

# A NATIONAL ENERGY POLICY FOR THE UNITED STATES

## AN INTERIM REPORT COMPARING CURRENT LEGISLATION BEFORE THE 111<sup>TH</sup> CONGRESS AND RECOMMENDATIONS FOR A NATIONAL ENERGY POLICY FOR THE UNITED STATES



Courtesy of Victor J. Lahr

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## INTRODUCTION

*We know the country that harnesses the power of clean, renewable energy will lead the 21st century.*

President Barack Obama  
Joint session of Congress, February 24, 2009

This white paper is designed in the mode of classic British Parliamentary white papers. It builds upon two previous white papers completed by students at the University of Oregon School of Law which in turn were based upon three recent ground-breaking efforts of a similar nature:

Center for American Progress (CAP), *Capturing the Energy Opportunity*, 2007

The National Commission on Energy Policy (NCEP), *Ending the Energy Stalemate*, 2004

NCEP, *Energy Policy Recommendations to the President and 110th Congress*, 2007  
(updates *Ending the Energy Stalemate*)

These three papers led to an active, national dialogue on the *sine qua non* policies of a National Energy Policy (NEP) for the United States. They stimulated a renewed effort to further research and assess policies to be considered for inclusion. This charge was taken up by advanced graduate students at the School of Law enrolled in Law610/08 and Law610/09. After analyzing each of the white papers the students consolidated the recommendations in each of them into six over-arching policy areas.<sup>1</sup> The six represent the *sine qua non* policies as seen by the CAP and NCEP authors. Having divided themselves into teams representing each of the six areas, the students proceeded to analyze the CAP and NCEP authors' work. In doing so, the teams assessed:

1. the policy's advantages,
2. potential problems in its implementation and administration,
3. the policy's natural constituencies, opposition, and neutrals,
4. budgetary considerations, and
5. promotion strategy(ies), including global linkages.

As a final task, each group set out recommendations for reformulations and/or additional policies designed to strengthen those analyzed. The result: a draft set of NEP policies. Students enrolled in Law610/10 strengthened the analysis of their colleagues by analyzing the energy bills before both houses of the current session of Congress as of February 12, 2010. Readers will find in the six policy groups below interlinear quotations of key passages from those bills. The interlinear quotations from **House Bills are highlighted in blue** and **Senate Bills are highlighted in red**.

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<sup>1</sup> It should be noted that titles of the six Policy Groups are in some cases combinations of primary headings in the CAP and NCEP publications. For precise attribution please contact hwc@stanfordalumni.net.

Given the number of pages devoted to the six policy areas covered by this paper as well as the multiplicity of sub-policies dissected, discussed, and evaluated, the authors suggest readers may get the maximum benefit out of the document by consulting the table of contents, choosing the policy area in which they have the greatest interest and turning to the pages wherein that policy area is discussed. Each policy discussion concludes with the authors' recommendations. Finally, it is hoped readers will find the discussions, highlights, and footnotes a rich set of background material for use in their own discussions and deliberations.<sup>2</sup>

The instant document is designed to be a "living" document in that the authors invite readers to suggest further additions, changes or revisions in any of the policy areas. In doing so, all the reader need do is email comments and/or suggestions to [hwc@stanfordalumni.net](mailto:hwc@stanfordalumni.net). Please include your preferred email address in order that Dr. Cummins can respond to you, making this a fully realizable national dialogue.

The result of this dynamic process will help those given the task of drafting legislation, rules, and regulations a touchstone against which to measure their efforts.

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<sup>2</sup> When citing a particular Policy Paper, please use the following example as a correct format: Aaron Kraft & Will O'Connor, *Policy Group 5 - Enhancing Capacity, Efficiency, & Reliability of Energy Transmission*, in AN INTERIM REPORT COMPARING CURRENT LEGISLATION BEFORE THE 111TH CONGRESS AND RECOMMENDATIONS FOR A NATIONAL ENERGY POLICY FOR THE UNITED STATES [page #] (Univ. of Or. Sch. of Law, Fed. Energy & the Cong. White Paper Law610/10, available at <http://thehill.com/resources/white-papers/energy/56999-an-interim-report-comparing-current-legislation-before-the-111th-congress-and-recommendations-for-a-national-energy-policy-for-the-united-states/>)



## **RESEARCH AND AUTHOR TEAMS BY POLICY**

**POLICY GROUP 1 – ENHANCING OIL SECURITY: Brian Dirks, Tyler McPheters**

**POLICY GROUP 2 – REDUCING RISKS FROM CLIMATE CHANGE: Paul Thompson, Brandi Veltri**

**POLICY GROUP 3 - EXPANDING ENERGY SUPPLIES: Ian Best, Justin Steffen**

**POLICY GROUP 4 – TECHNOLOGY INNOVATION/IMPROVING ENERGY EFFICIENCY: Anna Johnsen, Jonathan Rue**

**POLICY GROUP 5 - ENHANCING CAPACITY, EFFICIENCY, AND RELIABILITY OF ENERGY TRANSMISSION: Aaron Kraft, William O'Connor**

