Economic Impact of the Propane Green Autogas Solutions Act of 2011 (Propane GAS Act) (H.R. 2014/S. 1120)

Executive Summary

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Prepared for the:
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Congress is currently considering a bill, H.R. 2014, the "Propane Green Autogas Solutions Act of 2011", to promote propane-fueled vehicles. ICF International was retained by the National Propane Gas Association to evaluate the potential economic benefits and costs of this legislation. This Executive Summary report provides a summary of the study approach and highlights the key conclusions of our analysis. The study methodology, inputs, outputs, and conclusions are discussed in more detail in the full report.

Introduction

In many ways, propane[1] is an ideal alternative vehicle fuel. The fuel is widely available, and sufficient fuel supply, transportation, and distribution infrastructure exists in the market today to meet foreseeable demand. There are no major technological challenges associated with developing propane fueled vehicles or expanding the fueling infrastructure. The current generation of vehicles powered with propane have nearly the same operational and performance characteristics as conventionally powered vehicles.

In addition, the use of propane as a vehicle fuel is consistent with national environmental and energy security objectives. Propane is cleaner than gasoline and diesel with respect to most major pollutants, including carbon monoxide (CO), non-methane hydrocarbon (NMHC), and exhaust course particulate matter (PM_{10}), and provides from 18 to 20 percent reduction in total carbon dioxide emissions relative to gasoline.

Propane is also primarily a North American energy source. In 2010, more than 99 percent of propane used in the U.S. was produced in North America, and more than 66 percent was produced from natural gas liquids. In early 2011, the U.S. became a net exporter of propane. ICF is projecting domestic propane supply to grow rapidly over the next 10 to 20 years in conjunction with the growth in shale gas production. ICF is also projecting consumer propane

[1] Propane used as a vehicle fuel is often referred to as LPG (Liquefied Petroleum Gas) and as propane autogas. In the U.S., the terms propane and LPG are functionally equivalent, although in other parts of the world, LPG may contain a higher proportion of other petroleum gases, including butane than would be allowed in propane. For this report, we use the terms propane and propane autogas interchangeably with LPG.

demand in traditional markets to be stable or declining. Unless domestic demand for propane increases, the growth in propane supply will lead to a significant growth in propane exports. As a result, displacement of gasoline and diesel fuel by propane will directly reduce reliance on imported crude oil and petroleum products, while also reducing propane exports, and increasing domestic energy security.

Despite the potential benefits, propane vehicle sales currently represent a very small share of the total vehicle market. Higher vehicle costs created by tighter emissions standards, combined with relatively low gasoline prices have slowed propane vehicle market penetration in the last ten years.

However, the outlook for propane vehicles has changed substantially in the last few years. The increase in crude oil prices, combined with growth in domestic propane supply associated with the growth of shale gas has reduced the wholesale price of propane relative to gasoline, and changes in propane fleet fueling business practices have changed the relationship between propane and gasoline prices for fleet customers. As a result, current delivered propane prices are typically well below gasoline prices for fleet vehicles after adjusting for differences in fuel efficiency. Given the current energy price outlook, propane prices are expected to remain well below gasoline prices for the foreseeable future.

In addition, federal government tax policies have promoted the development of new propane vehicles by offering significant tax credits for new vehicles and refueling infrastructure, as well as excise tax credits on fuel. These incentives have encouraged development of a number of new propane vehicles that have recently reached the market, or are expected to reach the market in the next two years. However, the new vehicle tax credit expired at the end of 2010, and the infrastructure and fuel excise tax credit are scheduled to expire on December 31, 2011.

Proposed Legislation

Congress is currently considering legislation to extend propane vehicle incentives through 2016. H.R. 2014, the "Propane Green Autogas Solutions Act of 2011" includes three provisions intended to facilitate market penetration of vehicles fueled by Liquefied Petroleum Gas (LPG).[2] These include:

1) Extension of the $0.50 per gallon alternative fuel excise tax credit for liquefied petroleum gas used in vehicles for five years, from December 31, 2011 through December 31, 2016.
2) Extension of the new qualified alternative fueled motor vehicle credit through December 31, 2016.
3) Extension of the 30 percent tax credit on investments in alternative fuel vehicle refueling property through December 31, 2016.

[2] The provisions in H.R. 2014 are limited to the use of LPG. Hence the analysis assumes that no new tax credits are passed for other alternative fueled vehicles.

Overview of Approach

The ICF analysis was conducted using standard economic modeling and analysis techniques. The analysis was conducted in two phases, using two widely used and respected economic models. In the first phase, ICF projected the number of propane vehicles that would be sold to the fleet market with and without the proposed tax credit. The analysis used a vehicle market share model called the Alternative Fuel and Vehicle Choice (AFVC) model. Key inputs to the analysis, including propane vehicle efficiency, fuel prices, incremental vehicle costs refueling infrastructure costs and other inputs were developed based on input from the propane vehicle industry, as well as research published by the U.S. Department of Energy, the national laboratories and other public sources.

