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WHERE AND HOW THE NEW STIMULUS BILL BEGINS TRANSFORMING THE NATION'S ENERGY

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The 407-page American Recovery and Reinvestment Act of 2009 ("Stimulus Bill") enacted in mid-February makes sweeping changes and provides substantial funding increases to past renewable-energy legislation (Energy Independence and Security Act of 2007, Energy Policy Act of 2005; Energy Policy Act and Conservation Act Amendments of 1994, and the Tax Code, not to mention changes in education, health care and finance). Most of the \$43 billion in the act's appropriations will be administered by the Department of Energy (DOE), and most of that is directed at electricity transmission, energy efficiency and renewable energy applications. Approximately \$10 billion is directed through other agencies including Department of Defense (DOE). The truly transformative aspect of this legislation, however, is in the way this new spending will pervasively influence the future shape of this country's energy delivery systems.

What the Stimulus Bill Does: Summary of Relevant Appropriations

This legislation is intended to provide "fast money" designed to stimulate the economy quickly: most funds appropriated are available only until September 30, 2010. A short summary of the relevant aspects that affect energy include:

- ⇒ \$6 billion in loan guarantees as Amendment to Title XVII Energy Policy Act of 2005 §1705 for guarantees of "Rapid Deployment of Renewable Energy and Electric Power Transmission Projects" 42 USC §16511 for the Innovative Technology Loan Guarantee Program for renewable technologies and transmission technologies (page 31).
- ⇒ \$5 billion for the Weatherization Assistance Program Part A of Title IV of Energy Conservation and Production Act 42 USC §6861 to assist low-income families in improving the energy efficiency in their homes. Expanded participation with low-income threshold at 200% of the poverty level, and expanded funding up to \$6,500 per project (page 24).

- ⇒ \$4.5 billion for modernization of electric grid for "Demand Responsive Equipment," and implementation of programs authorized under Title XIII ("Smart Grid") of Energy Independence and Security Act of 2007 §1301, 42 USC §17381; to modernize the electric grid, to include demand-responsive equipment, enhance security and reliability of the energy infrastructure, energy storage research, development, demonstration and deployment, and to facilitate recovery from disruptions from the energy supply (page 24).
- ⇒ \$4.5 billion to convert General Services Administration facilities to high-performance green buildings.
- ⇒ \$4.24 billion for facilities sustainment, restoration and modernization, including investments in energy efficiency projects and to repair and modernize Department of Defense facilities.
- ⇒ \$3.25 billion in loans from Secretary of Treasury for constructing & financing upgraded electric transmission lines and related facilities; loans may be forgiven if balance remains due at the end of the useful life (page 27).
- ⇒ \$3.2 billion for state Conservation Block Grants for government entities under Subtitle E Title V of Energy Independence and Security Act of 2007, including formula and competitive grants (page 24).
- ⇒ \$3.1 billion for State Energy Program Part D Title III Energy Policy and Conservation Act Amendments of 1994, 42 USC §6321 (page 24).
- ⇒ \$2.5 billion for energy efficiency and renewable energy research, development, demonstration and deployment activities.
- ⇒ \$2 billion in grants the manufacturing of advanced batteries and components, including advanced lithium-ion batteries, hybrid electrical systems, component manufacturers and software designers (page 24).
- ⇒ \$1.52 billion for a range of industrial carbon capture and energy efficiency improvement projects, including a small allocation for innovative concepts for beneficial CO2 reuse.
- ⇒ \$650 million for the Forest Service's Capital Improvement and Maintenance, including consideration of alternative energy technologies
- ⇒ \$400 million research under §5012 of the America Competes Act, 42 USC §16538 to support high-risk, high-payoff research to accelerate the innovation cycle for both traditional and alternative energy sources and energy efficiency through the newly-created Advanced Research Projects (page 24).
- ⇒ \$400 million for qualified electric transportation projects that reduce emissions.

