Thank you and good afternoon,

Let me begin by thanking the Secretary Moniz, Acting Assistant Secretary Elkind, and his staff in the Department of Energy, his counterparts at the Department of State, and the US delegation to the OECD, for their cooperation throughout the entire review process. I would also like to thank the Bipartisan Policy Center for hosting this event.

Today I am here to present the findings of our review of energy policy in the United States. Developments in the US energy sector in recent years have bolstered the country’s energy security, sustainability and economic competitiveness, but challenges remain.

There is much to be discussed, from the renaissance of the oil and gas industry, to significant steps forward in energy efficiency and research and development, and the main focus of our report, the long-term sustainability of the electricity sector. Long-term development of a sustainable electricity sector requires clarity. This means predictable, effective national policies to encourage investment, greater co-ordination to encourage the integration of renewables, and a common understanding on the future of nuclear power. This is something that I will return to when we present our recommendations.

But first, let us look at what has changed.
Six years ago, when the last In-Depth Review was published, we said that the United States needed a more consistent national-level energy policy. There was an absence of a link at the federal level among energy, environmental and security policies. As such we recommended that the United States pursue closer coordination among Congress, the administration, and state governments. To a large extent these concerns are being addressed: not only by the introduction of the Quadrennial Energy Review, but more recently, by the Climate Action Plan.

The United States has undergone other significant changes since that time: the most obvious trend has been the resurgence of oil and gas production.

This growth in unconventional gas production has been a game-changer for North American markets. Lower energy and input costs, for example, are making a substantial additional contribution to economic activity and employment, both within and without the energy industry. Energy security has also been strengthened over the past six years.

As you may know, the IEA was founded in response to the 1973-74 oil crisis; our initial role was to help countries co-ordinate a collective response to major disruptions in oil supply through the release of emergency oil stocks to the markets. In this regard, the United States is in a very strong position, maintaining stocks equal to 247 days of 2013 net imports (public stocks of 106 days and industry/commercial stocks of 141 days) as well as the Northeast Regional Refined Petroleum Product Reserve and the Northeast Home Heating Oil Reserve.
The oil industry renaissance over the past six years is largely the result of growth in light tight oil production, a boom that was expected to continue if prices had remained at levels seen earlier this year. But oil prices continued to plunge in November and into early December.

While the short-term outlook for light tight oil production remains unchanged at current prices, should price drops continue, there will be an impact on production, as marginal projects could become uneconomical. This includes emerging shale plays. A pullback in drilling might also be required in mature US plays, most notably the Bakken formation, in the event of further sustained price pressure.

Another defining feature of the energy landscape in the United States has been the unexpected rise in shale gas production. Lower revenues from the oil and liquids streams of shale plays will impact the economics of gas shale production. On average, higher gas prices will be required to offset the loss of oil-driven and liquid-driven revenues in many shale formations. Accordingly, we expect lower oil prices to feed into higher gas prices. The scale and time of the adjustment is closely dependent on the actual level of oil prices and the persistency of the new lower price.

The United States has moved quickly from two decades of increased dependence on imported gas to being a possible LNG exporter. With DOE approval for the export of LNG to countries with which the US does not have a free trade agreement forthcoming, the country is on the path to becoming one of the world’s largest LNG suppliers. This can only be a good thing. Higher US natural gas prices, however, alongside lower Asian oil-linked gas prices, will reduce the attractiveness of many US LNG projects and cost control will prove increasingly critical for the LNG sector.
Despite this boom in gas production, coal remains the largest source of energy for electricity generation. Nonetheless, we have seen its share of generation decline as the sector switches to less expensive, and cleaner, natural gas. Climate plans and environmental regulation on emissions will also give rise to the closure of coal capacity. There is still much low-cost coal in the US, however, and IEA foresees more than 250 GW of coal capacity remaining at the end of the decade.

![Image](https://example.com/image.png)

**Towards a cleaner energy sector**

- **Increased engagement and leadership opportunities:**
  - US-China Joint Announcement on Climate Change and Clean Energy Cooperation
  - Lima and Paris COP21
  - Climate Action Plan of June 2013: EPA called on to develop regulations to control CO₂ emissions from power plants.
  - Clean Power Plan of June 2014:
    - State-specific, rate-based goals for CO₂ emissions from the power sector and guidelines for states to follow.
    - This rule, to be in place by 30 June 2016, builds on existing measures to reduce CO₂ emissions.
    - The confluence of market and regulatory pressures is likely to result in a gradual evolution towards cleaner electricity generation in the US.

Though I noted that there has been increased co-ordination among Congress, the administration, and state governments, there are still bridges to be built. Climate and global greenhouse gas emissions policy in particular remains an unsettled and disputed area of energy policy between the Executive and Legislative branches of government.

I was in Lima just last week for COP 20, and though I was encouraged by the level of engagement, we all know that words are worth nothing without action. In this regard, there is a great opportunity for the United States, along with China and other emerging economies, to take a leadership role and drive for real action when the world meets in Paris next year for COP 21.

