Testimony before Committee on International Relations'
Subcommittee on the Western Hemisphere

"Western Hemisphere Energy Security"

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Thursday, March 2, 2006
2:00 p.m.
Rayburn House Office Building, Room 2172

Good morning, Mr. Chairman and Members of the Committee. I am pleased to appear before you today to discuss the Administration's efforts to strengthen Western Hemisphere energy security, detailing both our strong successes and the challenges we face. In my testimony today, I plan to provide an update on our efforts, as well as the Department of Energy's view on the outlook for energy markets, integration, diversification, and exploration and development of energy resources in the Western Hemisphere.

Energy security is inextricably intertwined with economic prosperity and national security. This concept is at the heart of the energy bill signed by President Bush last summer, and his Advanced Energy Initiative (AEI) announced as part of his 2006 State of the Union address. But our energy future requires more than just a national approach. We believe that a secure and prosperous Western Hemisphere is vital for our national interest. Integrated markets, interconnected infrastructure, technologically advanced development of a broad range of resources, and efficient end-use will create a strong, confident Western Hemisphere that benefits the United States and the populations of each country in our hemisphere.

The United States consumed 20.7 million barrels per day of petroleum in 2005, of which 6 million barrels originated from sources (net total supply) in the Western Hemisphere, especially from our border countries of Canada and Mexico. In 2005, net imports accounted for 58 percent of U.S. total petroleum consumption. Thirteen countries in the Western Hemisphere provided 49 percent of the United States' gross imports of crude oil and petroleum products, according to Energy Information Administration (EIA) analysis. Our neighbors in the hemisphere make up three out of our top four suppliers – Canada, Mexico and Venezuela – with the Canadians holding the top spot among all suppliers of crude oil and petroleum products. These three countries accounted for 39 percent of U.S. gross imports in 2005, with Ecuador, Colombia, Brazil, Trinidad and Tobago, and Argentina also falling in the top 25 sources.

For the most part, the Western Hemisphere energy picture is starkly divided into producer and consumer countries, with some degree of overlap. Energy markets are highly integrated in some areas and disconnected in others. The prospects for economic growth and development in the region depend increasingly on unlocking valuable resources to supply reliable, affordable and clean energy.

Western Hemisphere energy security is enhanced with the adoption of policies that expand the sources and types of global energy supplies, increase efficiency of energy production and consumption, encourage the use of the most environmentally responsible technologies, enhance the transparency and efficient operation of energy markets, and strengthen the capacity to respond to oil supply disruptions. To realize greater energy security in the Western Hemisphere, we must work together with our neighbors to achieve common goals and take responsibility for the role we each play in the global energy market. The Department of Energy and other U.S. government agencies are engaged in the implementation of these strategic goals.

Some of the most important challenges facing countries in the hemisphere include:

- High oil prices
- High natural gas prices
- Infrastructure vulnerability
- Political volatility in traditional production areas
- Security issues in protecting production and distribution infrastructure
- Declining production in traditional areas
- Unpredictable and nontransparent legal, regulatory and fiscal regimes that impede necessary resource and infrastructure development
- Temptation to increase state involvement and government shares of natural resource revenue, imposing limits on access to needed capital for investment
- Concerns over refining capacity, especially in meeting a shift toward heavy oil
- Massive energy investment requirements in the coming years (the International Energy Agency estimates that Latin America will require nearly US$1.3 trillion of investment in the energy sector between 2001 and 2030)
- Lack of financing for alternative energy sources

However, opportunities far outweigh these challenges. The United States is committed to fostering an era where we can realize our mutual goal of hemisphere-wide energy security. Each country must make choices to achieve energy security. In order to ensure the most efficient development and use of energy, these choices must include commitments to market-based pricing and open investment in order to assure that each country realizes its full potential. These choices represent political challenges in many of the countries of our hemisphere, but making the right choices will make a real difference in the quest by each country to achieve energy security and economic prosperity for its people.

International Dimensions of U.S. Energy Policy

The underlying belief of our energy policy presumes that access to secure, reliable and affordable energy sources is fundamental to national economic security. As energy is the lifeblood of economies around the world, global economic growth depends on adequate, reliable and affordable supplies of energy. Key foreign policy objectives, including support for democracy, trade, sustainable economic development, poverty reduction, and environmental protection, rely on the provision of safe, reliable and affordable energy supplies.

As the world's largest producer and consumer of energy resources, the United States must play a leading role in addressing the world's energy challenges and ensuring a secure energy future. However, energy markets are increasingly integrated, and ensuring our national energy security requires well-coordinated international efforts. The global nature of energy markets means that supplying adequate, affordable and reliable energy services is a responsibility we all share and one we must continue to address as a global community. Actions taken by any country to misuse or mismanage their energy resources without considering the global implications of their actions will have a negative impact on every country. As traditional energy resources become scarce and more difficult to develop, energy security will become an even more critical component of economic security and national security.

