction and storage)
- Compounding growth estimated at more than 11%pa

## Eden's Targets for 2011

- **To build 25-100 tpa commercial production unit to produce MWCNT for following target markets:**
- **Concrete**
  - 1% MWCNT increases compressive strength up to 50% and may provide conductivity
- **Composite plastic materials**
  - for strength and electrical qualities
- **Tyre manufacturing**
  - to extend life of tyres

# MWNT Current US Market Prices

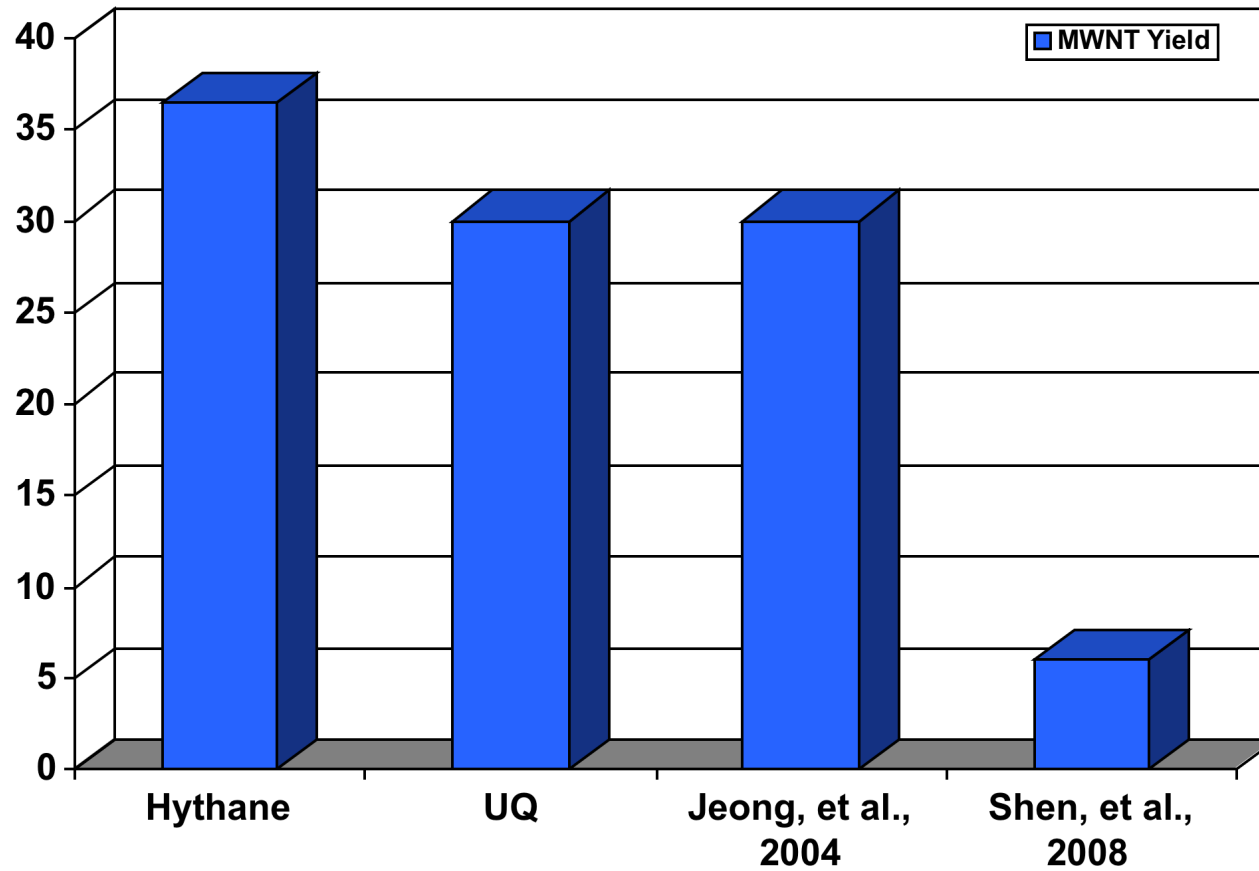
(20-30nm diameter, >85% wt. purity)



