



Weaning the United States from Foreign Oil:  
An Assessment of the Impact of the American  
Energy Security Fund on Oil Imports,  
Greenhouse Gas Reduction, and Job Creation

Prepared by Clean Edge, Inc.

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## Overview

Clean Edge was hired the American Energy Security Fund to evaluate the impact of investments in and deployment of clean-energy technologies and energy-efficiency measures on reducing the nation's reliance on foreign oil. The following white paper takes a look at hypothetical scenarios that measure the impact of investments on our importation of foreign oil, the potential for reducing greenhouse gasses, and the creation of new job opportunities.

In order to conduct its assessment, Clean Edge created hypothetical scenarios to measure the following:

- Gallons of gasoline eliminated/replaced;
- Tons of greenhouse gasses (carbon dioxide) reduced; and
- Number of new jobs created.

Three levels of funding were examined: a commitment of \$5 billion/year over ten years (\$50 billion total), \$10 billion/year over ten years (\$100 billion total), and \$15 billion/year over ten years (\$150 billion total). The results of our analysis provide a compelling picture of how we could shift our current dependence on imported oil towards solutions that will enhance our security, our leadership globally in emerging technologies, and our environmental stewardship.

Some top-line findings include:

- Over a ten-year period, we could eliminate our need to import oil from the Middle East by 40%-80%.
- In the final year of the program (Year 10), we could displace the need for Middle East oil by as much as 98%.
- We could remove the equivalent of up to 22% of all vehicles on the road today.
- We could create up to three million jobs, representing over 2% of all current U.S. employment.

Our calculations, unless otherwise noted, reflect a summation of investments over a ten-year period of time. In these examples, we look at two different scenarios:

- Baseline – in which we applied a 6% percent annual improvement in economies of scale and costs. This was a conservative multiplier based on industries such as solar which have experienced an 8% annual improvement in these criteria. In this scenario we project the average cost to replace imported Middle East oil (with alternatives such as biofuels, hybrid electric vehicles, and other technologies) at \$1.24 a gallon in Year 10.
- Accelerated – in which we doubled the baseline improvement figures to capture the potential effect that the American Energy Security Fund would have on accelerating benefits in specific technologies, such as breakthroughs in applications like cellulosic ethanol, or the positive impact this injection of money

would have on tangential companies. In this scenario we project the average cost to replace imported Middle East oil at \$0.62 a gallon in Year 10.

**At \$5 billion a year:**

- We could reduce the need for foreign oil by between **34 billion gallons** and **67 billion gallons** -- which equates to **eliminating the need to import oil from the Middle East by between 13% and 27% over a ten year period.**
- We could reduce carbon dioxide emissions by between **153 million tons** and **307 million tons** -- equivalent to taking from **8 million to almost 16 million vehicles off the road** or removing between 4% and 7% of all vehicles on the road in the U.S. today
- We could create almost **a million jobs** over ten years, roughly the number of jobs currently in the telecommunications sector.

**At \$10 billion a year:**

- We could reduce the need for foreign oil by between **67 billion gallons** and **134 billion gallons, representing between 27% and 53% of imported Middle East oil over a ten year period.**
- We could reduce carbon dioxide emissions by between **307 million tons** and **615 million tons** -- equivalent to taking from **almost 16 million vehicles to 31 million vehicles off the road** or removing between 7% and 14% of all vehicles on the road in the U.S. today.
- We could create almost **two million jobs** over ten years, more than fifteen times the number of people currently working in oil and gas extraction.

**At \$15 billion a year:**

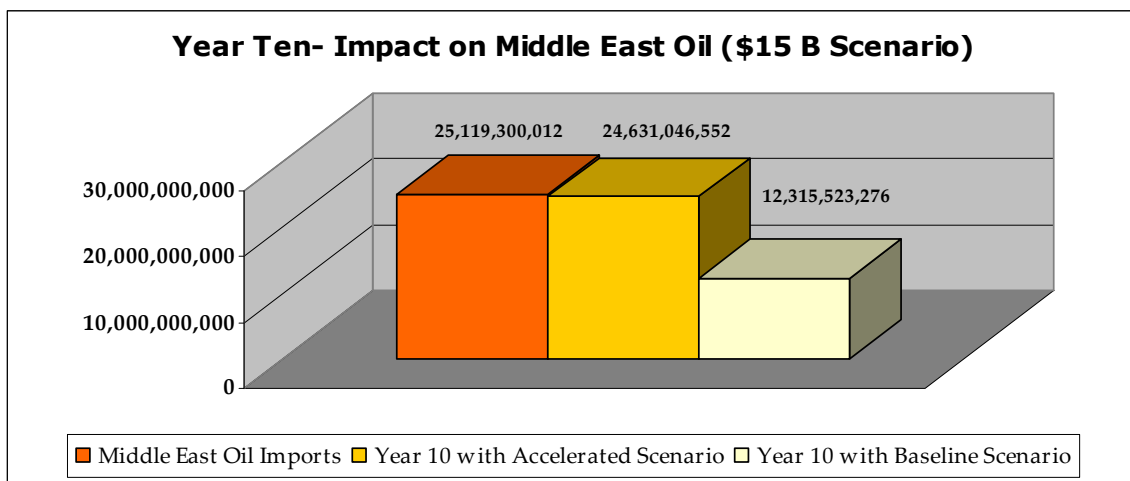
- We could reduce the need for foreign oil by **between 101 billion gallons** and **202 billion gallons, reducing our need for oil from the Middle East by between 40% and 80% over a ten year period.**
- We could reduce carbon dioxide emissions by between **461 million tons** and **923 million tons** -- equivalent to taking **from almost 24 million to 47 million vehicles off the road** or removing between 11% and 22% of all vehicles on the road in the U.S. today.
- We could create almost **three million jobs** over ten years, **representing two percent of all current employment.**<sup>1</sup>

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<sup>1</sup> <http://www.bls.gov/news.release/empsit.nr0.htm>

For our oil reduction/displacement and carbon reduction assessments, we applied a range of growth and impact assumptions in the Baseline and Accelerated scenarios. In evaluating the impact on job creation, however, we kept the numbers consistent through all scenarios because there are both positive and negative potential effects in employment growth. On the one hand, where industries may become saturated with employment, the number of new jobs decreases over time. On the other hand, indirect jobs would most likely increase, resulting in positive gains for employment overall. So for job creation projections, we maintained a moderate approach relying on extrapolation from third party, trusted resources.

