



## Hythane®: Bridge to the Hydrogen Economy

*“America has got to change its habits. We’ve got to get off oil. Our strategy is twofold: One, we’re going to change the way we drive our cars; and two, we’ll change the way we power our businesses and homes. This administration is a strong supporter of hydrogen...it makes sense to invest now and work on the technology so that when it becomes cost-competitive, it’s available.”*

**— President George W. Bush, March 2008**

**Washington International Renewable Energy Conference**

The vision of a hydrogen economy is materializing rapidly around the world. Hundreds of hydrogen cars, buses, and truck fleets are already on the road, including the first commercial hydrogen vehicles introduced this year by BMW, Honda, and General Motors. Scientists and industry analysts predict that fuel cell and other hybrid vehicles will continue gaining in popularity, and be available sooner than many have thought.

Adding to the urgency for new alternative fuels is the astronomical rise in oil and diesel fuel prices that is having major political and economic repercussions globally. By acting quickly and taking a leading position in the worldwide market for hydrogen technologies, the United States can strengthen its competitiveness by opening up new economic opportunities.

Hydrogen is an energy carrier with zero carbon content. Like electricity, hydrogen can be produced from all energy resources, such as biomass, wind and solar energy, nuclear energy, and clean fossil fuels. It can be converted to power and heat with high efficiency and zero emissions. Hydrogen improves security of supply due to the decoupling of demand and resources, allowing the US to choose its own energy sources.

Hythane® is a patented, optimized blend of natural gas and hydrogen that is produced and marketed by Eden Energy Ltd. It leverages the benefits of hydrogen to gain maximum reductions in harmful NOx emissions while maintaining engine power and fuel mileage efficiency. Hythane® was designed as a practical and affordable fuel to reduce dependence on petroleum while infrastructure is established for a full transition to a hydrogen economy. Using Hythane in vehicles today achieves an immediate environmental benefit by significantly reducing greenhouse gases and particulates that affect air quality.

In the United States, Hythane® is being used in several municipal bus and truck fleets in California, New York, Arizona, Nevada and other states. The San Francisco International Airport is converting its entire shuttle bus fleet to run on Hythane® to dramatically decrease harmful emissions. Los Angeles Airport is reviewing a proposal to follow this lead.

In India, a high court ruling has forced the issue. Some of the worst air pollution on the planet in its urban centers has sparked a public health crisis that demands immediate action. In response, the nation has charted a path to a hydrogen economy, including having at least 20% of all vehicles, or about one million, using hydrogen-based fuel by 2020.

India is starting this journey by converting its fleet of 500,000 public buses to run on Hythane<sup>®</sup>. By adopting Hythane<sup>®</sup> as its national fuel standard, India has taken the first big step toward making hydrogen its national fuel of choice. Additionally, agreements during the past year between Eden Energy and Larsen & Toubro (the largest engineering company in India), AshokLeyland (the largest bus manufacturer in India), and Gujarat State Petroleum (a major state-owned oil and gas producer in India) have put the pieces into place to achieve a durable national consensus about the direction of hydrogen policy.

In February 2008, the Hythane Company was selected by petroleum giant IndianOil Corporation to install and supply the first public hydrogen fuelling station in India. This \$1 million retail outlet is being sited in the heart of Delhi at one of India's busiest natural gas fuelling stations. Scheduled for completion in the fall of 2008, the station will produce, store, blend, and dispense Hythane<sup>®</sup> as well as pure hydrogen to power natural gas vehicles, including buses, cars, and trucks. Two major Hythane<sup>®</sup> bus demonstration projects in Gujarat and in Mumbai during 2008 will be a springboard for commercial rollout of thousands of hydrogen/Hythane<sup>®</sup> fuelling stations across India.

As the world tunes into the 2008 Summer Olympics, there will be much commentary about the extreme environmental hazards now plaguing many Chinese cities. These conditions are paralleled in airports and cities in the US, South America, Europe, and Asia. India's roadmap to a hydrogen economy is a model for these nations and others around the globe.

