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Shifting Energy Priorities Create Opportunities

The new administration is quietly changing the rules of the energy industry, and making a large economic bet on improving energy efficiency and renewable energy technology. Success will depend on the ability of scientists and engineers to greatly improve the technology for renewable energy and energy efficiency.

The massive government stimulus bill will provide billions for renewable energy. The bill extended the production tax credit (PTC) for renewable energy and provided a new option allowing producers to take the PTC as an investment tax credit when they build a new facility. The federal government will also release the tax credit money as grants to spark more renewable energy investment in a tight capital market. The bill also provides billions for the development of "smart grid" technologies, increasing energy efficiency and reducing greenhouse gas emissions in federal buildings and housing. Five hundred million was set aside to fund job training programs in energy efficiency and renewable energy. Finally, lawmakers included tax credits of up to \$7,500 for plug-in hybrid electric vehicles.

The new administration quickly followed the stimulus bill with new rules from the EPA to reduce greenhouse gas emissions. The EPA has recently started a review of the tough new emission rules for automobiles that California passed in 2002. The new rules force automakers to reduce greenhouse gas emissions by 30 percent in new cars and light trucks by 2016. Eighteen other states have either adopted or are in the process of adopting the California standards. Industry watchers expect the EPA to approve the waivers, creating a new de-facto standard for nation's auto market. The EPA has also proposed a national registry of greenhouse gas emissions that captures yearly emissions from 90% of U.S. sources of greenhouse gas emissions. A national registry is the first step needed for a comprehensive 'cap and trade' program for reducing greenhouse gas emissions.

A 'cap and trade' program will raise the price of carbon emissions and create market-based incentives for clean energy, efficiency, and conservation. The President's proposed 'cap and trade' program would reduce U.S. emission 14% below 2005 levels by 2020 and 83% below by 2050. The program would raise \$646 billion from 2012 to 2019 by auctioning the rights to emit such gases, and redistribute the majority of the funds to a tax credit for working Americans.

The new administration is reversing previous policies favorable to the oil, gas and nuclear industries. President Obama's budget proposal effectively kills the Yucca Mountain nuclear repository, the controversial site for permanent storage of nuclear

waste. This is a sharp contrast to the Bush administration, which reduced taxes on nuclear power, streamlined licensing for new nuclear plants and provided 'risk insurance' to mitigate the cost of possible delays in the licensing of new reactors. The death of the Yucca Mountain nuclear site could pose a serious challenge to the nuclear industry's plans to build more than 30 new reactors. The proposed budget also eliminated tax incentives for the oil and gas industry adopted during the Bush administration and levied new fees on the industry. The White House estimates that the changes will bring in \$31.5 billion in revenue over the next decade.

The new administration's vision of a vibrant, sustainable economy will depend largely on dramatic improvements in renewable energy and energy efficiency. Alternative energy produces fewer than 10% of the nation's electricity. Carbon intensive coal power, on the other hand, makes up 48% of the nation's energy. Replacing coal power with alternative energy will require dramatic improvements in renewable energy technology. Furthermore, renewable energy sources, excluding hydroelectric power, are not good sources of baseline power. Nuclear power is an excellent source of carbon free baseline power. However, the effective closure of Yucca Mountain, problems with siting new nuclear power plants and long development times will continue to make increasing nuclear power problematic. Since coal cannot be easily or quickly replaced by carbon free sources of energy, improving energy efficiency, at both power plants and in everyday devices, will be vital to reducing the emission of greenhouse gasses.

ASME Implications

Mechanical engineers play essential roles in improving energy efficiency and in creating the new energy technologies of tomorrow. Mechanical engineers who can improve energy efficiency for vehicles, energy generation, energy transmission, heating and air condition will be in high demand. Older coal fired power plants will need to upgrade their efficiency and adopt new 'clean coal' technology, which will create opportunities for mechanical engineers. Mechanical engineers will be challenged to create better renewable energy and energy storage technologies to meet growing demand for carbon free energy.

ASME can work with its partners to encourage the development of renewable energy technology, energy storage devices and more energy efficient devices. ASME can be a leader in standards development for new energy technologies and educate its membership on advances in these advances. ASME can also play an important role in advocating for policies at the federal and state level that encourage the development of new energy sources. ASME can also help to create new energy ecosystems (see also the November 2008 Strategic Issues and Trends Brief on A New Energy Ecosystem for more information).

ASME held a workshop in mid-March to begin the development of a visionary roadmap for the Society's role in energy in the next few years. Balanced Scorecard objectives include:

- Better serve our core customers (C1)
- Secure, serve and incorporate emerging markets and technologies (C2)
- Develop new and expanded market relevant content (I2)
- Provide effective representation and advocacy for the engineering profession (I3)
- Create a volunteer-staff partnership that embodies innovation and diversity (L1)