In addition to evaluating the impact of investments over a ten year period, we also evaluated the impact of these investments in the final year. In Year 10, for example, American Energy Security Fund investments at the \$15 billion level would reduce our dependence on Middle East oil by 49% under the Baseline scenario and 98% in the Accelerated scenario (assuming our dependence on Middle East oil remains at a relative constant).



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The level of funding described in this report, while significant, is comparable to existing financial commitments to other long-term objectives. The war in Iraq is costing us more than \$90 billion annually, and according to CNN and the Associated Press has cost us \$456 billion from its start up until today. To completely remove our need for oil from the Middle East would cost between approximately \$16 billion and \$31 billion a year over a ten year period (the range includes our Baseline and Accelerated estimates). And while the replacement of up to 24 billion gallons of oil in Year 10 may seem ambitious – it is in line with other recent projections. President Bush, for example, called for replacing 35 billion gallons of fuel with biodiesel and ethanol by 2017 in his 2007 State of the Union address.

In addition, when compared to the current level of funding for alternatives to conventional energy supplies, these figures are again within reason. For example,

according to our research, venture capitalists invested over \$2.4 billion in clean energy start-ups in 2006.<sup>2</sup> And total investments globally in clean energy (including venture, corporate, project finance, government incentives, and R&D) were estimated between \$55.4 billion and \$63.3 billion for 2006.<sup>3</sup> Since the U.S. consumes 25% of the world's energy, it would be a safe assumption to hypothesize that roughly \$14 to \$15 billion was already in play in the U.S. last year for total clean-energy investments. Finally, given that the overall global energy market represents some \$600 billion annually,<sup>4</sup> this level of financing is still a small fraction compared to the potential impact cleaner energy could have on dependability and environmental factors.

Compounding the impact of these investments, established energy companies are funding their transition to clean energy: BP plans to spend \$500 million over the next ten years to establish a dedicated biosciences energy research laboratory at UC Berkeley. Additionally, it plans to spend \$8 billion over the next ten years on renewable-energy technologies. Chevron Technology Ventures, a subsidiary of Chevron, plans to collaborate with Georgia Tech's Strategic Energy Institute and contribute up to \$12 million over five years for research into and development of cellulosic biofuels and hydrogen technologies, and has just announced a \$25 million contribution to UC Davis to research and develop biofuels. Shell has invested \$1 billion dollars in renewable energy to date, with company CEO Jeroen van der Veer recently publicly expressing optimism about biofuels and wind. While these efforts are a good start, compared to the commitment of the American Energy Security Fund's vision they represent a fraction of the potential for innovation.

Clean Energy Venture Capital Investments in U.S.-Based Companies as Percent of Total

Year	Total Venture Investments (US\$ Billions)	Energy Technology Investments (US\$ Millions)	Energy Technology Percentage of Venture Total
1999	\$59	\$468	0.8%
2000	\$103	\$1,329	1.3%
2001	\$41	\$932	2.3%
2002	\$21	\$566	2.7%
2003	\$18	\$547	3.0%
2004	\$20	\$716	3.3%
2005	\$22	\$917	4.2%
2006	\$25.5	\$2,425	9.4%

Source: Nth Power LLC and Clean Edge, Inc.

<sup>2</sup> <http://www.cleandedge.com/reports/Trends2007.pdf>

<sup>3</sup> This figure was estimated by New Energy Finance and is available at <http://www.clintonglobalinitiative.org/NETCOMMUNITY/Document.Doc?&id=42>

<sup>4</sup> Energy Information Administration [www.eia.doe.gov](http://www.eia.doe.gov)

## Methodology

We applied two different approaches to our scenario analysis:

- The **Baseline** scenario assumed a 6% annual reduction in costs for the technology we examined. This multiplier was based on the positive benefits that other clean-energy sectors like solar and wind have experienced in the past decade, where we've seen an average 6-8% annual reduction in costs. So, the assumed increment in cost reductions is fairly conservative.
- The **Accelerated** scenario doubled the figure to a 12% annual reduction in costs for the technologies we examined. This scenario assumed that the accelerated investments in these technologies would have exponentially positive effects with breakthroughs and tangential companies synchronizing profitability and market impacts. This scenario also assumed breakthroughs in systems integration; for example, better battery technology integrated into electric and hybrid vehicles.

Even in our Accelerated scenario we take a somewhat conservative approach, however, and didn't capture the impact that a major disruptive technology might have on production costs. Truly disruptive technology achievements could potentially create cost reductions of much greater magnitude (perhaps ten times the impact as opposed to a doubling over our baseline projections). The personal computer provides an example of this type of disruption. Today's ipods and BlackBerries, which cost a few hundred dollars, have more storage and processing power than the multi-million dollar mainframes of mid last century.

