



# US

## Emissions targets and implications for business

### *What is the US's contribution...*

The US has committed to reduce emissions by 26-28% by 2025 compared to 2005 levels

1. 60% of the reductions will come from the US **President's** Climate Action Plan that addresses the largest GHG producing sectors of the economy—power generation, transport, and buildings—as well as federal government operations and major sources of two potent GHGs, hydrofluorocarbons (HFCs) and methane.
2. Potential areas for further reductions include energy efficiency and fuel switching in the industrial sector (bulk chemicals, petroleum, refining, metals, cement), and changes in the forestry, agriculture, and other land use areas.
3. The Clean Power Plan (CPP) - the largest single contributor to GHG reductions from the Climate Action Plan is - focuses **on emissions from the nation's power plants (electricity generation)**. The CCP is forecast to reduce overall emissions by 7.3%, approximately a third of the total 2014-2025 reduction commitment.
4. The CPP requires all 50 states to develop state-level plans to reduce GHG emissions by improving power plant efficiencies, shifting from coal to natural gas and renewables, and encouraging energy efficiency by electricity consumers.
5. The US adopted fuel economy standards for light-duty vehicles in 2012 and for heavy-duty vehicles this year.
6. The Energy Policy Act and the Energy Independence and Security Act dictate a number of energy conservation standards and building codes that will generate reductions from the building sector and from Federal Government operations, primarily through energy efficiency improvements and the adoption of renewable energy.
7. Significant additional reductions will come from new federal regulations on HFCs and methane from coal mines, landfills, and oil and gas production.

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## *...and what are the implications for business*

### **The Clean Power Plan:**

- **Current demand and fuel mix trends** are transforming the US power sector already, so it's helpful to separate the impact of the plan itself from the projected continuation of existing trends. The two most important existing trends are:
  1. moderation of electricity demand growth due to conservation and efficiency measures, and
  2. the falling carbon intensity of electricity due to the ongoing shift away from coal.
- In terms of demand, the base case projects a continued moderate growth rate of 0.6% per year or total growth from 2014 to 2030 of 9.6%.
- Falling carbon intensity is driven by projected continued low natural gas prices resulting from shale gas production and the improving economics of wind and solar. Continued regulations and incentives also continue to support renewables. The 2030 'Base Case' shows that coal will drop 6 percentage points as a portion of the electricity generation mix by 2030, to 33% from 39% in 2014. Concurrently, natural gas and renewables (wind and solar) will both improve their share of the energy mix by 2 and 3 percentage points respectively, to 30% and 10%.
- The CPP will cut total electricity demand by 8% through conservation and energy efficiency, and will **further reduce coal's share by 5 percentage points**. Renewables and natural gas will each gain an additional 2 percentage points of the post-CPP fuel mix, all compared to the base case.
- **Industry costs and electricity prices** will be affected. The EPA projects the CPP will cost \$8.4 billion per year to implement. The EPA further projects average electricity price increases in the early years will be on the order of 3%, with some regions of the country facing up to 6% price increases. As the sectors transition, renewables costs fall, and new infrastructure and capability comes on line, these price increases will be mitigated. By 2030, average cumulative price increases from the plan will be in the range of 1%. While no 3rd party analyses of the final rule are currently available, many in the utility industry contest these cost projections and believe that resulting price increases will be more significant than the EPA estimates.
- **Utilities** will face limited aggregate demand growth paired with the requirement to ramp up generation through gas and renewables. The plan could significantly impact coal-dependent merchant generators. Vertically integrated and distribution-only utilities should be able to pass transition costs on to customers, but they will likely need to mitigate the potential regulatory consequences of higher customer bills.