A few key trends are of particular concern. Most of the energy that drives world economies today is derived from fossil fuels, in particular petroleum, and this energy comes from a relatively small number of producers. The world's dependence on a few countries is neither responsible nor sustainable over the long term. Record high oil prices indicate limited spare oil production capacity in the world market due to a lack of investment in new supply and unforeseen levels of demand growth in many parts of the world. Resources are often located in places that are geographically hard to reach, geologically difficult to develop, politically unstable, or unfriendly to new investment. Our poverty reduction goals are challenged by nearly 2 billion people who lack access to a reliable, affordable supply of energy. Environmental and climate change challenges will only become more prevalent in the years to come and require responses in ways that provide energy for economic growth and poverty reduction, while ensuring the long-term safety of our planet.

To cope with the full range of possible consequences of these trends, we must employ forward-looking policies that proactively address the energy challenges of today and tomorrow. We must maintain a diverse energy mix coming from varied sources. In the United States, we are striving to be better consumers through our efforts to promote conservation and diversify our supply sources. We are working to make energy efficiency improvements in our homes, places of work and modes of transportation. In the long-term, the Department of Energy is focusing on transformational technologies that will fundamentally change how we produce and consume energy. In the meantime, we must use the energy resources at our disposal in the most efficient, effective, and strategic manner possible.

The U.S. goals to achieve a more diversified world energy market to improve global energy security include:

- Expanding energy production to meet the needs of a growing global economy;
- Using technology to diversify the types of energy we consume, improve energy efficiency, and lessen the environmental burden of energy consumption;
- Improving investment climates in resource-rich countries and pursuing market-based pricing; and,
- Modernizing and protecting global energy infrastructure.

Overview of Western Hemisphere Energy Resources

The Western Hemisphere supplies one-fourth of the world's crude oil; one-third of the world's natural gas; almost one-fourth of its coal; and over a third of global electricity.

Oil production is concentrated in a few countries, and the United States, Canada, Mexico, Venezuela and Brazil produce almost 90 percent of the hemisphere's crude oil. Conventional oil resources are declining, and the Western Hemisphere imports about 30 percent of global oil shipments and one-fourth of oil products to meet its growing needs. In 2003, total oil consumption in the hemisphere was 29.5 million barrels per day, and total liquids production was 22.3 million barrels per day.

The hemisphere has few significant natural gas producers, and Canada and the United States produce more than 80 percent of its natural gas. Gas reserves are important but account for less than 10 percent of world reserves. Dry natural gas consumption in the hemisphere in 2003 was 31.2 trillion cubic feet, and production was 31.2 trillion cubic feet.

The United States produces almost 90 percent of the hemisphere's coal and has significant reserves. In 2005, coal consumption was 1,135 million short tons, and production was 1,120 million short tons. Electricity generation is linked to economic size, and key electricity producers include the United States, Canada, Mexico and Brazil. These four countries produce more than 90 percent of the Hemisphere's electricity. In 2003, net electricity consumption in the Western Hemisphere was just over 5 trillion kilowatt hours, and generation was nearly 5.5 trillion kilowatt hours.

Crude oil reserves in the hemisphere are significant – the second largest in the world outside the Middle East by some estimates, thanks in great part to Canada's 174 billion barrels of oil sands. Venezuela also has very large oil deposits estimated at as much as 270 billion barrels, but these are not yet proven reserves. Mexico has potential, but unproven reserves of more than 50 billion barrels. Brazil has the second largest proven reserves in South America, at 11.2 billion barrels, behind Venezuela.

Our focus on the Western Hemisphere begins here at home. U.S. domestic resources still provide a major portion of the products consumed in the United States. The United States possesses the 11th largest crude oil reserves in the world at 21.4 billion barrels and still produces approximately 40 percent of the petroleum it consumes, or about 8.25 million barrels per day (includes, crude, NGL, refinery process gain and other inputs). Domestic reserves will continue to play an important role in our energy security and prospects for increased domestic production exist. Despite the steady decline of Alaskan production, the state's wells still average about 872,000 bbl/d, or about 17 percent of total U.S. crude oil production. The most promising site for oil in America is ANWR. Developing a very small portion of ANWR could eventually yield up to a million barrels of oil every day, making us less dependent on foreign sources of energy.

On natural gas, analysts saw declines of U.S. production in 2005 due to the impact of the hurricanes, but the United States still possesses the sixth largest reserves in the world, at 192.5 trillion cubic feet (Tcf). Production remains between 18 and 19 Tcf/year, with consumption

levels of between 22 and 23 Tcf/year. The balance, of course, comes from imports, with the vast bulk of these supplies originating in the Western Hemisphere, primarily transported in gaseous form by pipeline from Canada but also imported as liquefied natural gas (LNG) flowing into the country's five import terminals. It should be noted that Mexico imports natural gas from the United States. Natural gas-fired power generation has increased its share of the U.S. power mix in recent years.

Coal continues to make up a vital element of our energy mix, as do our important nuclear energy and renewable energy sources. Production by U.S. coal miners still accounts for close to one-quarter of total U.S. energy consumption, and the expansion of clean-coal technology will provide an even greater demand for this resource that the United States possesses in abundance – about 21 percent of the world's annual production. Nuclear energy provides about 20 percent of the country's electricity generation, second only to coal, and renewable energy from hydroelectric, solar, geothermal, wind, and biomass continue to grow in importance in providing the United States with a secure and stable domestic energy base.