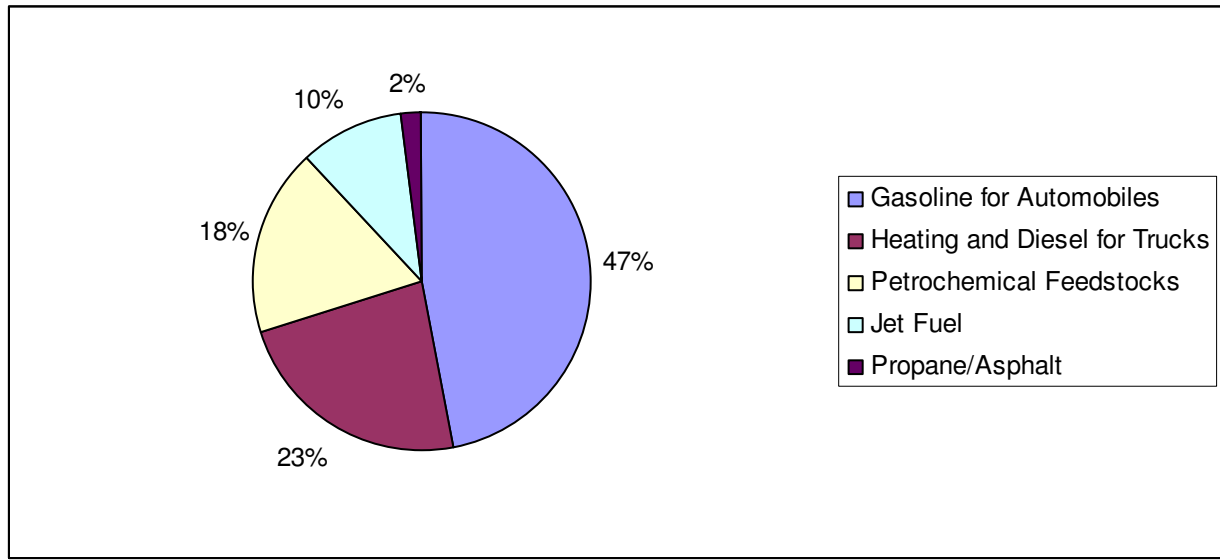
In developing our calculations, we examined an array of specific technologies in proportion to the current uses of oil in the U.S. Because the majority of oil in the U.S. is used as gasoline in automobiles, heating oil, petrochemicals, and diesel in trucks and cars, our research centered on these applications.<sup>5</sup> Based on the current uses of oil, we allocated oil imports at 47% for gasoline in automobiles, 23% for heating and diesel use in trucks, and 18% towards petrochemical feedstocks for plastics and other materials.<sup>6</sup> Since we did not examine jet fuel and asphalt (which make up the remaining percentage of consumption), we applied a multiplier to bring our percentages up to 100%: 53% of the investments went towards alternatives to gasoline, 26% towards heating and diesel alternatives, and 21% went towards alternatives to plastic feedstocks. We concentrated

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<sup>5</sup> Foreign sources of oil represented 59.8% of US petroleum consumption in 2005. Of the total oil consumed in the US that year, 47% was used for automotive gasoline, 23% for heating oil and diesel fuel, and 18% for other products, which includes petrochemical feedstock—products derived from petroleum principally for the manufacturing of chemicals, synthetic rubber and plastics. (Source: Energy Information Administration)

<sup>6</sup> US Uses of Oil  
[http://tonto.eia.doe.gov/ask/crudeoil\\_faqs.asp](http://tonto.eia.doe.gov/ask/crudeoil_faqs.asp)

our analysis accordingly.<sup>7</sup>



In order to create a broad picture of the potential impact, we amalgamated different benchmarks. We did not favor one technology over another, even if some examples had a greater impact on our selected criteria (e.g., impact on oil reduction, GHG reduction, and job creation). In other words, in the interest of neutrality, we weighted each type of technology equally, ignoring the differences in potential benefit. This decision was based on the relatively limited number of technologies we were able to examine in the current scope of the project. That said, it would be useful to create a more comprehensive and in-depth analysis of current and predicted technologies to capture the impact the American Energy Security Fund could have should it invest solely in the types of solutions that would have the greatest impact.

For our job creation figures, we relied on existing research<sup>8</sup> in addition to using the data we accumulated on the number of employees each type of facility or project that we examined would support. The job creation numbers we reference are for *direct jobs only*.

It also should be noted that our assumptions about costs are in line with current leading opinions about projected cost trends in alternatives to fossil fuels. For alternatives to compete with oil they need to reach a production cost equivalent to that of oil, which for gasoline right now ranges between \$1.60 and \$2.20 a gallon.<sup>9</sup> In our projections, production costs of alternatives decline from around \$2.00 in Year 1 (this is an average cost to produce new fuels and eliminate the need for gasoline altogether) to \$1.24 in Year 10 in our Baseline scenario and \$0.62 in our Accelerated scenario. Proponents of alternative fuels such as entrepreneur Vinod Khosla claim that ethanol can be produced in

<sup>7</sup> Examples of specific projects and technologies we examined are given in Exhibit A, and included biofuels, hybrid and PHEV technology, solar thermal and CHP applications, and alternative feedstocks.

<sup>8</sup> <http://www.apolloalliance.org/docUploads/ApolloReport.pdf>  
<http://www.e2.org/ext/doc/2006%20National%20Cleantech%20FORMATTED%20FINAL.pdf>

<sup>9</sup> [http://www.eia.doe.gov/oiaf/aeo/pdf/0383\(2006\).pdf](http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2006).pdf)

the U.S. today at \$1.00 per gallon, before any subsidies.<sup>10</sup> The U.S. Department of Energy projects that the cost for cellulosic ethanol could drop from \$2.26 today to a targeted \$1.07 in 2012. And the Energy Information Administration projects costs could be as low as between \$0.69 and \$0.98 per gallon by 2020.<sup>11</sup> NRDC (Natural Resources Defense Council) projects that cellulosic ethanol production costs could range from \$0.59 to \$0.91 per gallon by 2015, depending on the facility size and efficiency factors.<sup>12</sup> In comparison, our projected scenarios (where we examine a range of alternative technologies) are very much in line with current thinking regarding potential reduction in production and offset costs.