- ⇒ \$300 million for the Alternative Fueled Vehicles Pilot Grant Program to encourage the purchase motor vehicles with higher fuel economy, including hybrids, electric vehicles and commercially available plug-in electric-drive vehicles or other emerging electric vehicle technologies (page 212).
- ⇒ \$300 million for state appliance rebate programs to support appliance efficiency.
- ⇒ \$300 million for research, development, test and evaluation of projects for improvements in energy generation and efficiency, transmission, regulation, storage, and for use on military installations and within operational forces.
- ⇒ \$120 million for the Energy Conservation and Investment Program at Department of Defense.
- ⇒ \$100 million for the Navy & Marine Corps energy conservation and alternative energy projects.
- ⇒ \$100 million in worker training activities in transmission technologies (page 24).
- ⇒ \$50 million for wood-to-energy grants to promote increased utilization of biomass.
- ⇒ \$10 million for implementation of §1305 of the Energy Independence and Security Act of 2007 ("Smart Grid Interoperability Framework") through National Institute of Standards and Technology (page 25).

Tax Changes

Historically, two formidable financial challenges have hindered expansion of renewable energy: imminent deadlines that would disqualify current investment for tax benefits and the need to have income offset by tax credits. Deadlines have been volatile and unreliable, with frequent annual extensions that were hard to value. Current "tax appetites" (ability to use tax credits to offset revenue) have fallen dramatically due to the economic slowdown.

Production tax credits (PTC's) are claimed over a ten-year period based on the number of qualified kilowatt-hours of electricity produced and sold during the tax year. Credit amounts increase each year for inflation and currently equal 2.1 cents per kilowatt-hour or 1 cent per kilowatt-hour for most biomass facilities. Before the stimulus bill, PTC's were ending as soon as the end of this year, inhibiting additional investment due to construction time requirements. Wind farms had to be placed into service on or before December 31, 2009, and biomass, geothermal and most other renewable energy projects had until December 31, 2010.

The investment tax credit (ITC) for energy property equals 30% of the cost of qualified energy property (primarily solar property) placed in service during the year. This credit scheme worked when the economy was stronger, but now, with the financial markets in decline, less investors and operators have the income sufficient to take advantage of tax credits.

The stimulus bill resolves the short time horizon for PTCs by extending the placed-in service date by three years for the two renewable energy categories: wind farms now qualify if placed in service by December 31, 2012, and biomass, geothermal and most other renewable energy projects qualify if placed in service by December 31, 2013 and eliminates the tax basis adjustment under IRC §48. The bill also includes provisions permitting taxpayers to elect to receive ITC at the rate of 30% in lieu of PTC on projects placed in service during 2009 and 2010. Together, the changes in ITC and PTCs are estimated to be equal to \$20-billion over the next decade:

- ⇒ §1100. Extension of Credit for Electricity Produced from Certain Renewable Resources to 2013 and 2014; revision of IRC §45(d) and inclusion in §102 of Energy Improvement and Extension Act of 2008 (Part of the H.R. 1424 [110th]; Emergency Economic Stabilization Act of 2008 (page 205).
- ⇒ §1121. Extension and modification of credit for non-business energy property under IRC §25C; allowing credit against tax of 30% for energy improvement up to \$1500 for 2009 and 2010 (page 208). Modifications of IRC §§ 25C and 25D for electric heat pumps, ac, water heaters and other improvements (page 209).
- ⇒ §1302. Credit for investment in advanced energy facilities; modification to IRC §46 (relating to the amount of credit) and inserting new §48C "Qualifying Advanced Energy Project Credit" as 30% of the qualified investment for manufacturing facility for production of energy from the sun, wind, geothermal or other renewable resources; not to exceed \$2.3 billion (pages 231-232).

The stimulus bill would allow taxpayers to elect to receive cash grants equal to 30% of the cost of property used in solar, wind, biomass, and other specified renewable energy projects placed in service during 2009 and 2010. Unfortunately, taxpayers electing to receive cash grants on a project would not be entitled to either ITC or PTCs on the same project, but grants would not have to be reported as taxable income. The tax basis of property developed using the grants would be half of the amount of the applicable ITC that would have otherwise been allowable (equal to a 15% basis reduction) but subject to depreciation recapture if the property is disposed of within five years. The variety of other limitations that currently apply to ITC remain.

- ⇒ §1102. Election of Investment Credit in Lieu of Production Credit; available for tax years if investment credit has not been used; 30%; placed in service after December 31, 2008 (page 206).
- ⇒ §1103. Repeal of Limitation on Certain Renewable Energy Product Credits (page 206).
- ⇒ §1603. Grants for specified energy property in lieu of tax credits as 30%; not to exceed limitations described in IRC §§48(c)(1)(B), 48(c)(2)(B) or 48(c)(3)(B); qualified facilities including fuel cell, solar, wind, geothermal defined in §48(a)(5)(D); no grant to governments, 501(c) organizations, IRC §54(j); grants end October 1, 2011 (pages 250-251).

