Testimony by Dr. Thomas Tunstall

Research Director, Institute for Economic Development

The University of Texas at San Antonio

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Good afternoon. I would like to thank Chairman Duncan and the members of the subcommittee for extending me the privilege to testify here today. My name is Thomas Tunstall. I am the research director for the University of Texas at San Antonio Institute for Economic Development. Our institute has undertaken extensive research to-date on the Eagle Ford Shale in South Texas, specifically addressing issues dealing with the economic impact and sustainable community development. In September of last year, we completed our fourth economic impact report on the Eagle Ford in Texas. In that report, for the calendar year 2013, we estimated that the Eagle Ford Shale generated $87 billion in economic impact, supporting over 150,000 full-time jobs. While the recent decrease in oil prices has resulted in some job loss, the activity in the Eagle Ford in South Texas continues to have a significant impact on the region – one of the traditionally poorest areas of the state if not the entire country. Prior to the ramp-up of activity in the Eagle Ford, many of the counties in the region were losing population. This unexpected

windfall has given communities in the area an opportunity to build a foundation for long-term sustainable economic and community development.

The Eagle Ford is one of the more interesting shale formations that have been extensively explored to-date. The shale is noteworthy because it contains significant quantities of oil and gas, as well as condensate, also known as wet gas or ultralight crude oil. The Eagle Ford is also arguably the most productive shale formation for oil production in the United States or anywhere else in the world so far. And the while the same shale field is called the Burgos Basin across the Rio Grande border in Mexico, the Eagle Ford and other formations continue well into Mexico, over to Monterrey, and then along the Gulf Coast as far south as Vera Cruz.

It is worthwhile to note that Mexico's oil production peaked in 2004, and has been declining steadily since then. In fact, were it not for energy reform in Mexico, the country would likely have been facing the prospect of becoming an oil importer in the next few years. Mexico already imports substantial quantities of natural gas from the U.S. – over 650 billion cubic feet annually in 2013 and 2014, with even greater quantities expected in the next few years by way of additional pipeline capacity that has recently been developed. At the same time, shale gas reserves alone in Mexico are estimated to be 545 *trillion* cubic feet.

Mexico's energy reform consists of several types of fields and blocks that will be auctioned off in the coming months. These blocks include deep-water fields, shallow

water fields, onshore conventional fields, and shale fields. Our research at the University of Texas at San Antonio has focused primarily on the shale field opportunities in the Mexican states of Coahuila, Nuevo Leon, Tamaulipas and Vera Cruz.

While the experience in the Eagle Ford in Texas can be a useful point of reference for the opportunities for Mexico's shale, there are some important differences to note. Although there have been infrastructure challenges in South Texas, most were overcome relatively quickly. In Mexico, the infrastructure challenges will be much more significant. In order to address some of the key issues at hand, I would like to highlight four policy prescriptions that I believe would encourage the development of the Mexican energy industry, increase trade activity between the U.S. and Mexico, and bolster North American energy security.

Policy Prescriptions

1. Expedite oil swap approval

Most of the refineries along the Gulf Coast in the U.S. were optimized to process heavier crude oil that the U.S. expected to be importing from OPEC countries or Canada. However, because of the unexpected increase in light crude oil production from shale, the refineries are processing a type of oil that they did not expect to receive. Much of Mexico's production tends to be heaver crudes. And in addition, much of Mexico's refining capacity is better equipped to process lighter crudes of the type coming from U.S. shale fields. Both from an optimization as well as energy security standpoint, it

makes sense to encourage the Department of Commerce to approve the oil swap arrangements with Mexico as soon as possible.

2. Streamline border-crossing process for key industry employees in order to facilitate workforce development

The bulk of worldwide expertise dealing with unconventional extraction techniques resides in the United States, especially in Texas. While the ultimate success of energy reform still depends on the implementation, Mexico's proximity to Texas puts the country in a good position to benefit from the technologies and techniques developed in the United States. However, in order for a suitable workforce to be developed in Mexico, it is often necessary for employees to be trained by experienced staff on working rigs located in the United States. Typically, Mexican nationals sponsored by exploration and production companies will make several training visits to the U.S., sometimes daily. Experienced U.S. workers will also increasingly be making trips to Mexico to supervise operations. While such border crossings would be expected to be a routine procedure, experience to-date suggests that significant delays of hours at a time are not uncommon, which burden operators with unnecessary costs and delays. Developing a streamlined process for worker knowledge-transfer from the U.S. to Mexico will be an important step to ensure the ultimate success of Mexican energy reform implementation.

3. Supply chain logistics between the U.S. and Mexico.

Unconventional techniques require a wide variety of personnel and equipment to complete a shale well. The logistical infrastructure in northern Mexico in terms of roads,

housing, workforce, medical facilities, rail, telecommunications and pipelines is significantly undeveloped. In order to successfully develop the shale opportunities in Mexico, the federal and state governments there (perhaps in coordination with the U.S.) must make a commitment to invest in the infrastructure that will be necessary to support oil and gas development, as well as provide a foundation for other types of industry in the future. Developing the supply chain network that will be required represents a significant opportunity to increase the involvement in Mexico for small-medium enterprises in Texas and other oil producing states.

4. Crude oil export

U.S. hydrocarbon export policy is inconsistent. Currently, U.S. law allows for unlimited, unrestricted export of refined products such as jet fuel, gasoline and diesel fuel. Further, natural gas can be readily exported to any country with which the U.S. maintains a free trade agreement, such as Mexico and Canada. Several companies have either obtained permits, or are in the process of investing billions of dollars building facilities and obtaining permits that will allow them to export natural gas to any country in the world from the U.S. While plentiful supplies of natural gas in the U.S. keep the price around $3 per thousand cubic feet (mcf), other countries pay significantly more for their supply of natural gas. Europe pays around $11-12 per mcf and Japan is paying $16-17 per mcf. Most recently, the Commerce Department has authorized companies to export condensate – essentially an ultra-light crude oil with an API (American Petroleum Institute) gravity of 45 or higher.

In essence, the United States now exports most classes of hydrocarbon products - refined petroleum products, natural gas, manufactured products that use natural gas as a feedstock, and condensate (or ultra-light crude oil). Yet if the crude oil has an API gravity below 45, export is not allowed. This standard is arbitrary and depresses U.S. oil production. The restrictions force WTI (West Texas Intermediate) crude oil to be sold at a discount to Brent crude. Lifting the export ban on crude oil would boost U.S. production and would no longer unfairly penalize exploration and production companies, as well as mineral rights property owners in the U.S. - both of whom are currently forced to sell their crude oil only to U.S. and some Canadian customers.

Once again, I would like to thank the members of the committee for their kind attention, and the opportunity to speak before you today.