



To: Energy Clients
From: Helios Strategies
Re: Looking Back and the Year Ahead

Energy Bill Update

After nearly a year of debate, a new energy bill was signed into law in December. The process was marked by debate around a number of controversial issues including new fuel efficiency standards for cars and trucks, a mandate that a large percentage of the nation's fuel be derived from biofuels, a mandate that required utilities to purchase 15 percent of their electricity from renewable sources, and a tax package to fund the programs in the bill, the revenue from which was to be secured from a rollback in subsidies to the oil industry,

On November 30, House and Senate negotiators were able to strike a compromise on Corporate Average Fuel Efficiency Standard (CAFÉ) that was going to allow a vote on that measure. The compromise mandated an increase of the fuel efficiency of cars and light trucks to 35 mpg by 2020. Concessions included that the National Highway Traffic Safety Administration would maintain separate regulations for cars and light trucks, and an "off-ramp" if the standard was deemed to be causing harm to the economy. Additionally it extended an extra credit that can be used against companies CAFÉ obligation for the production of flexible fuel vehicles, vehicles that can be run on a gasoline-ethanol mix or other biofuels.

Additionally, over that same weekend, the negotiators reached a compromise on the Renewable Fuel Standard (RFS). The compromise standard would mandate the production of 36 billions gallons a year of biofuels by 2022. With compromise measures in place, it was announced that a bill would go to the floor early the next week, without the fate of the Renewable Energy Standard (RES) and the tax provisions yet decided.

House Action

On Monday morning, it seemed unlikely that either the RES or the tax package would be included in the bill. By the close-of-business, at the initiative of the Speaker, that changed and both the RES and the tax provisions were to be included in the bill that would be voted on by the House.

More popularly known at the state level as the Renewable Portfolio Standard (RPS) this measure would require utilities to purchase 15 percent of its electricity generated from approved renewable sources, with up to 4 percent eligible from

energy efficiency. The compromise tax package offered in the draft House energy bill totaled \$21 billion dollars in incentives and other funding, \$13 billion of which was to be derived from the repeal of tax subsidies to oil companies. Both measures had already drawn strong veto threats from the President, threats reiterated in a strongly worded letter from White House economic adviser Al Hubbard to the speaker regarding the bill they thought was going to emerge. These criticisms included a new criticism of the CAFÉ standard, charging that the bill would not properly delineate authority between NHTSA and the EPA.

In what was nearly a victory for the renewables industry, the draft House measure included a number of key tax credits were extended and modified. For the solar industry, the bill included tax provisions that would have:

- Provides an eight-year extension (through December 31, 2016) of the existing 30 percent Investment Tax Credit for businesses under Section 48 of the tax code.
- Removes the prohibition barring utilities from using the section 48 Investment Tax Credit.
- Provides the ability for corporate and personal filers to claim the Investment Tax Credit against the Alternative Minimum Tax (AMT).
- Provides a six-year extension (through December 31, 2014) of the existing 30 percent Investment Tax Credit for residential solar electric and solar water heating property, and raises the cap on the credit for solar electric property to \$4,000.
- Provides up to \$2.4 billion in bonding authority for the issuance of Clean Renewable Energy Bonds. (Source: SEIA.org)

The tax package also extended the Production Tax Credit (PTC) by four years and expanded it to cover marine renewables. In addition, it provided \$2 billion dollars to support loan guarantees for renewable energy projects through the DOE loan guarantee program.

Undeterred by potential obstacles in the Senate, the Speaker brought the complete Energy bill to a vote on December 6. The bill passed by a margin 235-181.

Senate Action

On December 7, the version of the Energy bill sent from the House to the Senate failed to secure enough votes to pass a cloture motion, stalling in a 53-42 vote. In order move some sort of energy package, Democratic leadership dropped the RES from the package, and sent a version to the floor that retained the rest of the language, including the \$21 billion tax provision. The motion for cloture failed by one

vote. The opposition objected to the tax package because the revenue to pay for it would be generated by the rollback of subsidies to oil companies, claiming that it would further contribute to the rise in gas prices.

Again the bill was revised, dropping the tax package, and with it all of the renewables tax credits and the revenue source to fund the various program authorizations. The bill retained the CAFÉ standard and the Renewable Fuel Standard, as well as myriad authorizations for R&D and other programs.

The bill passed with overwhelming support, passing 86-8 in the final vote. The House approved the Senate version and it was sent to the President and signed on December 19th.

What's Next?