- ⇒ §1123. Temporary increase in credit for alternative fuel vehicle refueling property from 30% (capped at \$30,000) to 50% (capped at \$50,000), with an increase of \$250,000 for hydrogen refueling pumps (page 210).
- ⇒ Smart grid technologies focused on modernization of the transmission infrastructure may also be able to take advantage of another \$6 billion that Congress appropriated for the Department of Energy's Innovative Loan Guarantee Program.

Structuring the "Deal"

Most renewable energy projects are structured as "partnership flip" transactions between a tax investor and a developer. Most of the income, loss and tax credits go first to the tax investor until it receives its contracted return, and then "flips" the income and loss to the developer who receives an option to acquire full ownership after the "flip." In this arrangement, the tax credit and depreciation deductions can be allocated to the tax investor; historically not an issue because investors that could benefit from tax credits generally could also benefit from depreciation. All that was needed was an investor with a sufficient "tax appetite." Unfortunately, the current economic downturn has significantly eroded tax appetites and consequently has neutralized the effectiveness of such tax credits.

The stimulus bill removes this credit impasse and opens the opportunities for using a lease structure instead of a partnership flip since a lease structure permits taxpayers to separate the credit from the depreciation allowance, permitting the parties to pass the ITC separately to the lessee. By receiving cash grants instead of tax credits, investors do not need taxable income and can separate the depreciation from the credit, allocating the depreciation to a party that has some tax appetite and the cash grant to a party that does not. As a result, a renewable energy project such as a large solar array on a residence or business can be sold to a party that has the ability to utilize depreciation.

The range of options to maximize ROI is now significantly broader. The developer as a lessor could, for example, either retain the ITC or cash grants for its own benefit, or lease the project to another entity and elect to pass on the ITC or cash grant to the lessee. The developer could also sell a renewable energy project to a tax equity investor and lease it back, retaining the cash grant, and consequently reducing the developer's financing costs where 30% of the purchase price would be captured in the form of the cash grant. Alternatively, the developer could be granted a purchase option so that it could reacquire the property at the end of the lease; or could retain ownership of the project and lease it to a tax investor, passing on the ITC or cash grant but retaining depreciation to offset rental income, permitting the developer to retain ownership of the project at the end of the least term without need of exercising a purchase option. A developer could also just continue to transfer both the depreciation and ITC or cash grants to investors, either through use of a lease or partnership flip.

Why the Bill Might Change Renewable Energy Significantly

Discount for a moment the traditional distinctions between fossil fuels versus renewable energy, green energy, etc. Instead, consider that there are two “other” types of energy: concentrated power and distributed power. Concentrated power is the traditional model in the form of large power plants that generate electricity supplied to the market through an expanse of transmissions lines as “the grid.” Distributed power is the variant where power sources are individually or locally situated such as rooftop solar or off-grid generators.

We have historically relied on concentrated power and therein lays the major challenge. Compared to the “grid” in central Europe that can readily ship electric power from Denmark to eastern Germany, enabling vast swatches of those countries to use wind energy exclusively during off-peak times, the US grid system is crippled. Even with the significant resources of wind energy in the Dakotas and Texas for example, wind turbines there cannot send the power they create to the major markets in the east. Simply stated, this country has fallen behind in infrastructure investment such as roads, bridges, mass transit and the electric transmission grid. (Overall, the country's infrastructure will require an aggregate investment of between \$87 billion to per year \$150 billion per year, while more aggressive estimates reach almost \$150 billion per year.)

The solution for electric energy is two-fold: improve the overall capacity of the grid by investing in repairs and new installations and improve its efficiency through a technique called “demand response” or “smart grid technology.” Because most electricity consumers are billed using a flat retail rate on a per kilowatt-hour scheme, consumers don’t know when to reduce their usage during peak hours or to shift consumption to less expensive periods. This needs so-called “smart metering,” enabling short-term capacity availability coupled with increased grid reliability, which in turn will help reduce inefficiency in power production and consumption and require less investment in transmission and generation capacity. Taken together, the result is a more efficient grid, costing less money, which maximizes the electric production from concentrated power sources and provides access to market from concentrated sources that are currently too isolated.

