

### **Summary: Hawaii Hydrocarbon Outlook**

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This study examines the important global, regional, and local trends that will affect Hawaii's energy horizon over the next several decades. Its main focus is to examine the potential for expanding the use of alternative hydrocarbon fuels, such as coal or natural gas, in an effort to diversify away from oil.

Numerous topics are discussed, including: the outlook for petroleum, coal, and natural gas at the global, regional, and local level; the future of hydrocarbons in power generation; the future viability of the refining business in Hawaii; the impact of new technology in the transport sector; Hawaii's fuel tax structure; and energy security issues of particular importance to Hawaii. The observations and suggestions are wide-ranging, but the key points include:

- In comparison to other states, Hawaii is heavily oil-dependent—it relies on oil for almost 90 percent of its primary energy. If the utilities' current plans are followed, the State's reliance on oil looks set to continue through at least 2020.
- The Middle East will increasingly dominate the oil export market, and prices are likely to remain volatile, but most analysts project that the average price will remain in the \$20-30/bbl range over the next several decades. Sustained higher prices bring massive supplies of unconventional oil into play, which effectively acts as a ceiling on oil prices.
- Partly due to proximity and partly because of Hawaii's need for low sulfur crudes to produce low sulfur fuel oil for power generation, the State is heavily dependent on Asian crude imports (which tend to be low in sulfur). Hawaii also relies on crude from the Alaska North Slope. Unfortunately, production of these crudes is generally stagnant or in decline at the same time that the Asia-Pacific region's thirst for crude continues to grow. As a

consequence, Hawaii's refineries will most likely have to pay a growing premium for the State's crude imports.

- In the past, liquefied natural gas (LNG) was considered to be a relatively expensive energy source, but technological advances and the entry of several key suppliers into the market in the 1990s has driven prices down—it is now clearly a buyer's market.
- Hawaii is in a good position because there is a great deal of interest in bringing LNG from Asia into the U.S. West Coast—Hawaii could be part of a larger scheme to import LNG. However, a possible concern is that introducing LNG would disrupt the current energy balance and weaken the position of Hawaii's refineries.
- Looking forward, LNG is a relatively clean burning fuel source that could enable Hawaii to reduce its dependence on oil while at the same time serving as a bridge to alternative fuel technologies, such as fuel cells. It can also be sourced from relatively stable countries, such as Australia and Malaysia, which could help enhance energy security.