**Projected Costs in Dollars per Gallon to Replace Oil with Alternatives  
Year 1 – Year 10**

	<b>Accelerated</b>	<b>Baseline</b>
<b>Year 1</b>	<b>\$1.97</b>	<b>\$1.97</b>
<b>Year 2</b>	<b>\$1.74</b>	<b>\$1.77</b>
<b>Year 3</b>	<b>\$1.52</b>	<b>\$1.67</b>
<b>Year 4</b>	<b>\$1.34</b>	<b>\$1.57</b>
<b>Year 5</b>	<b>\$1.18</b>	<b>\$1.52</b>
<b>Year 6</b>	<b>\$1.04</b>	<b>\$1.45</b>
<b>Year 7</b>	<b>\$0.91</b>	<b>\$1.39</b>
<b>Year 8</b>	<b>\$0.80</b>	<b>\$1.34</b>
<b>Year 9</b>	<b>\$0.70</b>	<b>\$1.28</b>
<b>Year 10</b>	<b>\$0.62</b>	<b>\$1.24</b>

We chose to use a conservative, linear approach in projecting production costs of alternatives to oil, with the assumption that any level of funding about \$5 billion would have an impact on improving economies of scale and driving down costs. We also only examined advances in technology and systems integration, not the impact that changing consumer behavior, such as carpooling or smart growth mandates, would have on our benchmarks.

<sup>10</sup> [khoslaventures.com/presentations/KhoslaEthanolControversyJuly2006v1\\_2.doc](http://khoslaventures.com/presentations/KhoslaEthanolControversyJuly2006v1_2.doc)

<sup>11</sup> <http://www.eia.doe.gov/neic/press/press156.html>

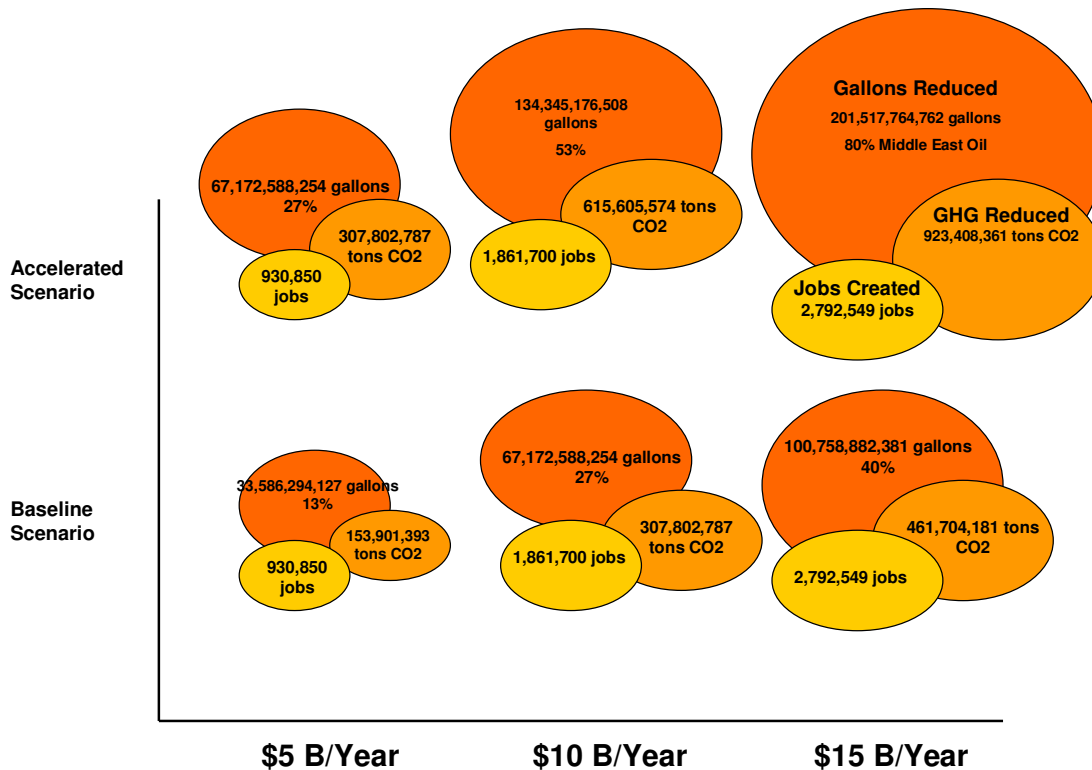
<sup>12</sup> <http://www.nrdc.org/air/energy/biofuels/biofuels.pdf>



## Findings

Different levels of funding in each of the two scenarios created a range of impacts, defined by the reductions in gallons of oil used by implementing alternatives, the reduction of the greenhouse gases (carbon dioxide), and the creation of direct jobs (as opposed to indirect jobs created as these new industries grew). **It is important to note that all numbers given represent the impact over ten years**, so for example 202 billion gallons reduced in the Accelerated, \$15 billion/year scenario is 202 billion gallons over ten years time.