In advance of the Obama administration's stimulus package, The Federal Energy Regulatory Commission (FERC), ISO New England, Inc. (ISO-NE) and the Midwest Independent System Operator (MISO) released separate recommendation regarding expansions of demand response programs. The mid-Atlantic, midwestern and southeastern U.S. regions currently make the largest demand response contributions to the national power system, but progress is slow and challenges are both technical and political. The MISO report issued this past December found that because price shifting based on demand changes the current business models, a new pricing system may upset existing market participants, expose retail customers to volatile prices, and require immediate widespread deployment and use of smart technology. In short, this will take time and money and the \$32 billion directed toward these projects is just the start.

And delays are looming. The issue of patent infringement relating to the application of new technology poses significant threats to utility companies pursuing these infrastructure mandates. Patent licensing entities such as Atlanta based wireless communications research development company IPCO

LLC, for example, has a patent portfolio relating to automated meter reading, specifically for systems and methods applicable to communication with smart meters. IPCO has sued meter equipment vendors (see *IPCO LLC v. Cellnet Technology, Inc.*, N. D. of Georgia, 1:06-cv-03048-JEC, for violations of wireless mesh technology for use on automatic “smart” meter reading devices), and has now sued a utility company for patent infringement. (*IPCO, LLC v. Elster Electricity, LLC*; *IPCO, LLC v. CenterPoint Energy, Eaton Corporation and Itron, Inc.*, E. D. of Texas, 2:08-cv-120-DF). The public nature of large investor-owned utilities with public utility commission filings make them an attractive target of patent claims, consequently utilities under such threat might take a license to avoid the risk of litigation. Yet state regulators might disapprove of such actions, paid for by consumers already under financial stress.

What this means: the electric grid infrastructure limitations as they currently exist and before this current funding created an opportunity for distributed power sources. Instead of billions spent on a new “smart grid,” individual homeowners and businesses faced an alternative to augment the electric power supplied by their power company with their own on-site renewable sources such as rooftop solar panels, geothermal systems and small-scale wind. The result would be less demand on the existing grid, less emphasis on developing new renewable concentrated power sources such as large wind and solar farms, and less need for new and expensive nuclear and fossil-fuel-fired power plants. While the stimulus bill is the first volley in this debate and favors the expansion of concentrated power, the significant tax changes valued at \$20 billion (notably the 30% ITC grants for qualified facilities including fuel cell, solar, wind and geothermal) keeps individually sited, distributed power competitive.

Implementation: State Initiatives and DEO Regulations Pending

The passage of the stimulus bill will soon be followed by a combination of funding appropriations, authorizations and department-level administrative rulings and regulations which remain pending and could modify particular features and details. Much of the stimulus funds flowing into actual projects will occur at the state level (\$3.2 billion for state Conservation Block Grants; \$3.1 billion for State Energy Program Part D Title III Energy Policy and Conservation Act Amendments of 1994; and \$300 million for the state appliance rebate programs to support appliance efficiency, for example). “Shovel ready” is the new term for project approval.

Some of the stimulus bill’s incentives, such as the tax credits, can be directly accessed by businesses. Other incentives, such as regulations implementing the grants for specified energy property in lieu of tax credits under §1603, still need to be written by the Treasury Department in consultation with the DOE, including the relevant types of projects or technologies for eligibility. Whether and how a company can take advantage of funds appropriated through the DOE will be largely determined by rules the agency adopts for the many programs it must administer. Not only must new rules be written for the new law, but also old rules need to be updated. The DOE is mandated to pursue a much more aggressive implementation schedule and DOE Secretary Chu has publicly committed to reworking the process by which guarantees are awarded with a goal of “cutting checks” by early May 2009. (Statement of Steven Chu Secretary of Energy before the Committee on Energy and Natural Resources, <http://www.energy.gov/news2009/6964.htm>).

The pace and magnitude of that growth will also be heavily affected by how state and federal energy policies evolve and interact. The Green Communities Act of Massachusetts, for example, requires the adoption of the International Energy Conservation Code as part of the state building code which allows customers to net meter excess electricity generated on site by qualified sources. For project developers in transmission infrastructure upgrades, negotiating overlapping state and federal policies may be even more important. The Federal Energy Regulatory Commission (FERC) and state public utility commissions have historically challenged each others' jurisdictional authority and that is likely to continue and become more acute.

Watch for the regulations that will implement these huge federal funding initiatives. A follow-up news release will update you on the passage of new laws and regulations as soon as they are enacted.

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