



## Clean Energy and Climate Policies Lead to Economic Growth in the United States:

New analysis shows that adopting comprehensive clean energy and climate legislation could create up to 1.9 million jobs

Comprehensive clean energy and climate protection legislation, like the American Clean Energy and Security Act (ACES) that was passed by the House of Representatives in June, would strengthen the U.S. economy by establishing pollution limits and incentives that together will drive large-scale investments in clean energy and energy efficiency. These investments will result in stronger job growth, higher real household income, and increased economic output than the U.S. would experience without the bill.

New analysis by the University of California shows conclusively that climate policy will strengthen the U.S. economy as a whole. Full adoption of the ACES package of pollution reduction and energy efficiency measures would create between 918,000 and 1.9 million new jobs, increase annual household income by \$487-\$1,175 per year, and boost GDP by \$39 billion-\$111 billion. These economic gains are over and above the growth the U.S. would see in the absence of such a bill.

<b>Table 1: U.S. Macroeconomic Impacts by 2020</b>					
	<b>2010 Baseline</b>	<b>2020 Baseline Projection</b>	<b>2020 With ACES</b>	<b>Net Increase Due to ACES</b>	<b>Percent Change Due to ACES</b>
<b>Employment (Thousands)</b>	<b>189,404</b>	<b>213,062</b>	<b>213,980- 214,959</b>	<b>918-1,897</b>	<b>0.4-0.9</b>
<b>GDP (2008\$ Billions)</b>	<b>12,338</b>	<b>15,852</b>	<b>15,891- 15,963</b>	<b>39-111</b>	<b>0.2-0.7</b>

The new comprehensive economic assessment of ACES was conducted by a team of researchers at the University of California using EAGLE, a new state-of-the-art forecasting model, to study the detailed impacts of the legislation on the United States

economy.<sup>1</sup> The model was developed collaboratively between the University of California at Berkeley, the University of Illinois (Urbana-Champaign) and Yale University.

EAGLE analysis of ACES findings:

- **Between 2010 and 2020, national employment would see a net increase of 918,000 (moderate-efficiency case) to 1.9 million (high-efficiency case) jobs under ACES—on top of a baseline increase of 24 million jobs over the same timeframe.**
- **By 2020, ACES would lead to average real personal income that is \$487 to \$1,175 higher per household per year than without the legislation (2008 dollars).**
- **ACES would result in U.S. real Gross Domestic Product that is \$39 billion-\$111 billion higher in 2020 than without legislation. That is a 0.2% to 0.7% increase on top of baseline growth of 28% between 2010 and 2020.** (See endnotes for definitions.)

By reducing our dependence on imported energy, the American Clean Energy and Security Act (ACES) will free us to commit more of our resources to domestic job creation while reducing our vulnerability to volatile oil prices, climate damage, and other threats to our national security. Moving from dirty to clean sources of energy will unleash a wave of more efficient technologies and drive innovation that will create new industries.

The cost reductions driven by ACES will boost our economy. The reason is simple: energy efficiency reduces costs for transportation and energy and thereby saves households and businesses money -- money they can spend on domestic goods and services, which will create jobs for Americans. For example, over the last thirty years, California reduced its per capita electricity consumption to 40% below the national average. This saved households \$56 billion, and those savings created 1.5 million additional jobs in California.

The EAGLE findings are consistent with previous analyses that have similarly demonstrated that clean energy investments create more jobs, across a wider variety of skill and education levels, than comparable investments in fossil-fuel energy sources. The Political Economy Research Institute (PERI) estimated in June 2009 that the combined effects of the American Reinvestment and Recovery Act ('Stimulus Bill') and ACES would yield a near-term net increase of 1.7 million jobs, based on a \$150 billion shift in annual investment from traditional to clean energy. While the PERI analysis focuses on the near-term effect of such legislation, EAGLE was used to analyze the longer-term impact.

Results from both EAGLE and PERI are also consistent with modeling by U.S. government agencies – such as the Environmental Protection Agency, Congressional Budget Office, and the Department of Energy – that shows substantial economic

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<sup>1</sup> The Environmental Assessment in General Equilibrium (EAGLE) model was developed at the University of California (Berkeley) in collaboration with researchers at the University of Illinois (Urbana-Champaign) and Yale University. The EAGLE model has been peer reviewed and full technical documentation is available on request.

benefits from the more efficient use of energy as part of comprehensive energy and climate legislation.

For the EAGLE modeling effort, two scenarios were developed: a moderate-efficiency case and a high-efficiency case. The moderate-efficiency case reflects faithful, but not aggressive, implementation of the energy efficiency standards and incentives in ACES, and assumes moderate rates of innovation in response to these policies. The high-efficiency case indicates the potential for greater economic gains from more aggressive implementation of the efficiency provisions of ACES at the federal level, and adoption of supportive policies by most states. The rate of energy productivity improvements in the high-efficiency case are consistent with results that have been achieved by states that historically have had the most successful energy efficiency policies.<sup>2</sup> A recent McKinsey & Company study on energy efficiency potential in the U.S. found that there are enough cost-efficient energy efficiency opportunities in order to achieve these levels of efficiency improvement by 2020, all at a positive return.<sup>3</sup>

The results are clear: The U.S. can improve its economy and the environment at the same time. A new energy economy will be less polluting, more efficient, more competitive, and provide more jobs. The United States can enjoy a cleaner, more prosperous future by passing comprehensive clean energy, energy security, and climate legislation.

#### **Definitions:**

- Employment is measured as average full-time equivalent (FTE) labor force participation per year. This means a single full-time job or two half-time jobs (people) are both counted as one FTE job.
- Household income measures wage and dividend income per household in 2008 dollars.
- Real GDP measures inflation-adjusted value-added in the private sector, i.e. net income to workers, enterprises, and equity investors, and is the most popular measure of economic activity.

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#### **Methodology**

EAGLE is a state-of-the-art economic forecasting model, detailing patterns of supply, demand, employment, incomes, resource allocation, energy use, and emissions across the nation and within each of the 50 United States. Using a general equilibrium framework, the model captures both direct impacts and the extensive economywide indirect effects of climate and energy policies.

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<sup>2</sup> For example, California achieved an aggregate increase in energy efficiency averaging 1.4% per year from 1972 to 2002. The high-efficiency case assumes that energy efficiency improves at a rate of 1.5% per year, compared to 0.75% per year in the moderate-efficiency case.

<sup>3</sup> McKinsey & Company, "Unlocking Energy Efficiency Potential in the U.S.", [http://www.mckinsey.com/client-service/electric-power-natural-gas/US\\_energy\\_efficiency/](http://www.mckinsey.com/client-service/electric-power-natural-gas/US_energy_efficiency/)