**POLICY GROUP 6 - TRANSPORTATION: Jeff Kane, Juliane Ross**

**ADDENDUM I - RECOMMENDATIONS BY POLICY GROUP**

## **POLICY GROUP 1 – ENHANCING OIL SECURITY**

- I. STATEMENT OF THE POLICY and sub-policies: Increase national and economic security by decreasing America's dependence on foreign oil.<sup>3</sup> A comprehensive and realistic energy policy will effectively balance and encompass the reduction of oil demand, increase other energy supplies, and foster greater international cooperation to reach its goals.
- A. REDUCE DEMAND FOR OIL
1. Increase the use of alternate fuel sources for all means of transportation within the US
  2. Modernize the national transportation system
    - a. Improve core infrastructure to reduce idle times and promote more efficient travel
    - b. Develop national high-speed rail networks
  3. Develop, incentivize, and deploy renewable energy projects
  4. Explore the feasibility of zero or low emission nuclear power plants;
    - a. Research disposal or possible uses for nuclear waste
    - b. Research feasibility of fusion based energy
  5. Increase funding for the commercial development of hydrogen power and infrastructure
  6. Invest in coal technology research to develop and deploy carbon abatement strategies such as Carbon Capture and Storage (CCS) technologies to help supplant our dependency on oil
  7. Increase incentives for coal to liquid technology (CLT) projects and research
  8. Construction of a natural gas pipeline from Alaska to continental United States
- B. EXPAND DOMESTIC OIL SUPPLY
1. Increase efficiency of oil extraction projects
  2. Increase environmentally responsible access to offshore oil resources
  3. Keep non-wilderness federal lands on the table to be reassessed after implementing a sound, feasible, and environmentally responsible energy policy that is focused on renewable sources of energy. See: Recommendations
- C. MANAGE GLOBAL SUPPLY AND GEOPOLITICAL RISKS
1. Identify, evaluate, and mitigate possible short term and long-term risks to foreign oil supply. Short-term risks include weather disruptions, terrorist attacks, and accidents. Long-term risks include shortfalls from political

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<sup>3</sup> See The White House—Energy and the Environment, [http://www.whitehouse.gov/agenda/energy\\_and\\_environment/](http://www.whitehouse.gov/agenda/energy_and_environment/) (stating that President Obama's energy policy is aimed at eliminating imports from the Middle East and Venezuela for the purpose of protecting national and economic security).

and/or economic instability. Lessening reliance on the foreign oil supply is the best way to mitigate risks

2. Assess vulnerable aspects of U.S. and global energy infrastructures to assure the stability of domestic and international energy supplies
3. Expand national security intelligence to identify potential oil supply conflicts, which impact U.S. oil supply, in order to intervene diplomatically or militarily

## II. POLICY IMPLEMENTATION

### A. ADVANTAGES

1. Reduce dependency on foreign oil and the volatile oil market
2. Significantly lower the trade deficit
3. Increase economic security
4. Reducing the use of oil-based fuels will mitigate the economic shock of a supply interruption
5. Reduce the impact that oil demand has on foreign policy decisions
6. Diminished greenhouse gas emissions

### B. ADMINISTRATION

1. Opposition
  - a. The oil and gas industry will oppose recommendations *not* to open all federal lands currently restricted from onshore oil and gas development. Opening some restricted offshore sites should help to secure some support from the oil and gas industry
  - b. Anti-offshore drilling coalitions and some federal lawmakers will challenge lifting the Outer Continental Shelf (OCS) moratorium. Require the strictest environmental review before allowing projects on the OCS
  - c. Bills to reduce the ethanol tariff have traditionally received opposition in the House and Senate
  - d. There will be strong opposition to an energy policy that keeps the possibility of drilling in The Alaskan National Wildlife Refuge (ANWR) on the table
  - e. A natural gas pipeline will likely face time-consuming National Environmental Protection Agency (NEPA) challenges
  - f. Anti-coal coalitions oppose the use and development of coal technologies
  - g. Anti-nuclear groups oppose the use of nuclear energy. Only the safest possible nuclear technology should be used
  - h. Nuclear Technology generally faces intense social reluctance. A public education campaign could alleviate this reluctance

2. Support:
  - a. Existing legislation: Energy Independence and Security Act of 2007 (EISA) already requires changes in Corporate Average Fuel Economy (CAFE) standards to raise fuel economy of all new vehicles
  - b. President Obama vowed to make ending the national dependence on foreign oil a national priority<sup>4</sup>
  - c. The G8 Global Energy Security Plan includes an agreement for international research and development of nuclear fusion projects for zero emission power plants<sup>5</sup>
  - d. Various agencies and federally funded organizations support and fund coal research and development. For example: The National Energy Technology Laboratory (NETL),<sup>6</sup> Office of Fossil Energy (OFE),<sup>7</sup> and Energy Information Administration (EIA)<sup>8</sup>
3. Potential Roadblocks
  - a. Foreign natural gas reliance: regulatory schemes to implement the policy should not make the nation more dependent on imported natural gas.
    - (1) Domestic natural gas recovery is speculative.
    - (2) Increased dependency on Liquid Natural Gas (LNG) imports from unstable suppliers increases geopolitical risks
  - b. Onshore Development: most of the accessible oil supply in the U.S. has been exploited. Untapped Alaskan onshore reserves could be opened but, will face public opposition
  - c. Availability and technology issues: plug-in hybrid electric vehicles (PHEVs) are not easily available in the US and there still exist important performance and cost constraints that must be overcome. Advanced technologies, such as battery advances, need to be developed and employed<sup>9</sup>
  - d. Electric Infrastructure modernization: developing the infrastructure required for a successful transition to electric cars will be very expensive and will take years to develop and construct
  - e. Policy ahead of science and technology: the energy policy must be technology forcing, but not unrealistic

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<sup>4</sup> Barack Obama, Speech on energy policy given at the Detroit Economic Club — May 07, 2007. “At the dawn of the twenty-first century, the country that faced down the tyranny of fascism and communism is now called to challenge the tyranny of oil. For the very resource that has fueled our way of life over the last hundred years now threatens to destroy it if our generation does not act now and act boldly. We know what the dangers are. We know that our oil addiction is jeopardizing our national security. We know that oil money funds everything from the madrassas that plant the seeds of terror in young minds to the Sunni insurgents that attack our troops in Iraq.”