Prices are anticipated to drop with increasing order size and increasing supply








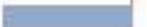
# Eden MWNT Catalyst Yield

(Shown in grams carbon per grams catalyst)





## 25-50 Metric Tonne/Year MWCNT Scale-Up Schedule

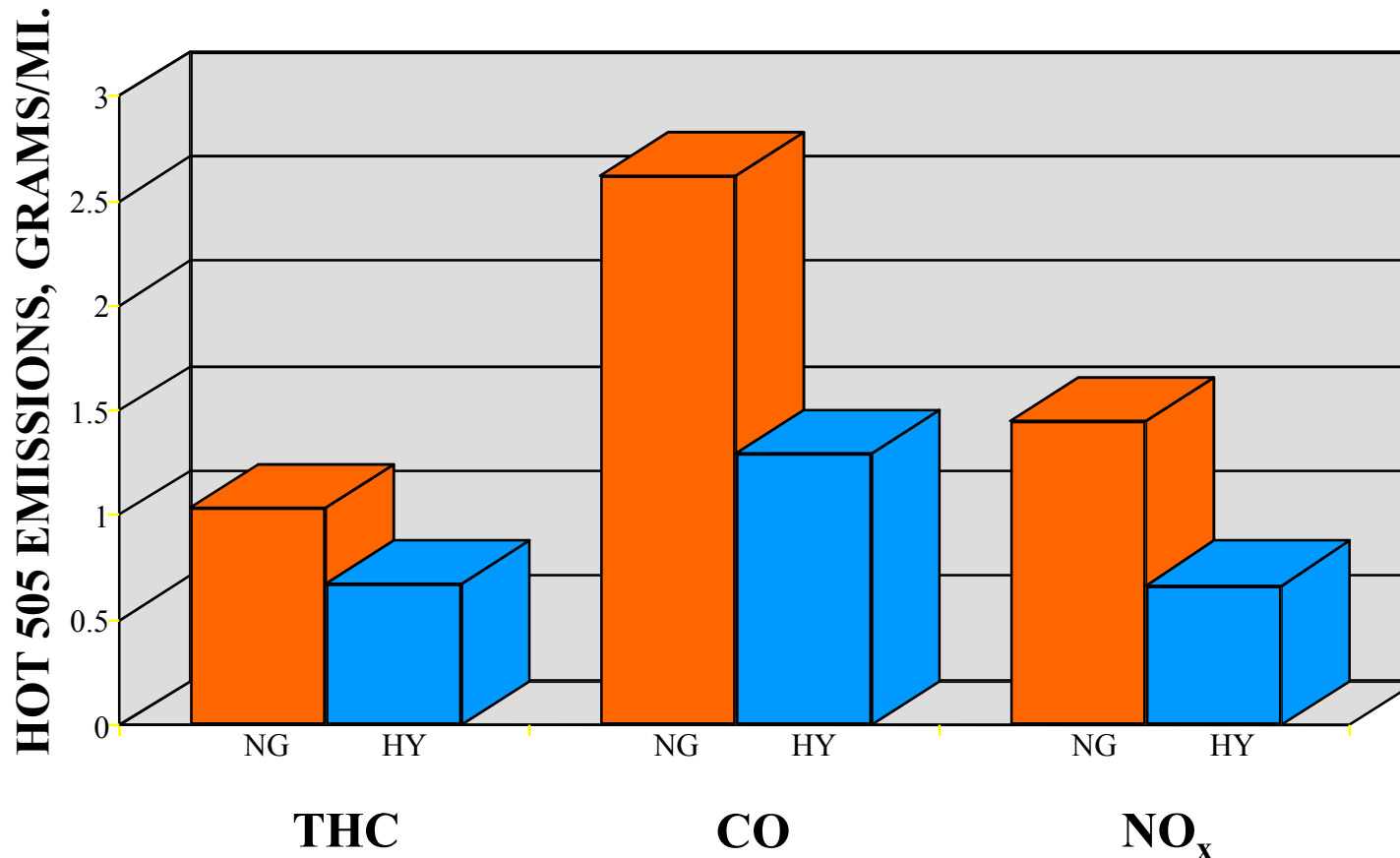
Activity Name	Start Date	Finish Date	2010	2011
Small Scale Design & Construction	8/2/10	9/13/10		
Small Scale Testing	9/13/10	12/15/10		
Small Scale Revision & Testing	12/15/10	1/31/11		
Large Scale Conceptual	1/17/11	2/11/11		
Large Scale Design	1/31/11	4/29/11		
Parts Procurement	5/2/11	7/29/11		
Assembly/Construction	5/30/11	9/30/11		
Testing	9/5/11	12/1/11		
Rework/Debugging	9/16/11	12/1/11		
Production	12/1/11	12/1/11		
			2010	2011