Over the recess, the price of oil broke \$100 a barrel for the first time, renewing pressure to respond to our dependence on oil. The Speaker has announced that she will again take up the tax package when Congress reconvenes later this month. The bill will again likely pass in the House, but conventional wisdom is that it will again meet the same fate in the Senate, with Republicans unwilling to hand the Democrats a victory in a Presidential election year.

This is not good news for the renewables industry. While there is a great deal of private investment capital waiting for prospects to invest in, it will not flow in the absence of the tax credits which expire at the end of this year.

A potential bright spot, however, is the potential that there will be an economic stimulus package created in response to recession fears. Due to the effects of the collapse of the subprime mortgage market, the weak dollar and rising costs of oil, there is growing concern that the national economy will grow at a much slower rate or worse contract. The White House and Congress are discussing plans to address this issue. Rumblings from the House of Representatives suggest that the Speaker will attempt to deem the package emergency spending, which will suspend pay-go rules, rules that require any new spending find a source of revenue either from new sources or by cutbacks in other programs. Energy will likely be high priority in that package, particularly the production and incentive tax credits because of their immediate impact on the economy, and funding these programs will not be dependent on controversial actions like the repeal of the oil subsidies.

What is in the Final Bill?

Automotive

Corporate Average Fuel Efficiency (CAFÉ)

As mentioned above, the CAFÉ compromise mandates an increase in the fuel efficiency of cars and light trucks to 35 mpg by 2020. Concessions included that the

National Highway Traffic Safety Administration would maintain separate regulations for cars and light trucks, and an “off-ramp” if the standard was deemed to be causing harm to the economy. Additionally it extended an extra credit that can be used against companies CAFÉ obligation for the production of flexible fuel vehicles, vehicles that can be run on a gasoline-ethanol mix or other biofuels.

Plug-in Electric Drive Vehicle Program

The act establishes a competitive grant program for local governments to provide grants on a cost-shared basis to promote plug-in electric drive vehicles. Priority is given to those projects with the biggest potential impact on widespread use of vehicles as well as those that will improve demand and production for the vehicles. The bill authorizes \$90 million a year for each year from 2008 to 2012.

Near-Term Transportation Sector Electrification Program

The bill also establishes a program to promote large scale electrification projects. Qualified electric transportation projects include: Shoreside or shoreside electrification projects, truck-stop electrification, electric truck refrigeration units, battery-powered auxiliary power units for trucks, electric airport ground support equipment, electric material and cargo handling equipment, electric material or dual-mode electric rail, distribution upgrades, and ancillary upgrades. The bill authorizes \$95 million for each year from 2008 to 2013.

Domestic Manufacturing Conversion Program

The energy bill establishes a program for manufacturers and their suppliers to retool their manufacturing lines to produce hybrid and advanced diesel vehicles and components. It authorizes such sums as necessary to carry out this program.

Advanced Battery Loan Guarantees

The bill establishes a full-faith-and-credit loan guarantee program for the construction of manufacturing plants to produce advanced batteries. The recipient of the guarantee must pay the administrative fees of associated with the guarantee.

Biofuels

Renewable Fuel Standard

Renewable Fuel Standard- The compromise standard would mandate the production of 36 billions gallons a year of biofuels by 2022.

Grants for Production of Advanced Biofuels

The bill directs DOE to establish a grants program for projects that achieve the greatest reduction in lifecycle greenhouse emission compared to gasoline emissions

in 2005. It also instructs that no grant can be awarded to a project that does not achieve at least an 80 percent reduction. It authorizes \$500,000,000 to carry out this section between 2008 and 2012.

Grants for Research and Development

The bill creates a program to invest in research and development in states with low biofuels production capacity. The program provides grants for either institutions of higher education or institutions in consortia with industry, State agencies, National Laboratories, or local government agencies located in the State. The bill authorizes \$25 million a year between FY 2008 and FY 2010.

Cellulosic Ethanol and Biofuels Research

The act creates a program to give institutions of higher education grants for research and development of cellulosic ethanol and biomass. The section directs the Secretary to award 10 grants to eligible institutions and directs awardees to collaborate with one of the federal bioenergy research centers. The bill authorizes \$50 billion dollars for 2008 to carry out this program.

Existing Renewable Energy and Bioenergy Research and Development

The Act also increases the amount of funding authorized under EPACT 2005 for renewable and specifically bioenergy research and development. It extends the renewable energy research and development funding in EPACT 2005 by one year, authorizing \$963,000,000 for 2010. It raises and extends the authorization for to \$377 million for 2008, \$398 million for 2009, and extending the authorization by authorizing \$419 million for 2010.

University-Based Research and Development Grant Program

The bill also establishes a grant program for the development of renewable energy technologies. The grants are for up \$2 million dollars each. Preference is given to universities that already have established renewable energy programs, that are located in low-income urbanized areas, partner with Indian tribes, or are near trees dying from insect infestation.