<sup>5</sup> *Global Energy Security Plan*, G8 Joint Statement, St. Petersburg, July 16, 2006, <http://en.g8russia.ru/docs/11.html>.

<sup>6</sup> See NETL: About NETL, <http://www.netl.doe.gov/about/index.html>.

<sup>7</sup> See Office of Fossil Energy homepage, <http://www.fossil.energy.gov>.

<sup>8</sup> See EIA—Coal, <http://www.eia.doe.gov/fuelcoal.html>.

<sup>9</sup> Andrew Simpson, *Cost-Benefit Analysis of Plug-In Hybrid Electric Vehicle Technology*, presented at the 22nd International Battery, Hybrid and Fuel Cell Electric Vehicle Symposium and Exhibition, November 2006, available at <http://www.nrel.gov/vehiclesandfuels/vsa/pdfs/40485.pdf>.



- f. After *Massachusetts v. Environmental Protection Agency*<sup>10</sup> and the recent *Bonanza Coal Plant* decision<sup>11</sup> essentially all new coal plant permits are issued only after the Best Available Control Technology (BACT) is determined by the EPA on a case by case basis. Previously BACT only applied to NO<sub>x</sub>, acid rain-forming SO<sub>2</sub>, particulate matter, mercury, and other noxious pollutants, but not carbon dioxide.

### C. PROMOTION STRATEGIES

1. Electric Cars
  - a. Provide incentives to companies to encourage development of advanced battery technology
  - b. Use grants to cities and tax credits to developers to foster the installation of recharging stations and electrification infrastructure
2. Bio-fuel Development
  - a. Require that a percentage of vehicles produced are Flexible Fuel Vehicles
  - b. Reduce tariffs on imported ethanol to match the 51¢ per gallon subsidy as proposed by the Imported Ethanol Parity Act (2007-2008)<sup>12</sup>
3. Promote Efficiency
  - a. Implement higher fuel economy standards per the Energy Independence and Security Act of 2007 (EISA) and consider raising the 2020 goals
  - b. Develop and employ a modern national transportation system
4. Promote renewable energy use and technology development
  - a. Tax incentives for innovative research
  - b. Public investment in renewable energy research and development

## III. RECOMMENDATIONS

### A. OTHERS

1. Oppose all “Use It or Lose It” legislation <sup>13</sup>

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<sup>10</sup> *Massachusetts v. EPA*, 549 U.S. 497 (2007).

<sup>11</sup> See *In re Deseret Power Electric Cooperative*, PSD Appeal No. 07-03PSD, PSD Permit No. PSD-OU-0002-04.00 (Nov. 2008).

<sup>12</sup> This tariff reduction was proposed in Imported Ethanol Parity Act, S. 3080, 110th Cong. (2008), available at <http://www.govtrack.us/congress/bill.xpd?bill=s110-3080&tab=summary>. For an interesting discussion for eliminating the tariff, see Stewart Butler & Kim Holmes, *Twelve Principles to Guide U.S. Energy Policy*, Backgrounder No. 2046 (June 26, 2007), available at [http://www.heritage.org/Research/EnergyandEnvironment/upload/bg\\_2046.pdf](http://www.heritage.org/Research/EnergyandEnvironment/upload/bg_2046.pdf).

<sup>13</sup> Use It or Lose It Legislation, H.R.6251, 110<sup>th</sup> Cong. (2008), available at <http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.06251>. Our recommendation against this legislation was made in part upon the arguments of scientists and other critics which claim the numbers found in the House Natural Resources Committee Majority Staff report, *The Truth About America's Energy: Big Oil Stockpiles Supplies and Pockets Profits*, are based on non-scientific methods and results in completely unreliable numbers about the amount of oil reserves on leased federal lands. American Association of Petroleum Geologists June 23, 2008 letter to the U.S. House of Representatives discusses why the realities of domestic oil exploration and exploitation on leased federal lands are not as simplistic as the assumptions that the House makes them appear to be.

- a. Finding the best place to drill on a piece of land is complicated and may take more than 10 years
- b. Exploratory drilling is expensive—oil companies have a very real incentive to take their time and get it right the first time
- c. It is unlikely that there is a profitable way to exploit the resources of the unused land if the company that currently holds the lease has not done so

## B. AUTHORS

1. ANWR drilling will not ensure oil security. The EIA estimates it will not be until 20 years after opening that ANWR will reach its peak oil production of only 780,000 barrels per day.<sup>14</sup> Given this small likely output ANWR drilling should not be pursued
2. Coal must be part of the national strategy to reduce oil dependency, but, coal plants must use the BACT. Using the stricter Lowest Achievable Control Technology (or Lowest Achievable Emission Rate [LAER]) for coal plants would greatly impair the use of coal as an alternative to oil.