## Hythane<sup>®</sup> - the transitional fuel

$H_2 + CH_4 \rightarrow$   
Hythane      *Significantly lower pollution / Higher efficiency*

- **Premium blend of Natural Gas** - complies with natural gas standards
  - 5-7%  $H_2$  (by energy); 20%  $H_2$  (by volume)
- Ultra-low emissions – 50%  $NO_x / CO$  - meets Euro V emission standards
- High efficiency - 10-15% increase in efficiency with suitable engines
- Low engine cost -only software changes to suitable engines
- Anticipated Hythane<sup>®</sup> sale price  $\approx$  10% more than natural gas
- Tested over 15 years – adopted in Indian Hydrogen Roadmap

# Denver Hythane<sup>®</sup> Emissions Results



Output of pollutants (grams per mile) of Natural Gas versus Hythane<sup>®</sup>. Source: Colorado Department of Health

## History of Hythane<sup>®</sup> in India

- Extreme air pollution – Govt push to reduce pollution
- 2006 Indian hydrogen roadmap - proposes HCNG as transitional fuel
- Cost of natural gas – <60% cheaper (per GGE) than diesel
- Increasing supply – 5Mtpa to 25Mtpa over 5 years
- National rollout of pipelines and Gas distribution networks
- 2009 First Public Hythane<sup>®</sup> station – Delhi - built by Eden

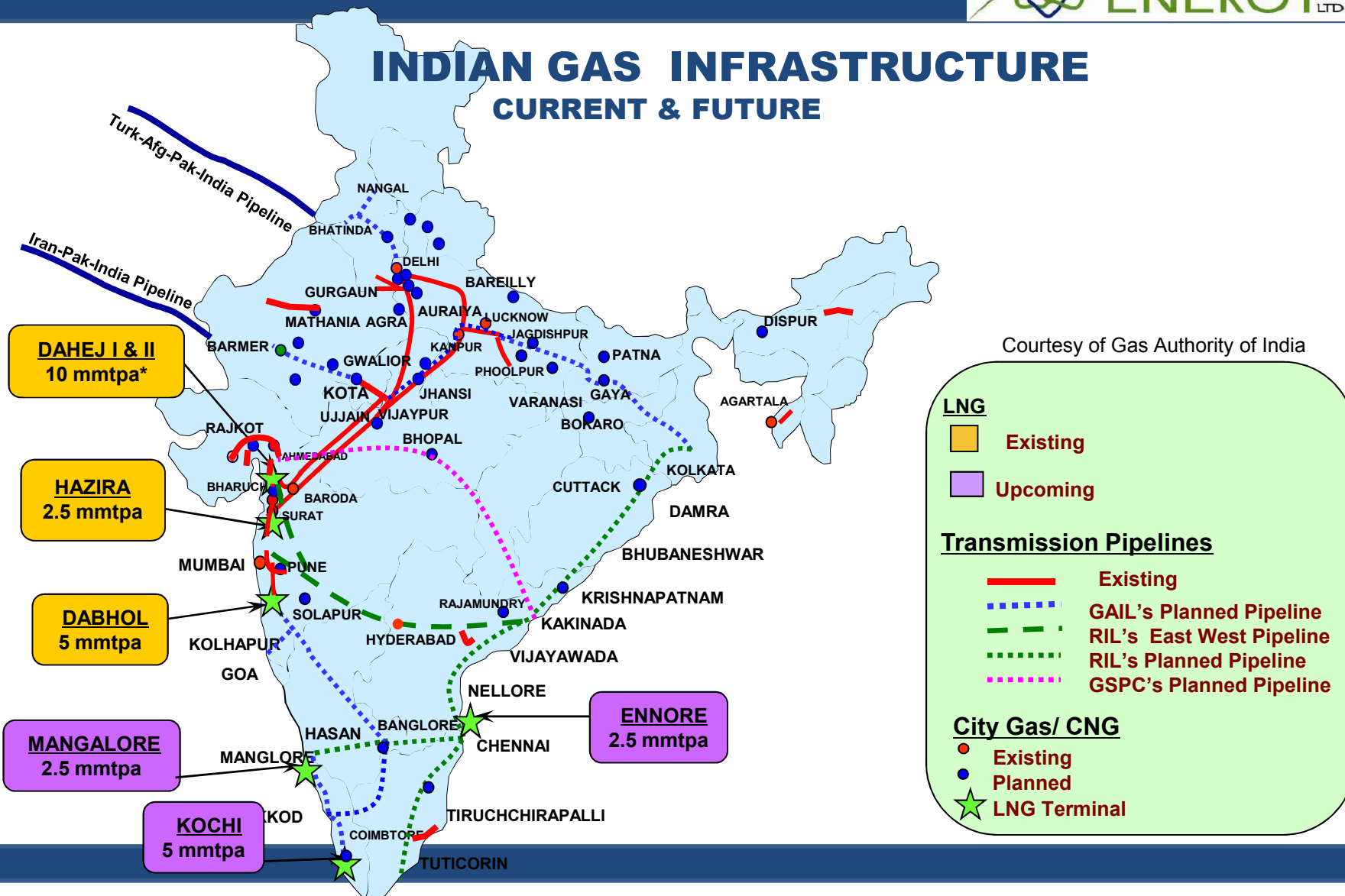
# First Public Indian Hythane<sup>®</sup> Station