Appliance Standards

The bill strengthens energy efficiency standards for a range of appliances, including: residential boilers, furnaces, furnace fans, air conditioners, battery chargers, home appliances, walk-in refrigeration units, electric motors, and light bulbs.

Energy Savings in Buildings

Zero Net Energy Commercial Building Initiative

The bill directs the DOE to establish the Office of Commercial High Performance building to undertake the Zero Net Energy Commercial Building Initiative. The Initiative will convene a consortium of industry representatives to guide a program of research, development, deployment and outreach with the goal of phasing zero net energy buildings into the building stock starting in 2030 and completing in 2050. The bill authorizes \$20 million for 2008, \$50 million for each 2009 and 2010, \$100 million for 2011 and 2012, and \$200 million for each year from 2013 to 2018.

Incentives for Waste Energy Recovery

This section establishes a program to create incentives for electricity produced from recovered waste energy. Eligible entities include owners of projects that produce electricity from waste energy, utilities purchasing or distributing that electricity, and states that have achieved 80 percent or more recoverable waste heat recovery opportunities. It awards a grant of \$10 for every megawatt produced from waste energy. If the producer of that electricity itself has excess energy and it purchased or distributed by a utility, half of the grant on that electricity goes to the utility. Waste energy recovery that produces useful thermal energy qualifies for \$10 for every 3,412,000 btus produced. The bill authorizes \$100 million for 2008 and \$200 million for each year after until 2012,

Buildings

Grants and Loans for Energy Sustainability and Efficiency in Institutional Buildings

This section creates a program to provide grants and loans to universities, municipal governments, public schools, and other public entities to carry out projects that improve energy efficiency on the grounds of the facilities. Grants for efficiency are awarded based on the level of efficiency that will be achieved, reduction in greenhouse gas emissions, reduction in fossil fuel use, participation of students, and need. The grant size is up to the lesser of \$1,000,000 or 60 percent of project cost. Grants for innovation in energy sustainability will be awarded to institutions that involve a technology not yet commercially available or technologies that greatly improve efficiency or sustainability, have the greatest potential for demonstrating new technologies, and if a university, the involvement of the student body. Preference is given to universities with small endowments, directing at least 50 percent of the awards go to with endowments less than \$100 million dollars, and if there are a sufficient number of applications, at least 50 percent of those awards should go to universities with endowments less than \$50 million. The grant size is up to the lesser of \$500,000 or 75 percent of total cost. \$250 million are authorized for these programs. The section also creates a loan program to undertake these projects, providing loans up to 20 years until the project is 90 percent amortized. \$500 million are authorized for the loan program.

University Green Building Demonstration Project

The act instructs the Director of Commercial High-Performance Buildings to select no fewer than 4 university-based demonstration projects at least 4 universities to advance green building technologies. The universities must have some green building expertise and be able to serve as model for other universities and enhance the educational program. The universities must also demonstrate established public-private partnerships, abilities to renovate buildings to meet high standards. In addition, at least one university of the four must have demonstrated capacity to replicate at other universities. At least one, has had to adopt university-wide green building policies, and at least one, must have already been recognized by similar institutions as a leader in education on sustainability. The projects must be allocated across diverse climates.

Energy Savings Performance Contracting

The bill also streamlines the ability of Federal agencies to negotiate Energy Savings Performance contracts. The ends Congressional authorization to exit contracts and allows agencies to use a mix of appropriated funds and private funds, presumably to give more flexibility to contractors to negotiate project financing. It also removes the sunset clause, extending the ability of agencies to enter into these agreements indefinitely.

Accelerated Research and Development

Solar

Thermal Energy Storage Research and Development Program- The bill instructs the Secretary of Energy to establish a research and development program to develop more effective solar thermal technologies. The bill authorizes \$5 million dollars in 2008, and expands each year until 2012, when the budget reaches \$12 million.

Solar Energy Curriculum Development-The bill instructs the Secretary to establish a competitive grant program to fund the development of curricula and training programs for workers, designed to increase the size of the qualified workforce. It authorizes \$10 million each year until 2012.

Solar Air Conditioning Research and Development Program—The bill authorizes \$2.5 million a year until 2012 for the establishment of a research and development program in the Department of energy to advance solar air conditioning. The approved activities of the program not only include technology innovation, but also innovation and refinement of manufacturability, and demonstration projects in different regions of the country.

Photovoltaic Demonstration Program—This program sets up a competitive grant program to states to maximize the deployment of solar photovoltaics. The bill authorizes \$15 million in 2008 but ramps up to \$70 million in 2012.