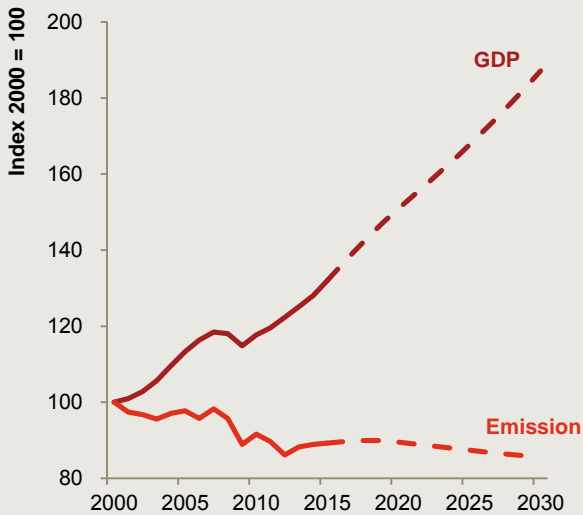
- **Fossil fuels and mining sector** will see an increase in the current pressures. The plan reduces domestic demand for coal and increases demand for natural gas producers. This feeds through into pipeline development companies that will provide the supply and infrastructure for the shift to natural gas.
- **Large users of electricity** including those with manufacturing operations, data centers, distribution centers or big commercial real estate portfolios will face incrementally higher electricity prices if their current supply is carbon intensive. These users can also expect a new suite of energy efficiency and renewable energy programs to become available that could mitigate cost impacts.
- **Renewables and cleantech** will grow as the plan is projected to result in growth of **renewables' share of** the generation mix from 10% in the base case to 12% by 2030 amid falling demand. The plan has the effect of **'locking in'** the growth on top of already rapid growth in the base case (projected 2014 – 2030 growth in the base case is 30%) to protect the sector from dips in demand. However, because the CPP is based on individual plans for all 50 states, it will complicate rather than harmonize the marketplace, exacerbating the complexity of state incentives and implementation programs that cleantech firms face.
- **Employment** may suffer in electricity, coal, and natural gas sectors: the US EPA estimates approximately 25,000 to 30,000 job losses. It also estimates employment growth in renewables of approximately 21,000, and in the energy efficiency sector of approximately 50,000.

### **The Vehicle Emission Regulations**

- By 2025, the average fuel efficiency of new US cars will be 54.5 miles per gallon as compared to 24.1 mpg in 2014, accelerating the transition to higher fuel efficiency vehicles. This improvement, to be achieved through vehicle lightweighting, the adoption of new technologies such as hybrid drive trains, and moderate increases in the electrification of the fleet, equates to a projected cut in US oil consumption in 2025 of 2 million barrels per day, or roughly 10% of daily consumption today.
- The EPA estimates these efficiencies will cost the consumer an average of \$985 in the initial vehicle cost, but save owners \$4,000 in fuel over the life of the car.
- Electric vehicles as a fraction of total vehicle sales are projected to reach 3% by 2025 from less than 0.3% today.
- The EPA estimates that 700-3,200 jobs will be added, primarily in the auto parts sector.

# GDP, energy and related emissions

**GDP forecast: 2.4% per year**  
**Emissions forecast: -0.2% per year**



*Our absolute emissions trend is based on combining the GDP forecast above with the average decarbonisation rate so far this century*



**GDP:** Since the turn of the century, GDP has grown by an average of 1.8% per year in real terms. This average includes the two consecutive years of contraction in 2008 and 2009 following the financial crisis. Since then, growth has picked up, reaching 2.4% in 2014.

**PwC's 'World in 2050' forecasts** that this rate will continue to rise over the next 3 years, before moderating, leading to an average annual growth rate of 2.4% from now until 2030.



**Renewable energy:**

The share of renewables in the energy mix has increased from 4% in 2000 to 6% in 2014. This rise has been driven largely by wind, which has increased from 0% to 2% in 2014. Solar power has increased rapidly but from a very low base and still contributes less than 1% to total energy consumption.