Delhi January 2009





# INDIAN GAS INFRASTRUCTURE CURRENT & FUTURE



Courtesy of Gas Authority of India

## Future of Hythane<sup>®</sup> in India

- 2011 Hythane<sup>®</sup> demonstration planned – Mumbai or Gujarat
  - some delay but project still looks likely
- Objective- to establish economics of a commercial Hythane<sup>®</sup>
- Agreements signed with GSPC and GAIL, MGL
- Initially 2 buses planned and expanding to 70-90 buses
- Duration- 18-24 months – then planned commercial rollout
- Potential - up to 500,000 buses over 5-10 years
- Total Market - Buses, trucks, cars, auto rickshaws, locomotives

# Hythane<sup>®</sup> Economics and Revenue Model

## Economics

- Hythane<sup>®</sup> production costs- approx 4-6% more than natural gas
- Increased efficiency in Hythane<sup>®</sup> engines ( 6.5%-15% targeted)
- Marginal increase in cost of vehicles- software change only
- New pyrolysis process -cheaper hydrogen and Hythane<sup>®</sup> possible

## Eden's projected revenue sources

- Sale or lease of stations and/or equipment
- Sale of fuel from station (solely owned or JV)
- Engine conversions and royalties
- Possible carbon credits – approx 15 tonnes/year CO2 savings per bus

## Hydrogen / Hythane<sup>®</sup> at San Francisco Airport

- **Alternative Fuel Station – 2011**

Hydrogen fueling (by Linde)