Geothermal

The Energy bill expresses support for expanded research and development into Geothermal Research and Development. It establishes support for three programs of research: 1) Hydrothermal Research and Development, 2) General Geothermal Systems Research and Development, and 3) Enhanced Geothermal Systems Research and Development. It directs the establishment of Center for Geothermal Technology Transfer at an institution of higher education. It expands the scope of the Geopowering the West technology transfer program to cover the entire nation, renaming it Geopowering America. It directs a university pilot program to raise awareness, authorizing an award of up to \$2 million dollars for a competitive grant to build a geothermal generation plant on campus. It also authorizes \$10 million dollars for research and development into geothermal technologies that will help with oil and natural gas recovery. Overall \$90 million dollars to authorized to support Geothermal R & D.

Marine and Hydrokinetic Renewable Energy Technologies

A significant victory for SMI was the inclusion of new language recognizing Marine and Hydrokinetic Renewable Energy Technologies. The bill instructs the Secretary, in coordination with the Secretaries of Commerce and Interior, to develop a Marine and Hydrokinetic Renewable Research and Development Program, to develop new technologies, lower the costs of manufacture, integrate with the power grid and other renewables technologies, and promote technology transfer of advanced technologies and processes. It also establishes one or more university-based National Marine Renewable Energy Research, Development, and Demonstration Centers, with preferences for land grant universities and historically black colleges and universities. The act authorizes \$50 million a year for each year between 2008 and 2012.

Energy Storage Systems

The energy bill instructs the Secretary implement a research, development, and demonstration program on energy storage. To help guide this program, to establish an Energy Storage Advisory Council. The council will be comprised of no less than 15 members recommended by the National Academy of Science and will be comprised mostly of energy storage industry representatives. The bill also creates basic research and applied research centers, and grants for institutions engaged in this type of R&D, related to electric drive vehicles, stationary applications, and transmission. It also authorizes not more than four research centers with industry participation. The bill also calls on the Secretary to carry out geographically diverse demonstration projects with public and private utilities, state energy offices, renewable energy firms, institutions of higher education and the fuel cell industry. It

goes on to authorize \$50 million a year for the basic research program between 2009 and 2018, \$80 million for each year for applied research from 2009 to 2018, \$100 million a year for the energy storage research centers, and \$30 million a year for demonstration programs.

Lightweight Materials Research and Development

The bill authorizes \$80 billion for research and development of technologies to make motor vehicles lighter. The program would conduct R&D on new materials and fibers and also ways to reduce the costs of manufacturing those products.

Commercial Insulation Demonstration Program

The bill establishes a demonstration project to apply advanced insulation to covered refrigeration units. It mandates that the insulation have an R-value not less than R35 and seeks to determine the application of highly insulative materials creates enough energy savings to justify the investment.

H-Prize

The legislation also authorizes a federally-managed competition called the H-Prize. The competition is meant to spur innovation in hydrogen fuel cell technology. There are awards in 3 categories: Advancements, Prototypes, and Transformational Technologies. The maximum award is \$4 million

Bright Tomorrow Lighting Prize

The bill establishes a competition for the development of solid-state lighting that can replace incandescent bulbs. It offers prizes in three categories: a 60-watt incandescent replacement, a halogen bulb replacement, and a so-called "Twenty-first Century Lamp." The prize would award \$10 million for the 60-watt replacement, \$5 million, for the halogen bulb replacement, and \$5 million for the lamp prize. It sets a timeline of 5 years from the passage of the legislation. Part of the criteria for the bulbs and the lamps, is that product and the process be ready for mass production. Two years from the granting of the award, it directs the Federal government to start procurement in order to replace incandescents, halogens, integrate the new lamp.

Renewable Energy Innovation Manufacturing Partnership

The bill establishes a program to help promote the domestic manufacture of renewable energy technologies. The program aims to aid in the development of advanced manufacturing processes, increase domestic production, and coordinate federal, state, local and private resources. Eligible entities include 1 or more public institutions, nonprofit entity, or national lab engaged in renewable energy development, and one more private manufacturers. Eligible activities include market studies, applied research into manufacturing process development, or other similar

activities approved by the DOE. The program is authorized at \$25 million a year from 2008 to 2013.

Transportation

Short Sea Shipping

The bill establishes a program to promote Short Sea Shipping as a way to reduce highway-use by freight bearing trucks and mitigate landside congestion. It instructs the DOE to coordinate between relevant federal and state agencies to designate shipping lanes and to work with ports, state and city agencies, other public agencies, and the private sector designate capital projects and develop facilities and infrastructure to support the sector.