The IEA certainly welcomes the recent US-China Joint Announcement on Climate Change and Clean Energy Cooperation, as the two countries together account for more than one third of global greenhouse gas emissions. From the United States we need leadership and real policies that build on such pronouncements.

The Climate Action Plan, released in June 2013, proposes the use of executive powers under existing laws to tackle harmful emissions. The EPA has also proposed the Clean Power Plan, a blueprint to cut carbon pollution.

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from existing power plants. It has proposed state-specific, rate-based goals for CO₂ emissions from the power sector, as well as guidelines for states to follow in developing plans to achieve the state-specific goals.

These are the kinds of plans that will see political climate commitments effectively realised.

The United States has also made progress on reducing energy consumption: among OECD countries, it has achieved the largest improvement in energy intensity in recent decades, albeit from relatively high levels, as energy performance standards for appliances and equipment and new buildings are implemented.

Since 2008 over one million low-income homes have been weatherised to improve energy efficiency for less well-off families.

The Recovery Act of 2009 provided more than USD 12 billion of direct investment in energy efficiency, notably for low-income homes, public buildings and research along with more than USD 20 billion of related investment in modernising buildings, green jobs and electric technologies.

Energy efficiency codes and standards for buildings are projected to produce more than 30% improvement in the energy efficiency in new homes and buildings when compared with the 2006 building energy codes and equipment standards. Progress has also been seen on renewables. Renewable energy growth has surged over the past decade and the United States has set a goal to double renewable energy production by 2020 compared with 2012.
However there is no explicit national policy mechanism to ensure the country reaches this target, although many states have put in place renewable portfolio standards. Instead, the federal government has employed fiscal mechanisms and blending mandates, among other tools, to support renewable deployment.

Yet, the durability of some existing federal tax incentives such as its Renewable Energy Production Tax Credit – PTC – for wind, remains a persistent uncertainty. Yet another short-term extension of the PTC undermines investor confidence and contributes to the volatile pattern of annual wind deployment. Moreover, lack of timely clarity over blending levels under the Renewable Fuel Standard has created difficulty in the market for renewable transport fuels.

This lack of long-term policy durability represents a challenge for investment in new projects and must be addressed. A more balanced approach, for example, would extend the PTC for a fixed period of five years while gradually reducing its level to zero on a permanent basis. This would provide greater investor certainty and spur continued cost reductions in wind costs.

In the transport sector, the largest oil consumer, new regulations have been introduced to reduce energy consumption. In 2012, federal agencies finalised a programme to improve the fuel economy of cars and trucks sold in the United States.

More stringent fuel economy standards for light-duty vehicle of model years 2012-16 and model years 2017-25 have been established alongside standards for heavy-duty vehicles manufactured during model years 2014-18.
These have been significant accomplishments, signalling to the world that the United States is serious about controlling emissions.

In fact, these vehicle fuel economy standards are projected to save about 6.3 billion barrels of oil over the life of light-duty vehicles built from 2012 to 2024 and heavy-duty vehicles built from 2014 to 2018. This is equivalent to almost one-half of US oil imports in 2012 alongside equivalent emissions savings.

Put another way, these policies will result in a vehicle fuel economy improvement trajectory from 2014 roughly parallel to the improvements expected in the EU, Japan and China – albeit from a much lower starting point. While the drop in oil prices will inevitably lead to more driving, as it always does, these standards serve to significantly lessen the impact of that rise.

In addition, the United States is the largest electric vehicle market in the world and home to approximately 43% of all EVs sold worldwide to date. This vehicle deployment is supported by the federal government through consumer incentives ranging up to USD 7,500 per vehicle, as well as substantial RD&D with over USD 2 billion spent between 2008 and 2012 alone.

States have taken the lead on deploying infrastructure, from tax credits for installing charging stations in Louisiana to rebates in Maryland, while the federal government supports programmes such as the Workplace Charging Challenge which aims to achieve a tenfold increase in the number of employers offering workplace charging in the next five years.

Despite this progress, EVs have not yet broken through 1% of sales, and in order to meet the national goal of 1 million electric vehicles on the road by 2015, fiscal incentives should be maintained to support the nascent market, and infrastructure needs to be expanded, as well easier to find and use.

All levels of government will now need to build upon the successes to date to ensure that the potential of EVs can be met.
The federal government remains one the largest funding entities for energy technology research development and demonstration in the world, and this has played a critical role in achieving advances in all fields of energy. The Department of Energy’s 2014 Strategic Plan provides a path to achieving national energy goals and demonstrates the government’s firm commitment to basic research, development, demonstration and deployment of priority clean-energy technologies.

The Quadrennial Technology Review is providing a platform to help align energy technology and programme priorities to achieve national energy goals and guide the department’s priority-setting over a five-year horizon. The government should continue to develop approaches to secure a stable, long-term funding environment which would help meet energy technology goals and avoid negative impacts on programme stability.