Hythane<sup>®</sup> fueling by Eden



**Hythane Vehicle**

- **Hythane<sup>®</sup> Vehicle Fleet**

27 Ford E450 parking lot shuttles

Vehicles certified by California Air Resources Board

Some delay to date in finance but approvals now in place

# SFO Fueling Station Plot Plan

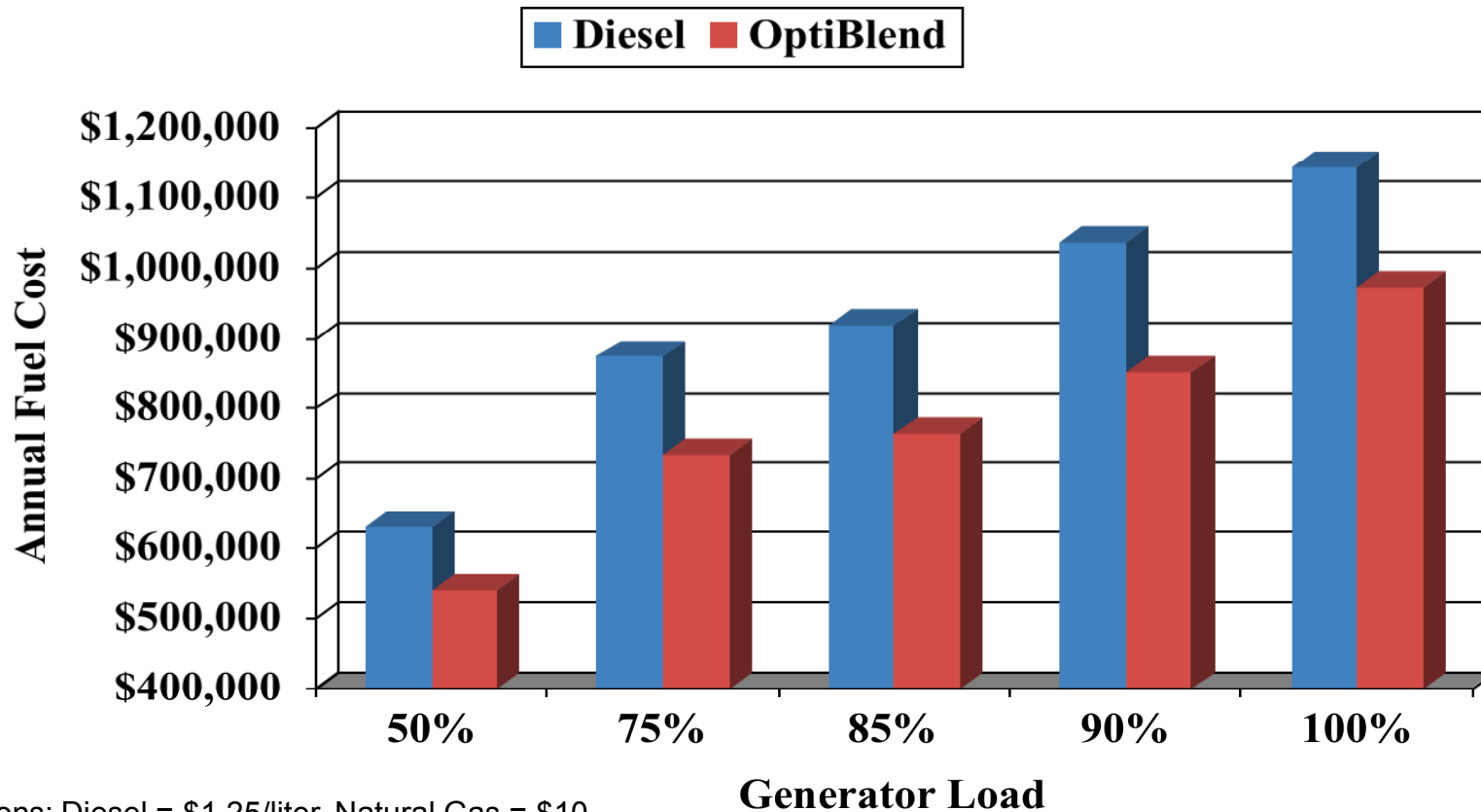




## OptiBlend Dual Fuel System

- Displaces up to 70% of diesel with natural gas in diesel engines
- Indian market – hundreds of thousands of gensets / locomotives
- Huge cost savings
  - Dramatic cost savings in full and part time applications
  - Payback period less than 12 months for larger gensets
- First sales of Indian and US kits – expanding with gas supplies
- Target- make Eden cash flow positive within 18-24 months