## **POLICY GROUP 2 – REDUCING RISKS FROM CLIMATE CHANGE**

I. **STATEMENT OF THE POLICY:** The United States should establish an economy-wide cap and trade program. There is a growing consensus that the government should take action to reduce the nation’s use of fossil fuels and output of greenhouse gases. An economy-wide cap and trade program appears to be the most feasible energy policy for accomplishing these goals, both politically and practically

## II. DESIGN ISSUES

### A. GENERAL

1. Set a cap on greenhouse gas (GHG) emissions that declines over time
2. Set the cap below current emissions
3. Distribute GHG allowances up to the cap. What timetable?
4. Regulatory scope: regulate certain or all polluters?
  - a. Point of Regulation: this may be based on GHG output (type or quantity)
  - b. Expansion of scope creates:
    - (i) Greater disparity in GHG reduction costs
    - (ii) A larger group of polluters who easily adapt to GHG reduction (making it easier for high-cost polluters to trade for permits)
    - (iii) A more efficient, less costly, regulatory system

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<sup>14</sup> Energy Information Administration, *Analysis of Crude Oil Production in the Arctic National Wildlife Refuge*, SR/OIAF/2008-03 (May 2008), available at <http://www.eia.doe.gov/oiaf/servicerpt/anwr/pdf/sroiaf%282008%2903.pdf>.

- (iv) Pollution hot spots. i.e., areas where polluting is cheapest and polluters congregate

B. SPECIFIC

1. Point of Regulation: regulate providers of GHG producing resources
  - (a) Advantages
    - (i) Relatively inexpensive
    - (ii) Easier to administer than downstream sources (after-the-fact)
    - (iii) Effective at limiting climate change
  - (b) Disadvantages: increases gas and heating fuel prices
2. Allowance Distribution
  - a. Basis for amount distributed to producers and consumers
    - (i) Emissions produced in the past (time to be established)
    - (ii) Highest bidder for trade credits
    - (iii) Polluters (at what point are they no longer allowed to buy credits?)
    - (iv) Energy consumers at large (power plants, airlines, the general public?)
  - b. Auctioned
    - (i) Less/no incentive to trade (expensive depending on demand)
    - (ii) Regulatory agency needed to sell to highest bidder
    - (iii) Can use proceeds to help defer energy cost increases to poor
3. Market Participants: who participates in the permit market? In open-market
  - a. No limit (eliminates conservative resistance)
  - b. Difficult to apply to entities which vary emissions due to demand or weather
  - c. Sunset clause to revisit within 5 years in order to ascertain whether this was the best system for market trading
4. Allowance Banking
  - a. Banked allowances may be used in the future
  - b. Allows producers flexibility in choosing when and how to allocate resources. Encourages innovation in order for companies to stay ahead of the curve. Also encourages innovation for out of market parties to enter the market directly or through new products.
  - c. Can cause uncertainty in future emissions levels
  - d. Should be done like SO<sub>2</sub>?

III. POLICY IMPLEMENTATION: Simple rules decrease transaction costs and increase market efficiency

- A. ADVANTAGES: Scientific discoveries demand substantial action to combat climate change. Some believe that economy-wide cap and trade programs are inferior to international cap and trade programs, to regional cap and trade

programs, or to carbon tax programs. However, a cap and trade program that spans the US has many advantages over such programs

1. Economy-wide vs. Regional
  - a. Regional cap and trade programs do not cover all polluters
  - b. Regional programs are easier to administer, however
  - c. Regional programs vary and are not uniform enough to limit shopping for the easiest place to pollute
  - d. An economy-wide program will have to address current regional programs; there will be pressure to integrate pieces of those programs into the Federal Program
2. Emissions Measurement.
  - a. Must define which gases are covered by the cap
  - b. Which units are used to measure gases
  - c. The more gases the more metering thus more administrative costs
  - d. The more metering and inspection the greater the cost for some polluters
3. Emissions Tracking
  - a. How emissions are monitored, reported, and recorded
  - b. Compliance must be ensured; what type of penalties?
  - c. Standardized reporting methods would be needed to reduce costs
  - d. High performance, reasonable costs, necessary for public support
4. Trading and transferring: who may buy, sell, broker allowances
5. Public participation is necessary
  - a. Leads to greater transparency
  - b. Leads to greater confidence in the program
  - c. More administrative cost, but could reduce litigation costs
  - d. Gives an appearance of equitable treatment
6. Enforcement
  - a. There must be penalties for noncompliance with the cap or timelines
  - b. Frequent and strict inspections of reduction efforts

## B. POTENTIAL ROADBLOCKS

1. Some supporters consider that proposed bills are not strong enough on specific issues
2. Costs to private businesses and the average consumer
3. Increases in consumer costs; characterization of the bill as a tax increase
4. Delay tactics in Congress: some seen in the past, others threatened
5. Cap and trade programs may need to apply to all appropriate polluters and pollutants
6. Widespread recognition of the scope of the undertaking, leading to long, drawn out negotiations
7. Budgetary considerations
  - a. State of the economy increases resistance to new costs
  - b. Would it be revenue neutral and if not where to find necessary revenue?