### Overview of Impacts-Over Ten Years

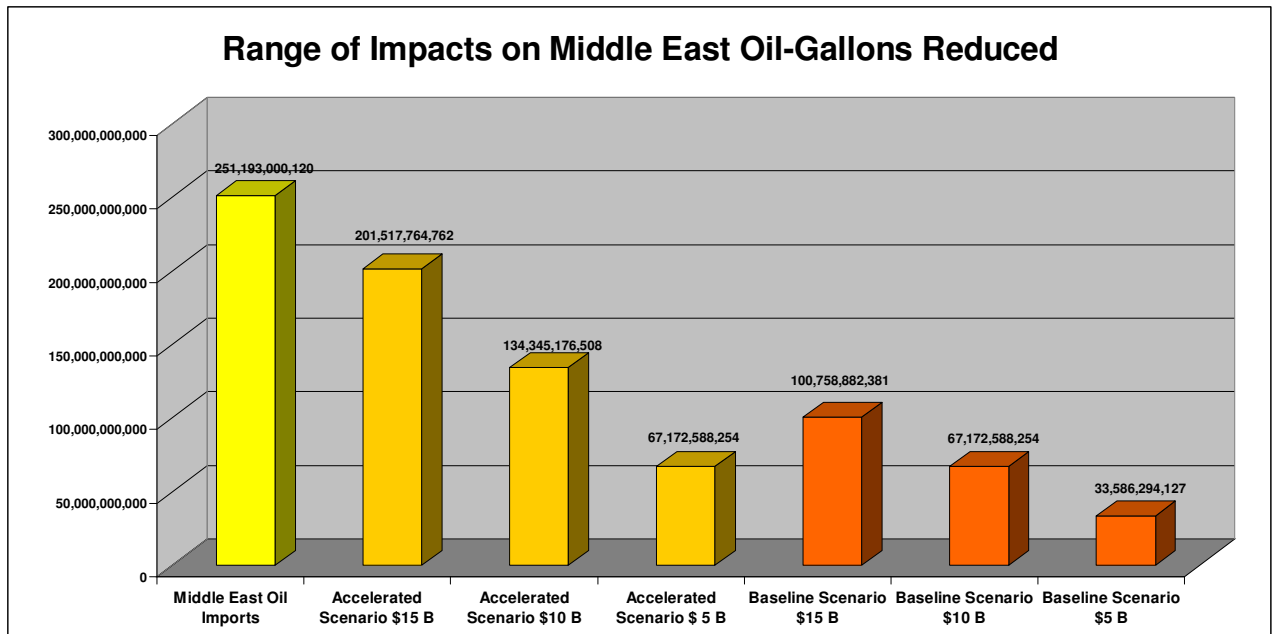


### Impact on Foreign Oil

We rely so heavily on imported oil that the relatively significant level of funding analyzed in this report would still have moderate impact on our total foreign imports. In addition to imports from the Middle East (approximately 25 billion gallons each year), the U.S. currently imports a significant amount of oil from such volatile regions as Africa (22% of imports) and Venezuela (10%). Our findings show, however, that the American Energy Security Fund could potentially greatly reduce U.S. dependence on *Middle East* oil (see bar chart below) – a good first step in moving beyond foreign oil consumption.

In the Baseline scenario at \$15 billion a year, we could reduce our dependence on Middle East oil by 40%. In the Accelerated scenario, we could eliminate our need to import oil from the Middle East by up to 80% over a ten-year period. In the final year of our assessment (Year 10), the Accelerated scenario could reduce our need for Middle East oil by 98%.

It's important to note that the American Energy Security Fund would only be one mechanism for funding new energy technologies. The venture capital community is increasingly interested in this sector, along with funding from the Department of Energy, regional and state governments, corporations, and others. This means that the American Energy Security Fund could potentially act as a catalyst, contributing to other efforts that would have positive impacts as well.

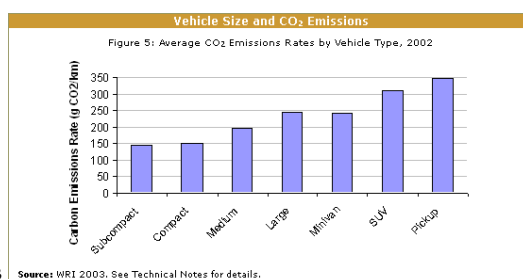


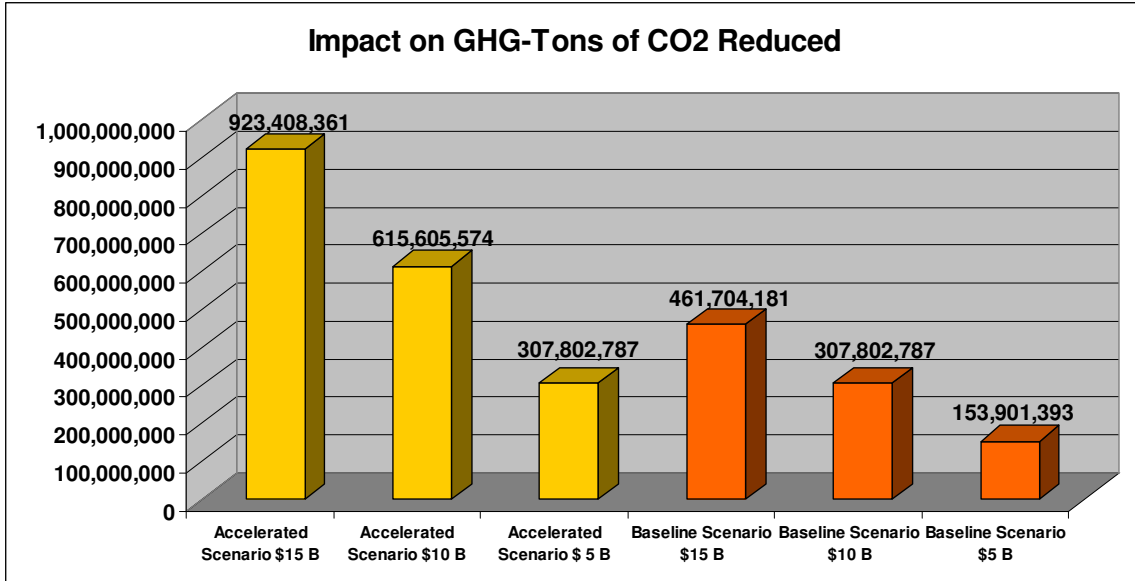
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## Impact on Greenhouse Gasses (Carbon Dioxide)