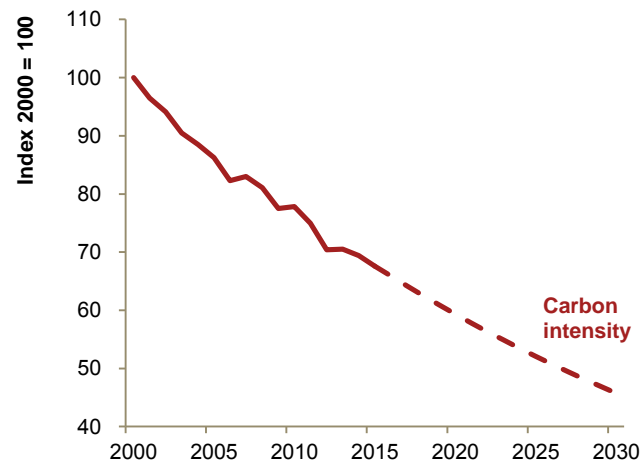
**Energy:** Overall energy consumption has remained largely unchanged, with total consumption in 2014 less than 1% below that in 2000. However, the steady consumption totals mask significant changes in the underlying mix of fuels. The shale gas boom has seen gas consumption surge by 24% since its low in 2006, and it now makes up 30% of total energy consumption. Oil fell from 38% to 36%, and coal from 25% to 20% since 2000.



**Emissions:** By sector, power contributed 44% of emissions in 2012, transport 37%, buildings 11% and industry 8%.

## Carbon intensity

**Carbon intensity forecast: -2.6% per year**



- Carbon intensity follows a steady trend of decline this century.
- Apart from two dips in the global recession, GDP and **emissions have been steady. Growth didn't exceed 3.8%** and emissions have did not fall by more than 3.9%.
- At its worst in 2009, the recession saw the economy contract by 2.8% and emissions fall by 7.1%.
- We use the 2.6% trend so far this century as our business as usual forecast opposite and below.

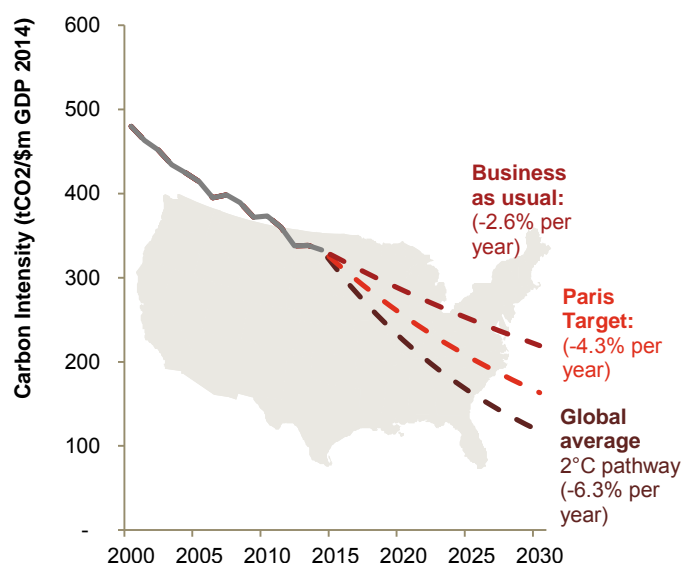
## How ambitious is the US's 26-28% target?

To meet its target, the US will need to decarbonise its economy at a 4.3% per year to 2030. Doing so will require **two-thirds more effort than today's** decarbonisation rate of 2.6%. This reflects the significant shift in policy under the Climate Action Plan for carbon or energy intensive businesses in the US.

**This level of change from BAU is higher than the EU's but lower than Canada's.** Carbon intensity in the EU has also been falling at 2.6% each year on average since 2000, but its target rate is only 3.1%. Canada has been declining at 1.2% but its target rate requires a jump to 3.9%.

Overall the US target appears to be middle of the pack in terms of ambition. Moreover, like all other countries, **the US' target does not come close to what's needed to reach two degrees** (an average of 6.3% decarbonisation every year).

How ambitious is the US' 26% to 28% target?



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