The technologies that make – and will make – these latter sources viable received an important boost in the form of President Bush's signing of the Energy Policy Act of 2005 (EPAct 2005) and the President's Advanced Energy Initiative (AEI) unveiled in his 2006 State of the Union address. Both are bold steps toward expanding the use of advanced sources of energy. A key focus of the EPAct 2005 involves important measures that seek to promote greater energy efficiency and for a more diverse energy supply, including tax incentives for emissions free and renewable sources of energy and a strengthened emphasis on nuclear power. The President has repeatedly emphasized the importance of using cleaner, more efficient energy technologies to help meet the Nation's energy needs with fewer environmental impacts. The AEI demonstrates U.S. commitment to investing in our energy future through technology advancement.

Our most important energy partner in the hemisphere and in the world is Canada. The current and future energy supply and our integrated energy infrastructure further binds an already strategic and fruitful relationship. The Canadian provinces of Alberta, British Columbia and Saskatchewan provide the vast majority of our natural gas imports, and Canada provides more than 80 percent of all natural gas entering the United States. There are a number of new oil and gas projects on the horizon in Canada. However, current Canadian production has slowed, and we must promote the full embrace of liquefied natural gas from other countries in order to provide supplemental support for the traditional, piped gaseous form.

The importance of realizing a fully integrated North American market goes beyond strong economic and cultural ties. More than 25 percent of total U.S. imports of oil and petroleum products come from Canada and Mexico – 16 percent and 12 percent, respectively – and the prospects of marked increases in crude oil production in both countries through technological breakthroughs in Canada's oil sands or a Mexican embrace of private-sector energy investment would further solidify these ties. The North American Energy Working Group of the Security and Prosperity Partnership has facilitated optimal development of resources, infrastructure and end use across the continent.

Of course, other countries have an important role to play in ensuring hemispheric energy security and economic prosperity. We have a long energy history with Venezuela, and we want this mutually beneficial relationship to continue. Venezuela sends around 60 percent of its oil exports to the United States, approximately 1.5 million barrels per day. One of the most important outlets of Venezuela's state oil company Petroleos de Venezuela (PdVSA) lies on our shores. Venezuela fitted its CITGO refineries in the United States to use Venezuelan heavy, sour crude oil as feedstock, and few refineries of this kind exist anywhere in the world in numbers sufficient to make Venezuela crude oil imports economic. Our West Coast refineries import approximately 195,000 barrels of oil per day from Ecuador, and we will see growing imports from Colombia, Brazil and many others. In 2005, 49 percent of U.S. crude oil and petroleum imports came from countries in the Western hemisphere.

The U.S appetite for LNG supplies is growing and new authorities provided in EPAct 2005 should allow for increased import capability. Our future LNG supplies are expected to either originate in this hemisphere or at least to pass through LNG facilities in our hemisphere. Mexico has two LNG regasification plants under construction – one on the Pacific coast and another in the Gulf of Mexico – with an additional seven sites under various stages of consideration, in all totaling 6.5 billion cubic feet per day (Bcf/d) of natural gas. For its part, Canada has seven LNG sites under consideration, with six in the environmental impact assessment or regulatory review stages. These facilities would account for close to 5 Bcf/d. LNG entering Canada and Mexico could be regasified in those countries and then shipped by pipeline to the United States. LNG imports into Mexico could also offset that country's need to import gas from the United States.

At present, however, we have no greater or more reliable LNG partner than Trinidad and Tobago. This Caribbean country accounts for more than 70 percent of our total LNG imports, and it continues to bring more supplies online, with the opening of a fourth train – or production unit – this year. This close, reliable source of natural gas has significant impact on the critical margins of our supply situation, and increased production in Trinidad and Tobago will assist in relieving some of the pressure on our traditional sources. Another exciting source of LNG continues to take shape in Peru, as the huge natural gas field at Camisea develops. An international consortium broke ground on a liquefaction plant earlier this year. Peru has at least 11 Tcf in reserves, but with greater exploration, this figure looks set to increase.

Bolivia's proven natural gas reserves of 24 Tcf – the second largest in South America (including Trinidad and Tobago) –could provide a tremendous platform for economic prosperity if those resources reach the international market. Further, Venezuela possesses the continent's largest gas reserves, with an estimated 151 Tcf, but significant investment and expertise are needed to develop this substantial resource. However, given the very slow development of its gas resources in the near-term, Venezuela plans to build a pipeline to Colombia, by which it will import natural gas for use in the production of its heavy oil and later reverse the flow once Colombia supplies diminish and Venezuelan resources are developed.

Natural gas development and integration in our hemisphere is following a rocky path. We continue to watch with interest, the various natural gas integration plans throughout the hemisphere. The two most prominent projects under consideration are:

- A Central American natural gas pipeline connecting Mexico and Colombia while serving Guatemala, Honduras, El Salvador, Belize, Nicaragua, Coast Rica, and Panama
- A South American "gas ring" that would link Peru, Chile, Argentina, Paraguay, Uruguay, and Brazil, with the potential to bring in Bolivia

While the bulk of the energy consumption throughout the hemisphere depends on hydrocarbons, some countries continue to invest in renewable energy and nuclear power generation. Hydroelectric power generation has been a mainstay in many Latin American countries for many years. The small island states of the Caribbean must reduce their oil dependency – and continue to explore the deployment of new technology for developing solar, geothermal and wind resources. A number of multilateral organizations and development banks, especially the Inter-American Development Bank, have a very constructive role to play in expanding the use of and spurring greater private investment in these non-traditional resources. Smaller economies' future prosperity may depend on minimizing the need for expensive foreign oil.