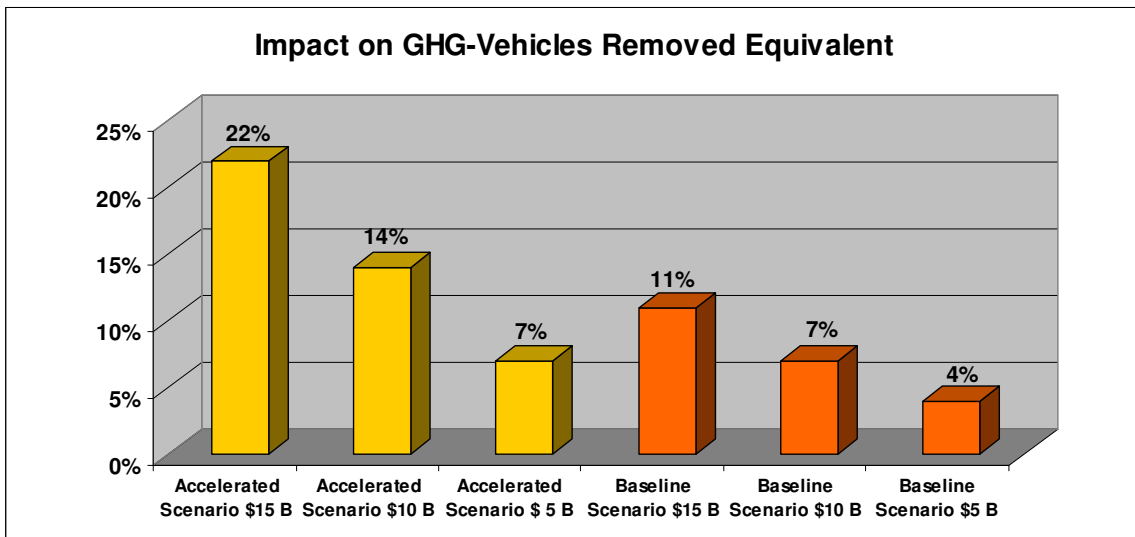
It is our position that the scientific community is united in its concern about climate change. Thus, the effect that the United States is now having on global warming is a problem that needs addressing. The new technologies that our analysis examines all utilize innovative solutions for energy thereby dramatically reducing greenhouse gas emissions. The scope of this study did not encompass all GHGs, nor did it address other hazardous environmental threats like particulate matter. However, by normalizing our parameters to carbon dioxide emitted in tons, we were able to compare the impact of different technologies as well as compile accumulated effects.

Our projections about vehicle equivalence to gasoline use are based on current CAFÉ standards; we obviously do not know how efficient vehicles will be required to be in the years to come.<sup>13</sup> In the Baseline scenario we reduced emissions between 4% and 11%, and in the Accelerated scenario we reduced emissions between 7% and 22%. We did not examine hypothetical policy applications such as smart growth mandates, keeping our analysis to consumer choices that are currently observed in the marketplace and looking for alternative technologies that match those demands. Changes in consumer choices, specifically in the transportation sector, could have added benefits (i.e. less traffic leading to better local economies and less pollution) but were difficult to assess in terms of funding. Ultimately, there are over 200 million vehicles on the road, each producing over 1,500 kg of CO<sub>2</sub> on average per year, so to make a significant impact here would seem to necessitate both advancements in alternative technology as well as perhaps, policy changes.





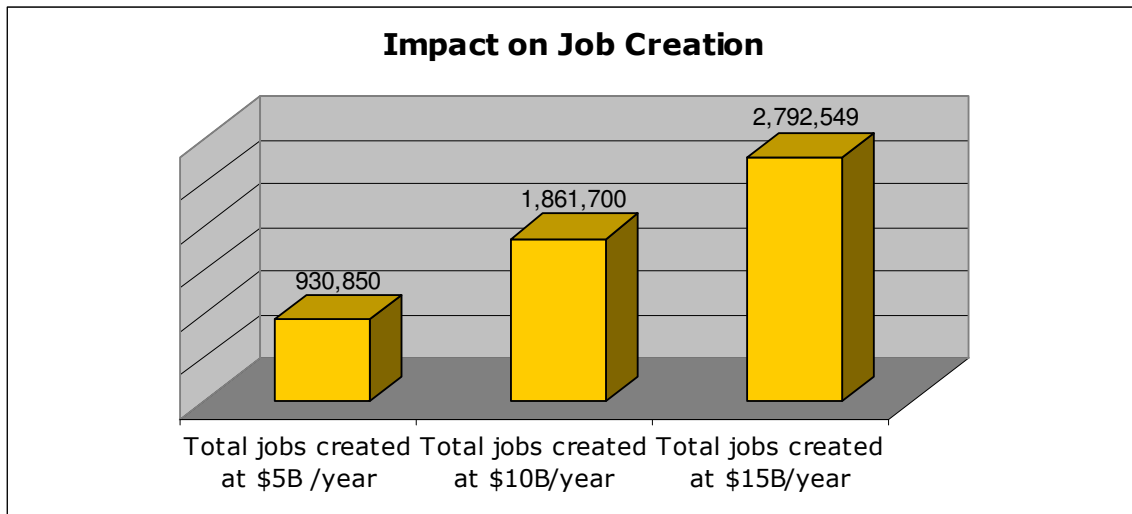
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## Impact on Job Creation