# OptiBlend-Typical Power Production Costs



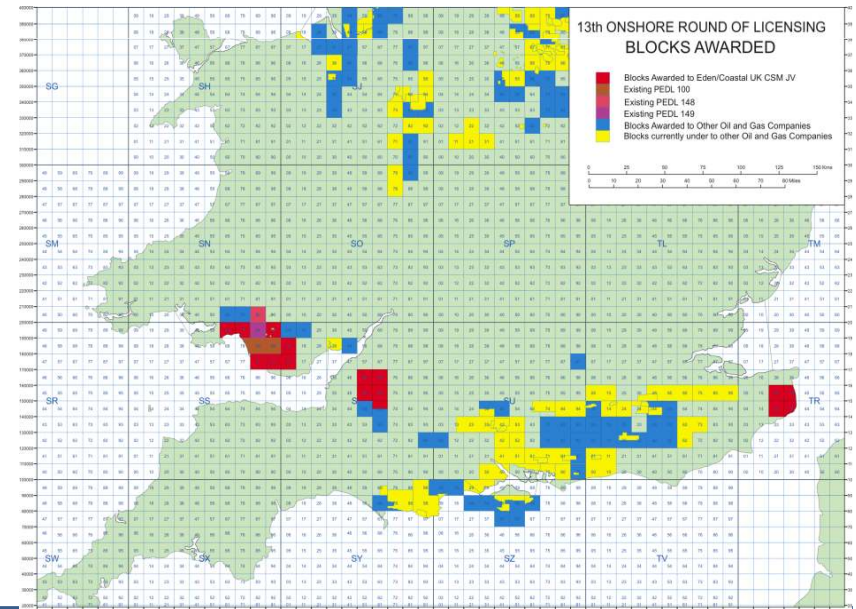
Assumptions: Diesel = \$1.25/liter, Natural Gas = \$10 mmbtu, Cummins K19 Genset

# Energy Assets

## COAL BED METHANE/ CONVENTIONAL/ SHALE GAS (WALES, UK)



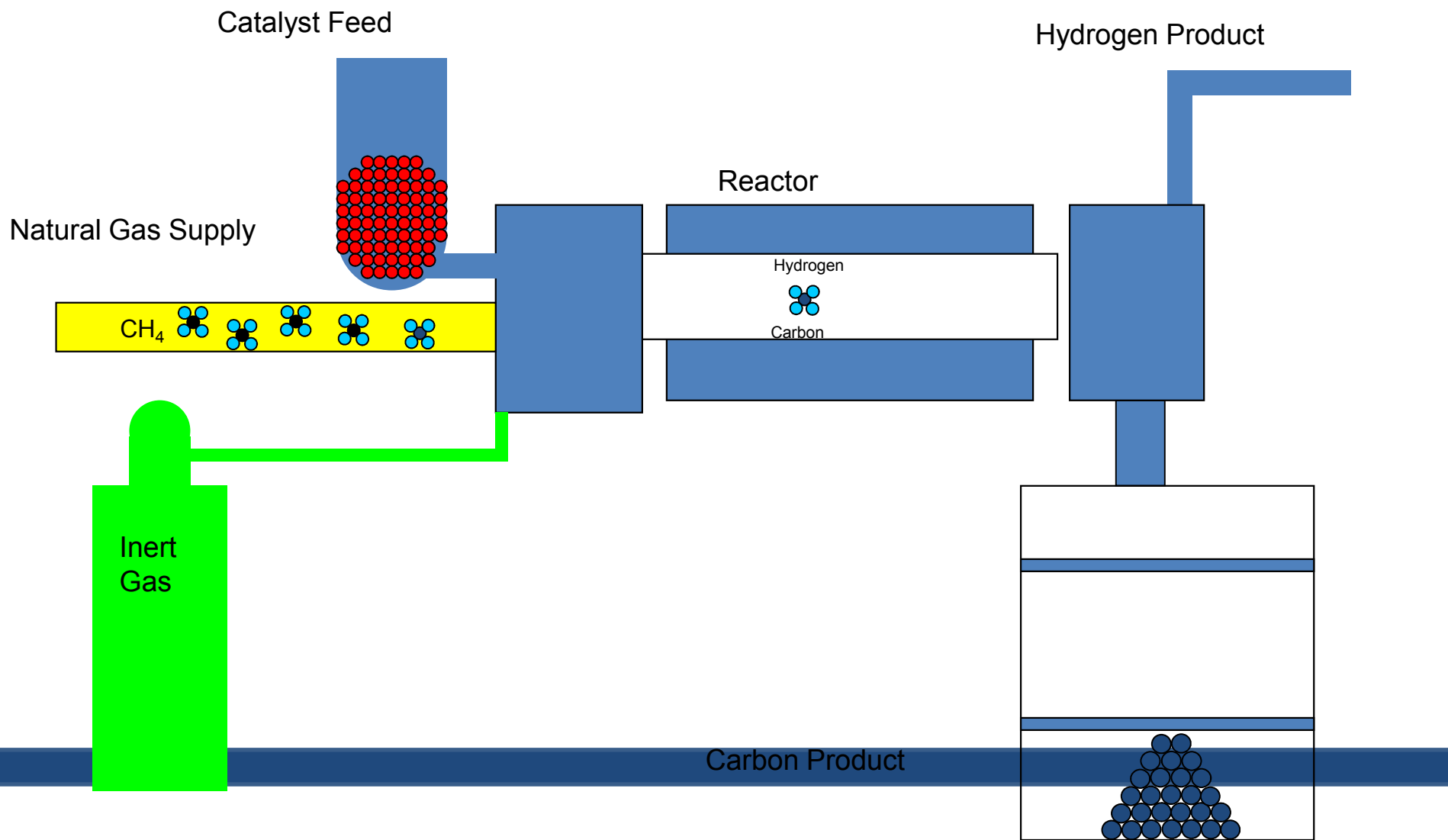
- Eden - 50% Joint venture (with Coastal Oil and Gas) -11 Licences
  - 5% Joint venture (with Coastal Oil and Gas / Centrica)- 4 CSM licences
  - 50% Joint venture/Farm-in (with Coastal Oil and Gas ) -4 NG Licences
- 18 Petroleum Exploration and Development Blocks in Wales, SW England and Kent
- **Coal Bed Methane (1-4 tcf estimated potential)**
  - 5 production test wells planned over 2-3 years
- **Conventional Natural Gas- Untested**
- **Shale Gas –Untested**
- Total area **1800km<sup>2</sup> (500,000 acres)**
- Digitised Welsh coal mine data
- High UK Gas Prices
- New joint venture company planned for 2011