- c. Develops a new market that may spur job growth and product development
- 8. Global links
  - a. Energy legislation is currently being driven forward by climate concerns. New energy policy must be cognizant of climate impacts. Climate change is an international problem. It cannot be solved by anyone or even a majority of nations. Full international cooperation is required
  - b. The Western Climate Initiative is a good example for other possible global links: <http://www.westernclimateinitiative.org/>
  - c. The U.S. must link with EU Programs.
  - d. Global links would follow a national plan that has been in effect for some period of time. Advantages of global links are numerous:
    - (1) International pressure provides an impetus for government action: federal, state and local
    - (2) International pressure drives investment in innovation of new technologies
    - (3) An international climate treaty should include technology transfer provisions, speeding dissemination of advanced technologies worldwide
    - (4) Inclusion of market mechanisms, such as trading and strictly regulated offsets, provides opportunities for new markets and least cost paths to compliance
    - (5) A multi-year treaty will end uncertainty, allowing now-stalled long-term business energy decisions to move forward
- 9. Budgetary considerations
  - a. The U.S. will be required to pledge billions of dollars as part of a final treaty package. Developing countries argue that developed countries are responsible for climate change given their large contribution to past emissions. Funds will be needed for adaptation to climate change and to achieve sustainable low-carbon development
  - b. Developing countries argue that patents must be lifted on key low carbon technologies, in a manner similar to HIV/AIDS drugs. This could require federal government compensation to patent holders
  - c. The cost of implementation is likely to be as great as the threat climate change presents. Analysts have presented a wide range of cost figures. One percent of gross domestic product is near the center of those estimates which would equal \$143 billion dollars per year. Such an estimate assumes a treaty stringent enough to prevent catastrophic warming

#### C. POLICY PROMOTION STRATEGIES

- 1. Rally behind minority groups and religious leaders, environmental groups
- 2. Publicize that sound science reinforces need for change now
- 3. Compare with successful European strategies
- 4. President needs to:

- a. address the nation on the nature of the problem and the path to solving it
- b. implement the Clean Air Act to the maximum extent possible to address emissions now, sending a strong signal to Copenhagen negotiators
- c. work with the Congress to advance domestic legislation, such as carbon cap and trade, and also explore carbon taxes and traditional regulations to address the climate crisis

#### IV. RECOMMENDATIONS

- A. The most important action now is swift and thorough implementation of Clean Air Act provisions to address climate change, as ordered by the Supreme Court in *Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438 (2007)
- B. Use the EU model and the SO<sub>2</sub> trading program as a model. Both of these have been successful and Congress can learn from both the successes and failures
- C. Sell allowances to end users and use proceeds as a way to alleviate any increased financial burden caused by a rise in energy prices on the poor
- D. Give businesses two to three years before the cap-and-trade system becomes effective in order to give a grace period (much like the EU model)
- G. Through a series of tax breaks and National Laboratory initiatives, make the US the world leader in green technology. By allowing other countries to take the lead, the US is losing potential market share to other countries, such as China, Germany, and France
- H. Work with the WTO, UN, and other nations to impose a tariff on other countries that do not take efforts to reduce GHG emissions. If the tariff is low enough, then this will prod nations such as India and China to address GHG emissions without the stringency of caps
- I. Work with petroleum companies to use carbon sequestration as a way to retrieve more fossil fuels while permanently storing CO<sub>2</sub>

### **POLICY GROUP 3 - EXPANDING ENERGY SUPPLIES<sup>15</sup>**

#### I. ADVANCED COAL TECHNOLOGIES

- A. STATEMENT OF THE POLICY and sub-policies
  - 1. CAP:

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<sup>15</sup> These terms are defined in the act (H.R. 2998 §610.): **RENEWABLE ELECTRICITY-** The term 'renewable electricity' means electricity generated (including by means of a fuel cell) from a renewable energy resource or other qualifying energy resources. **RENEWABLE ENERGY RESOURCE-** The term 'renewable energy resource' means each of the following: (A) Wind energy (B) Solar energy (C) Geothermal energy (D) Renewable biomass (E) Biogas derived exclusively from renewable biomass (F) Biofuels derived exclusively from renewable biomass (G) Qualified hydropower (H) Marine and hydrokinetic renewable energy, as that term is defined in section 632 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17211). After defining the sources that qualify as renewable the H.R. 2998 requires electricity suppliers (also defined) to supply an increasing percentage of their demand from these sources up to 20% in 2039.

- a. invest in commercial demonstration projects that include CO<sub>2</sub> sequestration, transport through pipelines and storage in different geological settings, and
  - b. require all new coal fired facilities to meet an emission performance standard equivalent to the BACT, and provide federal funds to help offset additional costs of implementing carbon capture and storage technology
2. NCEP
- a. \$3 billion program to support the commercial-scale demonstration of sequestration projects in several different geologic settings
  - b. immediately deploy incentives such as advanced coal with Carbon Capture and Sequestration (CCS) be eligible for the same production tax credit currently available to renewable energy projects.
  - c. condition eligibility for taxpayer subsidies or public funds for any new coal projects going forward on the actual inclusion of CCS
  - d. place greater emphasis on exploring carbon capture options for non-integrated gasification combined cycle (IGCC) plants
  - e. ensure that CCS is included from the outset in any publicly funded efforts to explore coal-to-liquids technology
  - f. ensure that the U.S. EPA completes a rigorous, formal public process to formulate effective regulatory protocols governing long-term carbon storage as soon as possible (recognizing that midcourse corrections will likely be needed as experience is gained)
  - g. ensure that new coal plants built without CCS are not “grandfathered” in any future regulatory program to limit greenhouse gas emissions