In the broadest sense, the goal of shifting funding towards innovation and away from extraction creates an expanding horizon of growth based on human ingenuity rather than dwindling returns from a limited energy source. Our analysis focused on the creation of direct jobs, that is, specific jobs to a specific project or source of funding. At the same time, the exponential impact of indirect jobs to these funding opportunities could be significant. The necessary support of service industries to growing clean energy manufacturing industries is expected to be substantial. Infrastructure and services will be needed as rural communities are revitalized for biofuel markets and as clean technologies spawn dynamic new business clusters. Further, the opportunity to create training programs and university programs adds another dimension of job growth that we did not capture with our projections. That said, new jobs ranged from 930,850 jobs (\$5 billion/year scenario) to 2,792,549 jobs (\$15 billion/year scenario).



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## Conclusions

The American Energy Security Fund concept evaluated in this white paper could have a significant impact on the growth of new industries while reducing our dependence on volatile, imported oil from the Middle East.

The U.S. imports more than \$50 billion dollars/year worth of Middle East oil.<sup>14</sup> By investing between \$50 billion to \$150 billion over a ten-year period, the U.S. could begin to wean itself off of this volatile energy source – reducing the need for Middle East imports by between 13 percent (at \$5 billion a year in our Baseline scenario) and 80 percent (at \$15 billion a year in our Accelerated scenario) over a 10-year period. In the Accelerated scenario and at the highest spending level (\$15 billion/year), the American Energy Security Fund program could result in a reduction in Middle East imports of 98% in Year 10. This would represent a near total elimination of the need to import oil from the Middle East. For illustrative purposes, we focused on Middle East oil, but the American Energy Security Fund program could create similar opportunities for replacing oil from other volatile regions. We import roughly 22% of our oil from the Middle East and about the same amount from the politically shaky continent of Africa. We could just as well imagine a similar reduction in our need for imports from this region instead.

The longest journey begins with one step and moving in the direction of innovation and clean technology could create a compelling and exciting future for our country. The financial commitment to building new industries and developing new technologies could help grow markets and professions to rival the “revolution” of the high-tech and telecommunications sectors that we have experienced over the past two decades. And the positive impact these investments could make on our contribution to global warming, energy security, and job creation could be significant.

In addition, while the American Energy Security Fund *would* represent one of several funding mechanisms for alternatives to foreign oil, it may serve to “prime the pump” for other activity. Our assessment shows that this level of funding would have benefits to reducing imports, cleaning up greenhouse gases and creating new jobs, but there would still be a need for more funding in order to finish the job. The large price-tag associated with security needs in foreign locations for the safety of oil supplies, the costs of environmental pollution and increasing natural disasters as a result of climate change, and the outsourcing of jobs to other economies which weakens U.S. competitiveness all point to issues that are not represented in the current cost of oil. The American Energy Security Fund mechanism of injecting a significant amount of funding into the creation of cleaner, efficient technologies and businesses may provide an effective way to begin to wean ourselves from foreign oil – and improve the economic competitiveness of the nation.

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<sup>14</sup> Actual figure is \$50,629,150,000 which assumes a cost of \$63.05 per barrel (price as of 5.4.2007) multiplied by 2.22 million barrels imported from the Middle East per day (cited from 2006 data provided by the Energy Information Administration).

## **American Energy Security Fund Impact Assessment - Exhibit A**

In order to craft our scenarios and calculations, we identified a range of current technologies that provide alternatives to uses of foreign oil. We relied on figures that were publicly available from existing companies and organizations in order to determine and calculate our findings. We did not give priority in our evaluations to those technologies that appeared to be more effective within the context of our benchmarks. After evaluating a number of technologies, we amalgamated our findings and extracted specific figures for the hypothetical scenarios.

One of the technologies we examined, for example, was bio-butanol. In order to approximate the impact of funding this type of technology, we took a case study of an existing bio-butanol project and documented the costs associated with building a refinery. We then applied the three levels of funding to the hypothetical case as if the funding would build varying numbers of refineries depending on the different levels of financing. After examining the number of gallons produced from the refineries in each different hypothetical funding situation, we derived a benchmark data point representing the fractional impact of \$1 of investment on each of the benefits we were measuring: job creation, greenhouse gases, and gallons of oil reduced. We then used that figure to derive the \$5 billion, \$10 billion and \$15 billion overall impact.

### **Some of the technologies we examined included:**

#### **Gasoline Alternatives**

BP-DuPont Joint Venture- Biobutanol

Environmental Energy, Inc.- Biobutanol

Honda Hybrids

Toyota Hybrids

Plug-in Hybrid Electric Vehicles (PHEVs)

#### **Heating and Diesel for Trucking Alternatives**

Solar Thermal Heating Systems

Stationary Fuel Cell-Industrial Use

Micro-CHP-Residential Use

Biodiesel Production for Trucking

Idle Reduction/Long-haul Trucking

## **Petrochemical Feedstock Alternatives**

Petrochemical Feedstock Alternatives- PLA and PHA



## American Energy Security Fund Impact Assessment - Exhibit B

### Select Resources

#### American Council for an Energy Efficient Economy

<http://www.aceee.org/>

*Reducing Oil Use Through Energy Efficiency*

<http://aceee.org/pubs/e061.pdf?CFID=1877991&CFTOKEN=94301130>

#### Apollo Alliance

<http://www.apolloalliance.org>

*New Energy for America: The Apollo Jobs Report*

<http://www.apolloalliance.org/docUploads/ApolloReport.pdf>

#### BP-DuPont Biofuels Initiative

<http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7028142>

[http://www2.dupont.com/Biofuels/en\\_US/](http://www2.dupont.com/Biofuels/en_US/)