Other renewable sources of energy, such as wind, solar and biomass, have become economically feasible for power generation in many countries, while some countries explore increased use of biofuels in the transportation sector. Of course, Brazil's well-documented employment of ethanol for transportation is a model for the region.

A small amount of nuclear power generation capacity exists in the Western Hemisphere outside of the United States. Canada produces about 15 percent of its electricity from 18 operational nuclear units, 15 of which are located in Ontario. Ottawa and the provinces continue to explore the construction of additional generating capacity, but the country also faces challenges, just as we do in the United States, in addressing future work-force shortages, plant aging and plant re-licensing. Mexico has published estimates that it must increase its generating capacity by 50 percent in the next 12 years and has considered new nuclear plants to join its two existing facilities to meet those needs. Brazil and Argentina also have active nuclear energy programs. Operations at Cuba's two nuclear power plants remain suspended.

Improving Energy Production

The Western Hemisphere supplies significant quantities of global energy, producing about one-fourth of the world's crude oil; one-third of the world's natural gas; almost one-fourth of its coal; and about 35 percent of global electricity. Undiscovered oil and gas in the hemisphere is estimated at 30 percent and 20 percent of the world's total undiscovered resources, respectively. Oil producers in the hemisphere have significant potential for increasing output over the next decade. However, technical, economic and political challenges exist.

Integrated markets provide opportunities to optimize the use of our current energy supplies, not just through economies of scale but also economies of precision, where supply and demand converge in the most efficient manner possible, reducing energy wastage. From a trade perspective, the United States has demonstrated its commitment to mutually beneficial open

markets; NAFTA, CAFTA-DR, the Andean Free Trade Agreement and the Caribbean Basin Initiative all serve as examples. We have reinvigorated our relationship with regional organizations like Caricom to facilitate further cooperation, as Caribbean countries feel the heavy impact of the continued high cost of oil and gas. Our successful trilateral North American energy relationship is a good example of integration based on market-based principles and frequent and open communication. Successful integrated markets require a stable investment framework and strong stakeholder relationships to ensure that resources are efficiently developed in an environmentally sound and publicly acceptable way.

We will continue to promote the importance of a stable, transparent, investment climate which invites private sector investment to unlock valuable natural resources. Natural resources if developed responsibly will help to lead many Latin American economies out of poverty. This development is another area where the World Bank and the Inter-American Development Bank should play a leading role.

Potential Areas of New Production

Potential additional oil and gas production in North America is significant. Canada is the U.S. top supplier of imported petroleum and significant new resources are on the horizon. Under new rules for counting reserves, which now include Alberta's heavy oil sands, Canada with 174 billion barrels of proven oil sands reserves, ranks second only to Saudi Arabia in world reserves.

Canada has opened its energy sector to private sector investment, affording it access to the technology required to tap its unconventional energy reserves. According to EIA, with investments of more than $25 billion already committed to the oil sands, production should reach about 1.8 million bbl/d by 2010 and 2.3 million bbl/d by 2015. By 2015, approximately two out of every three barrels of Canadian oil production will come from the oil sands. By 2020, oil-sand operators and their partners will have invested more than $100 billion.

Both the United States and Canada have significant unconventional oil reserves in their respective countries. However, to produce these reserves, numerous challenges must be overcome: improving availability of capital and skilled labor, financial uncertainty, limitations in natural gas supply, and environmental issues, as well as the need for adequate infrastructure to process and transport the product. The U.S and Canada are continuing to cooperate on the development and application of technologies needed to unlock the potential of these resources, as well as reducing the impact associated with their development. Technology has been, and will continue to be, the key to unlocking the potential of these resources, as well as reducing the impact associated with their development.

Mexico also has great potential to increase its output. However, provisions in its constitution prohibit private investment in the oil and gas sector, limiting the country's production and ability to access new technologies that would spur output. The Fox Administration has proposed numerous energy reforms to attract private investment to develop its resources. So far, reform efforts have fallen short, and progress in this area will likely take time. Mexico ranks fourteenth in world proven oil reserves with 12.9 billion barrels, but must import both gasoline and 25 percent of its natural gas needs from the United States, even though it has the potential to be a natural gas exporter, given its sizeable reserves. While Mexico has the seventh-largest gas

reserves in the Western Hemisphere, its demand for natural gas (especially for electric power generation) has outpaced production, and projections suggest that the country will continue importing natural gas for the rest of the decade. It must look to imported LNG, as well as gas from the United States, to meet its demand. Some of this LNG could also benefit consumers in our country, especially in California. Two LNG importing projects are underway in Mexico and many have been announced, but natural gas from these projects is not expected to reach U.S. consumers before 2007. Through existing cooperative mechanisms like the North American Energy Working Group, we will continue to work with Canada and Mexico to increase their oil and gas production. Cross-border infrastructure for natural gas and electricity trade exists, although trade in electricity remains limited.