## B. POLICY IMPLEMENTATION

### 1. Advantages

- a. CAP
  - (1) environmental benefits—reduces greenhouse gas emissions from the power sector by preventing emissions from coal-fired electricity facilities from reaching the atmosphere
  - (2) economic/job benefits—provides certainty for future investments in new coal fired power plants, and creates jobs in the sector
  - (3) coal is cheap, plentiful, and widely distributed around the world; the U.S. has 27% of the world’s total coal reserves<sup>16</sup>
  - (4) Without CCS, coal is far too carbon intensive to remain a viable energy source
  - (5) the components of CCS—carbon capture, transport via pipelines, and geologic storage—are all commercially in use (and used for enhanced oil recovery)
  - (6) there is already a high level of confidence that geologic storage of very large quantities of CO<sub>2</sub> is practical and will work<sup>17</sup>

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<sup>16</sup> Center For American Progress, *Capturing the Energy Opportunity*, 56 (2007).

- b. NCEP: providing CCS systems with deployment incentives that are at least equal to those currently available under EPAct05 for new nuclear power plants and (via the federal production tax credit) for renewable resources will provide strong financial incentives which could substantially exceed any direct increase in public R&D spending on CCS
2. Administration
- a. Opposition
    - (1) CAP is against coal-to-liquid technology<sup>18</sup>
    - (2) Environmental Groups: some environmentalists claim there is no such thing as clean coal because the United States doesn't possess the infrastructure to capture and sequester all of the CO<sub>2</sub> emissions.<sup>19</sup> Environmentalists also claim carbon capture and sequestration does not solve all of the emissions problems with coal. There are other polluting elements, such as sulfur and mercury making it a dirty source of energy.<sup>20</sup> Environmentalists also claim that even when carbon capture and sequestration is employed, it only reduces emissions (rather than eliminating them)
  - b. Neutrals:
    - (1) NCEP neutral about coal-to-liquid technology as long as CCS is included in any publicly funded efforts to explore the technology<sup>21</sup>
    - (2) Some environmentalists feel "clean coal" technology such as carbon capture and sequestration are a middle ground between traditional coal-fired power plants and their goals<sup>22</sup>
  - c. Support
    - (1) CAP supports CO<sub>2</sub> controls because "if the new capacity expected to be built by 2030 is built without CO<sub>2</sub> controls it will produce about 8.4 billion tons of CO<sub>2</sub> per year, a 30% increase over total current worldwide emissions from the consumption of fossil fuels"<sup>23</sup>
    - (2) Massachusetts Institute of Technology (and many other state technology colleges)
    - (3) IPCC
    - (4) Some big industry leaders claim to be proponents of clean-coal technology, such as Chevron,<sup>24</sup> but there was no information on their website about carbon capture and sequestration

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<sup>17</sup> CAP argument based on a 2005 report by the IPCC on *Carbon Dioxide Capture and Storage*.

<sup>18</sup> Center For American Progress, *Capturing the Energy Opportunity*, 48 (2007).

<sup>19</sup> <http://action.thisisreality.org/details>.

<sup>20</sup> <http://www.brighthub.com/environment/science-environmental/articles/8202.aspx>.

<sup>21</sup> National Commission on Energy Policy, *Energy Policy Recommendations to the President and 110th Congress*, pg 18 (2007).

<sup>22</sup> <http://www.brighthub.com/environment/science-environmental/articles/8202.aspx>.

<sup>23</sup> Center For American Progress, *Capturing the Energy Opportunity*, 56 (2007).

<sup>24</sup> [http://www.chevronenergy.com/our\\_solutions/](http://www.chevronenergy.com/our_solutions/).



- d. Potential Roadblocks
  - (1) Coal is the most carbon-intensive of the fossil fuels, accounting for over 80% of CO<sub>2</sub> emissions from electricity in the United States<sup>25</sup>
  - (2) Technology and storage issues: it's slated to go underground, but at some point we could run out of room or there could be leaks
  - (3) It takes energy just to capture and store the CO<sub>2</sub> making plants less efficient and the cost of building new "clean coal" plants or retrofitting existing plants is expensive
  - (4) This is a slow-moving solution; it would take roughly 10 years to fully equip all existing plants with "clean coal" technology
- e. Budgetary Considerations
  - (1) It would be a huge undertaking since most of the current CCS operations are small-scale compared to what would be needed to deploy full-scale CCS<sup>26</sup>
  - (2) Establishing a national CCS system will require not only large scale R&D and demonstration projects, but also the development of new rules to govern design and operation of geologic repositories, a process that the EPA has only begun to explore
- f. Global Links: China is building the equivalent of more than one major coal plant per week—an added capacity equal to the entire U.K. power grid every year<sup>27</sup>

#### C. PROMOTION STRATEGIES

- 1. With so many coal plants already in the United States legislation that would require new coal-fired power plants to capture and sequester CO<sub>2</sub> emissions is a step in the right direction
- 2. Requiring even existing plants to retrofit their facilities would be a leap in the right direction to reduce CO<sub>2</sub> emissions in the United States

#### D. RECOMMENDATIONS

- 1. Implement clean coal technologies such as carbon capture and sequestration (Sec. 371)**
- 2. Implement clean coal technologies such as carbon capture and sequestration.**
  - a. Sets forth provisions for certification and permitting geological sequestration as well as regulating sequestration sites.**
  - b. H.R. 2998 Subtitle B in general creates a National Strategy for the utilization of CCS. Specifically §114 sets out procedures for the creation of a Carbon Capture Sequestration and Early Deployment Program(s). This section calls for the creation of a "Carbon Storage Research Corporations" to establish and**

<sup>25</sup> Center For American Progress, *Capturing the Energy Opportunity*, 56 (2007).