<http://pioneer.mediaroom.com/index.php?s=pageB>

<http://www.britishsugar.co.uk/RVEa326524311fa46e3827a286a3c57aaaa...aspx>

#### Clean Edge, Inc.

<http://www.cleandedge.com>

*Clean Energy Trends 2007*

<http://www.cleandedge.com/reports/Trends2007.pdf>

#### DOE Energy Efficiency & Renewable Energy

<http://www.eere.energy.gov/>

Budget Information

[http://www1.eere.energy.gov/ba/pba/budget\\_08.html](http://www1.eere.energy.gov/ba/pba/budget_08.html)

Public Benefits

<http://www1.eere.energy.gov/ba/pdfs/39684.pdf>

#### E2

<http://www.e2.org>

*Creating Cleantech Clusters*

[http://www.e2.org/ext/doc/2006%20National%20Cleantech%20FORMATTED%20FIN  
AL.pdf](http://www.e2.org/ext/doc/2006%20National%20Cleantech%20FORMATTED%20FINAL.pdf)

#### Electric Power Research Institute

<http://www.epri.com>

*Driving the Solution: The Plug-in Hybrid Vehicle*

[http://www.calcars.org/epri-driving-solution-1012885\\_PHEV.pdf](http://www.calcars.org/epri-driving-solution-1012885_PHEV.pdf)

#### Energy Information Administration

<http://www.eia.doe.gov/>

**Environmental & Energy Study Institute**

<http://www.eesi.org/>

**Government Accountability Office**

*Crude Oil: Uncertainty About Future Oil Supply Make It Important to Develop a Strategy for Addressing a Peak and Decline in Oil Supply*

[http://www.hilltoplancers.org/photos/gao\\_peakoil.pdf](http://www.hilltoplancers.org/photos/gao_peakoil.pdf)

**The Hidden Cost of Oil**

<http://foreign.senate.gov/hearings/2006/hrg060330a.html>

**International Energy Association**

<http://www.iea.org>

IEA Biofuels Presentation

[http://www.iea.org/textbase/work/2005/Biofuels/Biofuels\\_Johnson\\_Presentation.pdf](http://www.iea.org/textbase/work/2005/Biofuels/Biofuels_Johnson_Presentation.pdf)

*IEA Biofuels for Transport*

<http://www.iea.org/textbase/nppdf/free/2004/biofuels2004.pdf>

**National Alliance of Clean Energy Incubators**

<http://www.nrel.gov/technologytransfer/entrepreneurs/inc.html>

**NRDC**

<http://www.nrdc.org>

*Growing Energy*

<http://www.nrdc.org/air/energy/biofuels/biofuels.pdf>

*Ethanol: Energy Well Spent*

<http://www.nrdc.org/air/transportation/ethanol/ethanol.asp>

*A Responsible Energy Plan for America*

<http://www.nrdc.org/air/energy/rep/rep.pdf>

**Renewable Energy Policy Network**

<http://www.ren21.net>

*Renewables: Global Status Report 2006*

[http://www.ren21.net/globalstatusreport/download/RE\\_GSR\\_2006\\_Update.pdf](http://www.ren21.net/globalstatusreport/download/RE_GSR_2006_Update.pdf)

**Redefining Progress**

<http://www.rprogress.org>

*RDP Environment & the Economy*

[http://www.rprogress.org/newprograms/sustEcon/SE\\_Econ.shtml](http://www.rprogress.org/newprograms/sustEcon/SE_Econ.shtml)

*RDP Smarter, Cleaner, Stronger*

[http://www.rprogress.org/bluegreen/SmartCleanStrong\\_National.pdf](http://www.rprogress.org/bluegreen/SmartCleanStrong_National.pdf)

**Renewable Fuels Association**

<http://www.rfa.org>

*Contribution of the Ethanol Industry to the Economy of the U.S*

[http://www.ethanolrfa.org/objects/documents/576/economic\\_contribution\\_2006.pdf](http://www.ethanolrfa.org/objects/documents/576/economic_contribution_2006.pdf)

**Rocky Mountain Institute**

[www.rmi.org](http://www.rmi.org)

RMI Green Transportation

<http://www.rmi.org/sitepages/pid388.php>

[http://www.rmi.org/images/other/Energy/E06-02\\_SenateTestimony.pdf](http://www.rmi.org/images/other/Energy/E06-02_SenateTestimony.pdf)

RMI Security

[http://www.rmi.org/images/other/EnergySecurity/S02-05\\_TakesMoreThanDrill.pdf](http://www.rmi.org/images/other/EnergySecurity/S02-05_TakesMoreThanDrill.pdf)

[http://www.oilendgame.com/pdfs/WtOEg\\_ExecSummary.pdf](http://www.oilendgame.com/pdfs/WtOEg_ExecSummary.pdf)

**U.S. Uses of Oil**

[http://tonto.eia.doe.gov/ask/crudeoil\\_faqs.asp](http://tonto.eia.doe.gov/ask/crudeoil_faqs.asp)

**World Business Council on Sustainable Development**

<http://www.wbcsd.org/>

*WBCSD Pathways to 2050*

<http://www.wbcsd.org/web/publications/pathways.pdf>