The United States and Mexico share a long-standing cooperative relationship in energy, and the DOE and the Mexican Secretariat of Energy (SENER) have maintained a strong and active relationship since 1981 and cooperate bilaterally on energy trade and policy, primarily under the auspices of the Energy Working Group of the U.S.-Mexico Binational Commission. DOE and SENER continue to focus on increasing our cooperation in energy trade and cross-border energy issues and the implementation of our shared vision for science and technology cooperation. Significant opportunities exist in terms of offshore oil exploration and production, but private investment is needed in order for Mexico to fully realize the potential of its hydrocarbons reserves.

Venezuela has significant additional heavy oil potential. According to PdVSA, Venezuela has as much as 270 billion barrels of extra-heavy and bitumen deposits. Venezuela would require significant amounts of investment, similar to the current investment levels in Canada's oil sands sector (around $25 billion to date, and projected to reach $100 billion by 2020) to develop these resources. Venezuela needs technological expertise to fully develop this important reserve. Currently PdVSA production is declining significantly - producing almost 50% less than its peak. Total Venezuelan crude output is now only 2.5 million barrels day total crude output (EIA, 2/06). This is the lowest level of PdVSA production since the oil workers strike in Venezuela in 2002-2003 and emphasizes PdVSA's need for investment and technical expertise. Without new investment, future production is expected to continue to decline. While expansive new programs for refineries, tankers and natural gas sectors have been announced, it is unclear how the country's ambitious agenda will be funded, even at high oil prices, given the lack of expertise and increasing restriction on foreign investment in the oil sector.

Harnessing the untapped natural resources of this hemisphere can be the engine for economic prosperity in many countries. The United States is working with the international financial institutions to promote the use of revenues from energy extraction as an engine of economic development.

Using Technology to Diversify Fuels and Improve Energy Efficiency

Harnessing the power of technology and markets to improve energy conservation and efficiency is another key goal for providing greater energy security. High oil prices have caused resurgence in interest in alternative fuels sources. Renewable energy offers the possibility to reduce reliance on oil in certain markets, but countries will have to make legal and regulatory

changes to become attractive to major private investment. Brazil has led in this area of the sector, with its widespread use of alternative fuels for automobiles and innovative programs to encourage greater renewable energy use in power production.

Brazil has successfully encouraged domestic use of ethanol and biodiesel for transportation fuel, in part by utilizing ethanol subsidies early on in its commercialization and by taking advantage of new technology in promoting the widespread use of flex-fuel vehicles. During the first ten months of 2005, 650,883 flex-fuel cars sold in Brazil, as compared to 580,063 regular cars purchased in the same period. Brazil seeks to expand domestic use of ethanol and promote greater use around the world. The International Energy Agency (IEA) predicts ethanol alone has the potential to make up 10 percent of world gasoline use by 2025 and 30 percent in 2050, up from around 2 percent today.

The proliferation of renewable energy technology and sources offers countries in the hemisphere an opportunity to diversify their energy mix away from traditional and expensive fuels and to reduce emissions from traditional energy production. In some cases, production of renewable energy also offers opportunity to revive domestic industry, as the case may be in Central America and the Caribbean when it comes to raising crops and processing ethanol.

For example, Caribbean countries are heavily dependent upon petroleum as their primary energy source. In 2002, the islands in the Caribbean region consumed 2.4 quadrillion Btu of total energy, of which petroleum accounted for 93 percent. Most electricity produced in the region comes from conventional thermal sources, chiefly oil-fired power plants. The islands' reliance on fuel oil makes them vulnerable to market prices. Great opportunities exist to break this dependence through sustainable energy planning. Regional cooperation among governments in the region to standardize energy regulation and coordinate planning could leverage the financing available to introduce clean, renewable and efficient energy technology.

Engaging in Multilateral Technology Partnerships

Increasing the use of alternative fuels and promoting greater energy efficiency in the near term using existing technologies requires constant and concerted effort. However, it is equally important to address future energy needs by working together to create transformational, next-generation technologies. President Bush has requested a 22 percent increased in clean energy research to accelerate these technological breakthroughs. The United States has spent nearly $10 billion since 2001 on research and development to reduce the costs of advanced energy options, such as electricity from wind and photovoltaics and biofuels for transport. These funds enable many bilateral and multilateral technology efforts that can help to accelerate deployment of options with low net carbon emissions. A few examples of our many next-generation technology initiatives are:

International Partnership for the Hydrogen Economy (IPHE)

The United States works with 15 other countries to accelerate deployment of economic hydrogen technologies through the International Partnership for a Hydrogen Economy (IPHE). Hydrogen holds great potential to serve as the energy vector of the future, whereby a variety of energy sources are converted to hydrogen, which is then used in highly efficient fuel cells to run

cars, trucks, power plants, and factories. In the Western Hemisphere, Canada and Brazil are involved in this partnership.