## Capital Structure 21 January 2011

<b>ASX Code:</b>	<b>EDE</b>
<b>Total Shares:</b>	<b>214m</b>
<b>Share Price:</b>	<b>\$0.105</b>
<b>Market Capitalisation</b>	<b>\$22.5m</b>
<b>Cash / Receivables</b>	<b>\$2m</b>

# Eden Energy CNT Production





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## Disclaimer – Forward-looking Statements and Projections

Whilst reasonable care has been taken in compiling the forward projections in this presentation, they necessarily are based on many assumptions and factors that are beyond the control of the company and accordingly there is no representation or warranty given that these projections will be achieved. There are many uncertain market and exploration risk factors on all the projects, particularly related to the energy projects including the coal bed methane, shale gas, natural gas and geothermal projects, all of which are at very early stages of development. On the technology projects, the risks are varied, including risk that patent applications will not be granted, or another party may claim priority. In the Indian market, there are many risks which are beyond the control of the company and which could significantly impact on both the prices that are achieved, the sales turnover and the production and operating costs. These risks include delays in the rollout of the Natural Gas pipeline system and the accessibility of Natural Gas in India, limitations in the available quantities of Natural Gas, increases in the price of Natural Gas, reduction in the price of alternate fuels such as diesel, changes in Indian Government or Indian Supreme Court policies and rulings, market competition, shortages in raw materials and labour, increases in cost of labour and materials, national or international political or economic instability, problems with reliability of equipment produced and sold, warranty claims, currency fluctuations, restrictions on foreign investment, disputes with potential joint venturers, market resistance to the products or services offered, lack of available capital or finance, restrictions on international travel and similar factors beyond the control of the company. For these reasons, all potential investors and others must satisfy themselves on the reliability of these forward looking projections before acting upon any information provided to them in relation to forward looking projections, and neither the company nor any of its officers make any representations, warranties or commitments that these or any other forward projections will necessarily be achieved.