<sup>26</sup> Center For American Progress, *Capturing the Energy Opportunity*, 57 (2007).

<sup>27</sup> Center For American Progress, *Capturing the Energy Opportunity*, 56(2007) quoting: Massachusetts Institute of Technology, *The Future of Coal*.

- administer a program to accelerate the commercial availability of carbon dioxide capture and storage technologies and methods, including technologies which capture and store.
3. **Require all proposed and future coal-fired power plants to implement clean coal technology including but not limited to carbon capture and sequestration.**
    - a. **H.R. 2998 includes §113 calling for a wide array of studies and reports regarding carbon sequestration: including a study of the Legal Framework for Geologic Sequestration Sites and the Establishment of a Task Force (The study indicates that the recommendation below may be a little premature and are pending a finding that the sequestration sites are indeed safe.)**
    - b. **Performance standards for new coal fired power plants are adopted. H.R. 2998 adopts performance standards for new coal powered power plants. One of the requirements is for 4 years after the various studies (a) above are finished, that plants are capturing and sequestering in the aggregate at least 12 million tons of carbon dioxide per year, calculated on an aggregate annualized basis. (H.R. 2998, §812, 2(A)(iii).**
  4. **Require all existing coal-fired power plants to retrofit their facilities with clean coal technology including but not limited to carbon capture and sequestration. H.R. 2998 adopts performance standards for new coal powered power plants, but these also apply to existing coal plants because H.R. 2998 §116 amends the Clean Air Act by inserting §812 (SEC. 812. PERFORMANCE STANDARDS FOR NEW COAL-FIRED POWER PLANTS) into the Clean Air Act. One of the requirements is for 4 years after the various studies are finished, that plants are capturing and sequestering in the aggregate at least 12 million tons of carbon dioxide per year, calculated on an aggregate annualized basis. (H.R. 2998, §812, 2(A)(iii).**

## II. RENEWABLE ELECTRICITY TECHNOLOGIES

- A. STATEMENT OF THE POLICY and sub-policies
  1. CAP. 2007. *Capturing the Energy Opportunity* at 56 quoting: *Massachusetts Institute of Technology*.
    - a. Tech neutral – all renewable sources treated the same
    - b. Allow trading of renewable NRG credits
    - c. CAP wants a 25% renewable portfolio standard (RPS) by 2025
    - d. Support FERC’s efforts to integrate market-based approaches to integrating intermittent sources to the grid
    - e. Complete systematic inventory of domestic energy sources – including renewable sources
  2. NCEP
    - a. Increase federal funding for renewable energy research and early development annually

- b. Extend federal production tax credit (PTC) for renewable energy – renew for longer periods. Some suggest that renewals should also be for longer periods than the current 2 year cycle; 4 or 5 years is recommended depending on the group
- c. Improve structure of tax credits and low interest loans to facilitate investment in this area
- d. RPS - the Federal Government should adopt a 15% renewable standard by 2020

## B. POLICY IMPLEMENTATION

### 1. Advantages

- a. One study suggests that a national 20% renewable standard by 2020 would create 185,000 jobs, save consumers \$10.5 billion and reduce CO2 by 223 million metric tons/yr.<sup>28</sup>
- b. A reduction in dependence on foreign oil could encourage the use of natural gas in more than just government fleet vehicles<sup>29</sup>

### 2. Administration

- a. Siting issues
  - (1) transmission capacity and efficiency from often rural/offshore locations to service areas
  - (2) Biomass plants must be sited near source of fuel to ensure efficient operation
  - (3) Many sources (forests for biomass and geothermic sources) are not located near population centers where power is needed
  - (4) Move production facilities to the source? Move people to the source?
  - (5) Intermittent nature, e.g., wind, solar
  - (6) environmental impact: e.g., large scale solar installations in the desert southwest conflict with potential endangered species; windmills impacts on birds
  - (7) biomass utilization: need “long-term subsidies or tax incentives to allow the nascent industry to attract necessary new investments.”<sup>30</sup> Private investors are cautious about investing where they would have to rely on federal sources for raw materials
  - (8) Regulation of utilities and tracking/purchasing from multiple small sites that may operate as co-generation facilities
- b. Opposition
  - (1) Generally “clean energy” does not appear to have many detractors, though issues may arise as to selection of specific projects in specific areas

<sup>28</sup> CAP pg. 49. Citing a 2007 study by the Union of Concerned Scientists.

<sup>29</sup> See the “Pickens Plan” at <http://www.pickensplan.com/theplan/> for the expected positive effect on use of foreign oil with switch to natural gas, among other sources of NRG.

<sup>30</sup> CAP at 52.