Carbon Sequestration Leadership Forum (CSLF)

Coal will continue to dominate electricity generation in many countries for the foreseeable future. To continue to use this abundant resource in view of concerns over global warming and the substantial contribution of coal-fired power plants to global carbon emissions, it is vital to encourage investment in the most efficient and least polluting coal-fired power plants available. For the long term, it is also essential to develop and deploy carbon sequestering coal plants, like the FutureGen demonstration plant now under construction, as affordable alternatives to conventional coal-fired power plants. The framework for international collaboration on sequestration technologies is the U.S.-led Carbon Sequestration Leadership Forum (CSLF), whose 16 partners are eligible to participate in FutureGen. Brazil, Canada, Colombia, and Mexico are all partners within the hemisphere.

Generation IV International Forum (GEN-IV)

The Generation IV International Forum (Gen-IV) is pursuing next-generation nuclear technology as a zero-emissions energy supply source. The United States, with ten other partners, including countries in the Western Hemisphere, is working to develop nuclear reactors with enhanced safety features and simplified designs that improve plant economics. We must cooperate with the International Atomic Energy Agency (IAEA) to strengthen the international nuclear nonproliferation framework needed to keep civilian nuclear power a robust option.

Methane to Markets

Methane to Markets is an international partnership with the goal of reducing global methane emissions to enhance economic growth, promote energy security, improve the environment, and reduce greenhouse gases. Other benefits include improving mine safety, reducing waste and improving local air quality. The initiative focuses on cost-effective, near-term methane recovery and use as a clean energy source. Argentina, Brazil, Canada, Colombia, Ecuador, and Mexico are all partners in this initiative.

High oil and gas prices have created momentum for research and development and investment in technologies that diversify fuel sources and increase energy efficiency. However, planning for our common energy future requires sustained investment, coherent energy policy and planning to bolster the introduction of new and existing technologies, a commitment to public education about where energy comes from and what technologies are available to improve production and consumption, and the political leadership to make hard choices to secure resources for the future.

Transparency and Market-Based Pricing

In order to develop secure energy resources now and in the future, massive amounts of investment are necessary to provide the capital that will drive infrastructure, production and technology projects. Investments are needed to unlock new supplies of oil and natural gas and to improve or prolong the lifespan of existing sources. Attractive trade and investment policies that provide access to reserves and promote the expansion of oil and gas production capacity around

the world are necessary to match demand in developed and developing countries alike. The substantial untapped hydrocarbon reserves in the hemisphere require large sums of private investment. While some countries, such as Canada and Trinidad and Tobago, have developed investment regimes and created openness that is expanding their hydrocarbon output, others have mostly closed off their sectors to foreign investment. Other governments, like that of Bolivia, may begin to reject some of their openness to investment established in recent periods. Venezuela continues to change its investment regime to reflect the government's revenue needs and desire for greater control of the energy sector, despite the evidence that these decisions result in sub-optimal levels of investment. Unresolved investment disputes in some of these countries, like Ecuador, may also deter future investment.

One positive example of a government's ongoing effort to increase energy investment is in Colombia. Colombia is the fourth largest Latin American supplier of crude oil and petroleum-related products to the United States and was the 16th leading supplier worldwide in 2004. However, much of the country's prospective natural resource areas remain unexplored. Facing the prospect of becoming a net oil importer, Colombia took effective steps to improve their investment climate in 2003. In an effort to increase transparency and spur exploration, the Colombian government created the National Hydrocarbons Agency (ANH) to administer the sector, a responsibility previously under the control of state-owned oil company Ecopetrol. As a result, Ecopetrol now competes on a level playing field with private companies, and oil companies may now assume up to 100 percent of investment and risk activities in all exploration and production contracts. Royalties changed from a 20 percent flat rate to a sliding scale, starting at 8 percent for smaller production amounts, increasing to 20 percent as production grows. The Colombian government also established innovative new methods of working with companies to address security concerns, invested significant amounts of money to provide improved geological information, and set out a number of strategic objectives. The goal of this initiative was to provide new incentives to investors to return to Colombia and explore its vast and virtually unexplored resource base. Throughout 2005, the U.S. government helped Colombia to promote investment in its energy sector highlighting the much improved and predictable investment climate. ANH signed 31 new upstream contracts and 28 technical evaluation contracts in 2005 with private firms and state-run Ecopetrol, surpassing their contract target of 30 for the year. By comparison, in 2004 the ANH signed 21 upstream contracts and 7 technical evaluation contracts. The reforms have successfully attracted new investment, and we believe they will continue to do so over the coming years.

Another positive development can be seen in Peru. Over the last few years, the government awarded new licenses under a revised contract structure, companies have moved forward with exploration and production plans, and progress on the Camisea gas project and LNG project continues. The giant Camisea gas fields located in the Peru contain at least 11 Tcf of natural gas and as much as 30 Tcf and could provide supplies to the U.S. market either directly to regasification sites on the U.S. West Coast or via facilities under construction in Mexico. The Hunt Oil-led Peru LNG project will build the necessary liquefaction plant on the Peruvian Pacific Coast to export LNG to overseas markets. It is important that Peru continue to move aggressively on the LNG project to secure a presence in the U.S. West Coast LNG market. Any change in this approach to developing Peru's natural gas resources would be a tremendous setback at this point.