The country is rich in CO₂ storage potential in both oil and gas reservoirs and saline formations and the United States is among the global leaders in CCS-related research, development and demonstration. In 2013, there were 19 large-scale CCS projects in operation, or in various stages of development, including eight major CCS demonstration projects. The Kemper County project is an example of the scale of the challenges, as well as rising capital costs, facing the technology.

Furthermore, the legal and regulatory landscape for CCS remains unsettled. While a federal regulatory scheme for permitting underground storage facilities is in place, there are gaps in areas such as pore space ownership and long-term liability, some of which are being addressed by individual states. Once more, leadership is required.
And now to the electricity sector – the focus of this review. Much of the final report is taken up with this subject.

Today, ten Regional Transmission Organizations operate bulk electric power systems across a large portion of the United States and Canada. This structure has delivered many benefits, such as efficient use of existing assets and minimisation of electricity costs. Conversely, in regions without this structure, the electricity system remains fragmented with less efficient use of existing assets.

Despite the success of markets, trade of electricity across the borders of utilities remains difficult: a balance between consolidation of system operators and co-ordination between systems is needed. This need will become more critical as wind and solar power continue to grow and greater access to balancing is required.

But electricity is no longer just about networks and load balancing. Climate change and extreme weather are fundamentally changing the way we view energy systems.

As the United States is experiencing regular “greater than billion-dollar” weather disasters, such as Hurricane Sandy, system resiliency has become a greater priority than ever before. Given the scale of the challenges ahead, we must increase the pace, scale, and scope of combined public and private efforts to improve climate preparedness and resilience. Thankfully, regulators have begun to respond to this threat and are providing guidance to network asset owners and operators to enhance the resilience of the bulk power system. These efforts must continue.

Climate is not the only threat to energy system security: over the past two decades, threats have also expanded as a result of the increased use of automation, IT, telecommunications and other electronic communication-enabled devices. The Department of Energy, in collaboration with industry and other partners in the federal
government, has released a Roadmap to Achieve Energy Delivery Systems Cybersecurity, which features a strategy and related milestones for addressing cyber security in the energy sector. We welcome these efforts, an example of strong leadership, which could be replicated elsewhere.

Regarding investment, the Energy Independence and Security Act of 2007 made it “the policy of the United States to support the modernization” of the electrical grid. Last year, the IEA’s WEO New Policies Scenario projected that the US power sector will require USD 2.1 trillion of new investments between 2014 and 2035!

In addition to investing in steel and wire, there needs to be greater co-ordination between the gas pipeline system and the high- and extra-high voltage power transmission system. Although we note that this work has started, there is a need to better co-ordinate operations, as well as market and planning rules.

Effective policies for planning and siting, cost allocation and cost recovery are also required in order to achieve the levels of transmission investments required to deliver reliable and least-cost service to electricity customers.

Greater deployment of renewables and managing their variability will require access to balancing and flexibility resources over wider geographic areas. More interconnections will have to be built.

Despite the advantages offered by investment in, for example, smart grids, demand response, integration of renewables and resilience, the market take-up has been slow. Market frameworks and regulations should encourage private-sector investment in these advanced technologies and practices.
Almost 600 GW of new generation capacity will be needed before 2040. While it is up to the market to attract most of this investment, regulation also has a role, and the federal government should consider developing a policy mechanism or long-term position, to ensure diversity of supply. This is particularly relevant in the case of nuclear power.

So now to our key recommendations:

**First**, the previous IDR highlighted the absence of a clear link at federal policy level among energy, environmental and security policies and recommended that the United States pursue closer co-ordination in the development of such policies. The Quadrennial Energy Review process is a tool that can address this concern. Accordingly, we recommend that the United States complete the process leading to the Quadrennial Energy Review and utilise its outcomes to re-establish a stable and co-ordinated strategic outlook for the energy sector.

**Second**, the United States has within its grasp an opportunity to set itself firmly on the path to a secure and sustainable energy system. We recommend that the United States grasp this opportunity and address some of the weaknesses we have highlighted. To do so we recommend:

- Supporting the development and implementation of demand-side measures and energy efficiency policies with an emphasis on the transportation and buildings sectors.
- Offering greater durability and predictability of fiscal incentives for renewable energy in order to maintain investor confidence.
• Continuing to enable the development and deployment of carbon capture and storage through consistent and predictable regulatory frameworks.

Third, and this concerns the focus of much of our review, we have recommendations on the sustainability of the electricity sector:

• Develop effective, co-ordinated, national policies to reduce the uncertainties which impede investments in secure electricity infrastructure including transmission, distribution, smart grids, renewable energy integration and climate resilience.
• Introduce measures to deliver greater co-ordination between different grid operators in order to facilitate the integration of greater shares of variable renewables and optimise regional transmission investments.
• Articulate a clear strategy for the future diversity of the power sector including a statement of how the federal government will provide long-term support for nuclear power.

Once again my sincere thanks to everyone who contributed to this in-depth review. As I noted earlier, there has been great progress in the six years since our last review. I look forward to seeing similar, or perhaps even greater progress, after another six years.