In the second phase, ICF used the IMPLAN economic model to evaluate the impacts of the change in propane vehicle sales on the U.S. economy. The vehicle sales and usage estimates were used to develop the direct economic impacts of the proposed tax credits, including incremental investment in new vehicles and refueling infrastructure for both propane and conventional fuel vehicles, impacts on operating costs associated with the use of propane instead of conventional fuels, benefits to the economy of reducing oil imports, and costs of the tax credit proposal to taxpayers.

ICF modeled the economic impacts over a ten-year time horizon, from 2012 – 2021, which allowed us to capture the five years during which the proposed tax credits would be in place, as well as the following five years in which the effects of the policy would continue to impact the economy. The results from this modeling analysis are reported as the total (direct, indirect, and induced) impacts generated by the proposed propane autogas tax credit policy on changes to employment, output, and tax revenue.

ICF conducted the vehicle market and economic impact analysis for two different scenarios reflecting different views of the propane vehicle market potential. For each scenario, ICF projected propane vehicle sales with and without the tax credits included in H.R. 2014. The two scenarios include:

1) The ICF Base Case: The base case reflects ICF's best assessment of the likely market penetration of propane fleet vehicles. This is based on ICF's assessment of propane vehicle availability and prices, vehicle performance characteristics, and market conditions, including fleet vehicle fuel price, and competition from conventional and other alternative fueled vehicles.

2) The ICF Optimistic Case: The optimistic case reflects a more positive assessment of the propane vehicle market with lower fuel costs and refueling infrastructure costs. The optimistic case inputs reflect inputs from the propane vehicle industry and other sources.

Summary of Conclusions

Our analysis of the economics of propane use as an alternative to conventional fuels in fleet applications indicates the propane vehicles are economic for many applications at current and projected propane and gasoline prices. Propane vehicle sales will expand relatively slowly in the absence of the tax credits proposed in H.R. 2014 or other incentives. However, H.R. 2014 will have a significant impact on the number of propane vehicles sold, leading to substantial economic, energy security, and environmental benefits at little or no net cost to taxpayers. The key conclusions from the analysis are summarized below. The lower and upper estimates identified below reflect the impact of the tax credits on the ICF Base Case and ICF Optimistic Case scenarios.

Impact on Propane Vehicle Sales

Implementation of the "Propane Green Autogas Solutions Act of 2011" H.R. 2014 will provide a major stimulus to the sale of propane autogas vehicles, leading to much faster market growth.

1) ICF's analysis projects between 17,000 and 34,000 propane vehicles sold in 2016 in the absence of incentives.

2) ICF is projecting between 96,000 and 157,000 propane vehicle sales per year by 2016 if H.R. 2014 is implemented.

Impact on Jobs and the Economy

H.R. 2014 will also provide significant benefits to the U.S. economy:

3) The growth in the propane vehicle sales and use created by the tax credits will generate an increase in economic activity that peaks at between $4 billion and $5.7 billion per year in 2016, and totals between $20 billion and $29 billion over the ten year period from 2012 through 2021.

4) The growth in economic activity created by the tax credits will create between 30,000 and 42,000 net new jobs by 2016, including between 14,000 and 19,000 jobs directly related to the production, sale, and utilization of propane vehicles, propane refueling facilities, and propane production and distribution, and between 16,000 and 23,000 indirect and induced jobs in other industries created by the increase in demand for services by the industries directly affected, as well as the impact of reduced expenditures on fuel on demand for other products.

5) Over the ten year period from 2012 to 2021, the cost of the proposed tax credits to the federal government will be more than offset by increased tax revenues at the federal, state and local government level.

Impact on Energy Security and the Environment

H.R. 2014 will improve U.S. energy security by increasing sales of domestically produced propane and reducing reliance on oil and petroleum imports.

6) H.R. 2014 will increase consumption of domestically produced propane by between 579 and 759 million gallons of propane per year by 2016, with a cumulative increase of between 4.2 and 5.5 billion gallons between 2012 and 2021.

7) By 2016, the increase in propane consumption will increase propane industry sales by 3.3 percent to 4.3 percent relative to total 2010 sales, and 6.3 to 8.3 percent of total consumer (odorized) propane sales.

8) The increase in propane use will reduce consumption of conventional fuels by the equivalent of between 480 and 683 million gallons of gasoline per year by 2016, with a cumulative reduction of 3.5 to 4.9 billion gallons of gasoline equivalent between 2012 and 2021.

9) The tax credit will reduce crude oil and petroleum product imports by between 11 and 15 million barrels per year by 2016, and between 83 and 117 million barrels over the period from 2012 through 2021.

10) The increase in propane consumption and corresponding reduction in gasoline consumption will directly reduce annual carbon dioxide emissions by between 0.9 to 1.7 million metric tons per year by 2016, and between 3.6 and 12.1 million metric tons over the period from 2012 to 2021.

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