Two more areas of investment opportunity are Trinidad and Tobago and Chile. Trinidad's vast natural gas reserves and efforts to develop those resources have revitalized the country's plan for development and economic growth. Trinidad and Tobago, through harnessing this opportunity, has strengthened its position as a leader in the region and constitutes a modern example of how energy resources can open new doors to a nation's economy. Maintaining a stable, transparent and fair investment environment will be critical to their growth as a major LNG producer in the region. Likewise, Chile is opening up new investment opportunities to secure the energy resources necessary to fuel their economic growth. Chile recently solicited bids for a 0.35 Bcf/d LNG regasification terminal with the potential for startup in 2009. LNG will allow Chile to reduce its vulnerability to cuts in Argentine gas exports, which Argentina reduced several times over the past two years. Short-term shortfalls and unreliable supplies have led Chile to take a serious look at new ways to secure future supplies.

Future Investment Needs & Challenges

The IEA estimates that Latin America will require nearly $1.3 trillion of investment in the energy sector between 2001 and 2030. Western Hemisphere countries, like all countries, must establish predictable, transparent and non-discriminatory investment and trade policies in order to promote adequate levels of local and foreign investment and increased trade to provide for growing energy needs. Retroactive contract changes, investment disputes, and unclear rules drive away investment and damage economies and citizens in the long run.

High oil and natural gas prices have brought about a resurgence of government control over previously privatized or semi-privatized energy sectors, but this is a step in the wrong direction, only adding to costs for governments and creating additional economic burdens. In Venezuela, a country blessed with abundant natural resources, the government has reasserted state control over the country's oil and natural gas resources by retroactively changing contract terms and structures and insisting upon greater involvement by PdVSA in energy projects. Contrary to the government of Venezuela and PdVSA's claims, production levels are down, current production is increasingly coming from private sector-sponsored fields, as state company investment and expertise declines. Private foreign companies have all but frozen new investment due to the uncertainty of the situation. Ultimately, it is the government of Venezuela's decision how to manage its energy sector, and it is its responsibility to choose the best use for its natural resource. However, we are concerned, and many investors are concerned, about declining production figures and efforts to squeeze out the much-needed private investment necessary to maintain production levels into the future.

Another opportunity in the region is the development of Bolivia's natural gas resources. Bolivia has an estimated 54 Tcf of proven and possible natural gas reserves, discovered and partially developed due to private investment and private company involvement in the energy sector. Unfortunately, the development of natural resources in Bolivia has a long and troubled past. Over the last two years, natural gas development has become entangled in a broader political debate over the diffusion of power and wealth in Bolivian society. The new government in Bolivia faces a choice to either use these resources for the benefit of its people or remain mired in political debate and continued poverty. The challenge is to learn from past lessons about how to embrace the opportunity that natural resources bring as a positive force for economic

development. Successful models abound. However, it is important to remember the experience and technology that private sector involvement brings to energy resource development, and we encourage Bolivia to look at energy companies as partners. Communication and forthright negotiation is of the utmost importance in this regard.

Nowhere is the importance of communication and forthright negotiation more pressing than in Ecuador, where investment disputes, efforts to restructure state-oil company PetroEcuador, and legislation that would re-work existing contracts with foreign oil companies to give a greater share of the revenue to the state threaten to damage private sector interest in future upstream investment. Clear leadership from the highest levels of government is critical to the settlement of investment disputes and establishing clear rules. Much is at stake and the U.S. is very concerned about the lingering disputes and urges their speedy and fair conclusion. Ecuador is endowed with 4.63 billion barrels of proved oil reserves, and about 50 percent of their exports go to the United States, mostly to refineries on the West Coast.

Further south, the Southern Cone region of South America represents a good example of how integration and cooperation are essential to energy security of sub-regions in the hemisphere. Repeated natural gas shortages over the last few years continue to show that a failure to establish a sound investment climate in one country adversely affects energy security in other countries. Chile, a notable, dynamic economy in the region, has taken control of its energy future by preparing to weather the uncertainty of natural gas production in the Southern Cone. However, pricing policies and an inability to attract new investment hinders the development of natural resources in Argentina. Countries in this region need to be mindful of their responsibilities to their neighbors to be consistent producers and suppliers of natural gas. Similarly, Brazil is looking to its own domestic resources to lessen its dependence on Bolivian natural gas imports. We are encouraged by Brazil's decision to continue its opening up of its oil sector to foreign companies, as was confirmed by a high court decision last year.

It is important keep in mind that political trends in the region have the potential to lead countries away from a market-based approach to developing their respective energy sectors. Ten presidential elections have or will take place in 2006, and energy will likely be an important topic in each race. High prices have launched energy into the political debates in many of these countries and popular pressure to deliver relief from high energy prices or claim greater shares of natural resource revenue puts pressure on political figures to offer short-term fixes unsustainable solutions. We are mindful of the economic difficulty that high costs place on poorer segments of society. However, it is important to remember that short-term solutions implemented today will not remedy unsustainable energy policies in the long run. We desire an open dialogue with political leaders in the region to form a consensus view of how energy policy should adapt to the advent of high oil prices.

U.S. government agencies have and will continue to work to address these issues through regular policy dialogues and outreach, especially with the smaller economies of the Caribbean and Central America. We are reaching out to the international financial institutions to ensure they have the proper mechanisms to help countries cope with the impact of sustained high oil prices and energy market price shocks. We generally support Mexico's efforts to spur energy development and integration in Central America, as well as greater efficiency and use of

renewables in the region. We will continue to promote the importance of private sector involvement in developing natural resources and providing critical new investment. We will move forward on plans to develop a mechanism stimulate private financing through a facility that finances feasibility studies and provides for independent project ratings. Finally, we will support efforts to attract new investment by providing clear, open and stable investment regimes.

Modernizing and Protecting Energy Infrastructure

Bringing energy infrastructure throughout the Western Hemisphere up to meet contemporary needs depends on deepening interconnections and expanding markets. Two such endeavors exemplify this idea – one established and one emerging: the integrated North American market and emerging links in Central America.

North American Energy Market Integration

North America's energy infrastructure and energy flows are increasingly interconnected. Both the quantity of flows and the complexity of the infrastructure are growing.

- Cross-border oil flows are very important to the region's economies. Canada and Mexico are key suppliers of crude oil to the United States. Oil products flow back and forth among the countries – conveyed in trucks and pipelines and by ship.
- Canada ships major quantities of its natural gas output to the United States through several pipeline connections.
- Natural gas flows from the United States into Mexico. There are several pipeline connections. Currently there are no natural gas flows from Mexico into the United States, but if Mexico builds LNG receiving terminals, this could change.
- Both Canada and the United States are net coal exporters, some of which is metallurgical coal. Mexico imports small quantities of coal from the United States.
- Electricity connections across the borders of the three countries provide important regional supplies and help offset the need for expansion of national capacity

The expansion of these interconnections allow for all three countries to consider energy supply and demand on a continental level, while still putting their national priorities at the fore. Coordinated regulatory work on the siting of LNG terminals and transportation routes provide an excellent example of the benefits that can accrue from collaboration through this initiative.

Central American Electrical Interconnection System

Linking the energy markets of Central America will increase the efficiency of each nation's energy system, diversify its energy supply, reduce the proportion of fuel oil use, spur economic activity, and has the potential to lower overall fuel costs and provide more incentives for foreign investment. To that end, the countries of Central America began discussing plans to link the region's national electricity grids in the 1960s and hope to reach their goal within the next two to three years. The Central American Electrical Interconnection System (*Sistema de Interconexion Electrica para America Central* or SIEPAC) project entails the construction of a transmission line connecting countries between Panama and Guatemala, coupled with similar

lines linking Mexico with Guatemala and Panama with Colombia; the creation and commencement of a Central American wholesale electricity market; and development of the first regional transmission system. The Inter-American Development Bank has granted the bulk of funding to support the grid integration plan, along with efforts to promote the importance of rural electrification and renewable energy sources. Central American energy integration not only enhances the power sector but also has second-order impact, such as developing human capital, promoting market-based behavior, boosting regulatory maturity, ensuring contract sanctity, and encouraging regional coordination and cooperation.

The entire U.S. government is involved in a variety of ways to support and advance energy integration in North America and Central America, as described above. We believe this type of cooperation and recognition of regional energy interdependence is exactly what needs to occur in sub-regions around the hemisphere. Over the past several months, a number of regional energy integration and infrastructure projects have come to the fore – an "energy ring" and Mexico's MesoAmerica Plan, to name but two. We look forward to discussing these projects where our input would be appropriate and hope that countries engaged in these talks consider the economic viability of each project, consider a role for the private sector, and prepare to make the tough regulatory, legal and investment decisions that will make integration and infrastructure projects successful.

Concluding Remarks

The United States recognizes that, as part of the Western Hemisphere, our energy future rises and falls with our neighbors in the hemisphere. While energy exists in a world market, our energy security is served by working with our partners in the hemisphere to ensure that we all produce at optimal levels and that our infrastructure development and energy consumption occurs at the most efficient levels and in the most efficient ways. We believe that all countries are best served by a strong, stable hemisphere. We also believe that a strong, stable and prosperous hemisphere is created by all countries basing their energy development, transportation and use on market reliance; by allowing for private capital to ensure optimal development; and by using the best technologies and a broad range of energy resources to give consumers the best choices.

However, energy security depends on the choices countries make, and we are concerned that some of the countries in our hemisphere are making choices that will not optimize the development of energy resources. Moves to restrict foreign investment and implement or increase the reach of state-run energy industries limit their ability to access capital for investment, restricting the development and access to energy supplies and infrastructure. It is a model that may hold patriotic appeal but delivers less prosperity to citizens.

Private companies have capital and technologies to share in a way that we believe will benefit the citizens of each country. We believe our partnerships in the region – with Canada and Mexico in the North American Energy Working Group; with Brazil; with Colombia and Peru; with the Central American countries; and with Trinidad and Tobago – demonstrate the rewards that foreign investment and market-based energy policies bring to the people of our country and those countries. Other countries may make other choices, but their long-term

prosperity and the well-being of their citizenry are at stake. The United States stands ready to work with our partners in the Western Hemisphere to achieve a stronger energy future for all of our citizens – one that is grounded in open and integrated markets and open and transparent economic regimes.