- (2) Local opposition, NIMBY. Some green projects have faced criticism and lawsuits from conservation organizations (ex. lawsuit over wind project in the Columbia River Gorge National Scenic Area)
- (3) Biomass utilization – a large amount of excess fuel exists in the Pacific Northwest national forests due to decades of fire suppression which could be used as fuel, many conservation groups oppose such thinning projects
- (4) Current not so clean energy sources – coal fired power plants and other fossil fuel power plants
- c. Support
  - (1) Large industry has sprung up, for example, Vestas has massive wind installations on both sides of the Columbia River in Washington and Oregon and is likely to support additional incentives to invest in clean energy
  - (2) Most policy makers/politicians see renewable energy as positive, especially Western states with their vast resources and burgeoning green power industries

C. PROMOTION STRATEGIES: As to forest biomass utilization, it is important to connect the argument for increased use of these resources in preventing catastrophic/stand replacing fire in forests that have experienced a relatively high fire return interval such that they may have fuel loads that are greatly removed from the historical range of variability. By preventing some of or lessening the severity of these fires, we are making two-fold gains by utilizing relatively clean energy and preventing massive releases of CO<sub>2</sub> to the atmosphere during the fires<sup>31</sup>

D. RECOMMENDATIONS:

1. As outlined in the promotion strategy above, the West stands in a unique position to use natural resources to generate electricity *in a sustainable* manner **through the incorporation of renewable biomass. In H.R. 2998 the definition of biomass is expanded to include a greater amount of materials including timber harvest waste.**
2. **Basically, continue the tax incentives to allow projects such as the one planned by Seneca Sawmill Company in Oregon. (Sec. 401)<sup>32</sup>**

<sup>31</sup> Science Daily. <http://www.sciencedaily.com/releases/2007/11/071101085029.htm>.

<sup>32</sup> Continue the tax incentives to allow projects such as the one planned by Seneca Sawmill Company in Oregon. Construction is scheduled to be complete by fall 2010 on the \$45 million, 18.8 megawatt facility that will have the capacity to power 13,000 homes. This facility will not require additional timber harvests to feed it, but will utilize waste materials including limbs that are typically left in the woods and burned as slash – this should reduce fire hazard associated with stockpiles of slash in the woods. This is a good example of a sustainable program that should be encouraged, but does not appear in legislation to date.

### III. BIOFUELS/NON-PETROLEUM TRANSPORTATION FUELS

#### A. STATEMENT OF THE POLICY and sub-policies

1. Focus on ethanol produced from cellulosic biomass (woody materials) over corn based ethanol
2. Biodiesel – from oil seed crops, though new tech shows promise, thermal depolymerization for example, merits further R&D efforts
3. Federal programs for R&D and cost reduction of bio-fuels is inadequate. NCEP suggests a \$1.5 billion dollar investment in R&D and cost reduction measures
4. Alternative Fuel Standard to require 25% of transportation fuels be from low carbon renewable fuels by 2025 (CAP)
5. Renewable Fuels Certification Program (CAP) – to allow consumers to know that the fuel they purchase comes from a legitimate source

#### B. POLICY IMPLEMENTATION

1. Advantages
  - a. Cellulosic biomass is associated with less erosion and improved soil fertility than that of corn-based ethanol
  - b. Possible to produce electricity in the process of converting cellulosic materials into fuel
  - c. Use of wood fiber is arguably more environmentally sound than a crop, which is essentially a monoculture, where even on intensely managed industrial forestlands, a myriad of species of plants and animals thrive – thus producing a valuable good and serving conservation needs at the same time instead of deforesting more marginal areas for traditional agriculture
2. Administration
  - a. General issues
    - (1) Cellulosic biomass based ethanol. Sufficient source of material without interrupting food production and forest products industries
    - (2) See spike in corn prices which led to increase feed costs for cattle ranchers as corn based ethanol exploded
    - (3) May require high yield crops resulting from additional R&D to be effective and not compete with food supply needs (switchgrass?)
    - (4) Cost – needs to be competitive with petroleum based fuel
    - (5) Infrastructure and distribution – need refueling/ distribution/ production facilities
    - (6) An incentive or requirement for gas stations to carry fuels containing some level of ethanol
    - (7) Impacts on environment. Concern that reducing US dependence on foreign oil will have adverse environmental impacts – coal to liquid, oil shale and tar sands concern (per NCEP)

- (8) Adoption of low-carbon fuel standard could be considered on national level to ensure domestic fuel supply is environmentally sound
    - (9) Actual size of the “footprint” from biofuels – may not be as large as some assume<sup>33</sup>
  - b. Opposition: one might be quick to assume that biofuels would be opposed by “big oil” however, many “big oil” companies have their own R&D on biofuels. They are very critical of the current use of biofuels and impacts on crops and increasing tilled acres
  - c. Support
    - (1) Likely support will come from states with large corn crops – though current proposed emphasis is not on corn as the source
    - (2) The current Administration, CAP, and allies
- C. PROMOTION STRATEGIES: focus on the potential for woody materials to be converted to biofuel – this could serve as a major future source of income for states with the latter
- D. RECOMMENDATION: There may be opportunities for wood resources and similar “waste” to become a major player in biofuel production<sup>34</sup>
  - 1. as mentioned above there has been a focus on primarily corn and other agricultural products as a means for developing biofuels. Additional source materials that do not require use of or expansion of farmland would be ideal. Biomass as mentioned above is defined in order to further the program to increase retail electricity suppliers output of renewable energy to 20% by 2039.
  - 2. Biomass other than agricultural corn, as defined in H.R. 2998 and above could further be utilized for the production of transportation fuels.**

#### IV. OPTIONS FOR EXPANDING AND ENSURING FUTURE SUPPLIES OF NATURAL GAS

- A. STATEMENT OF THE POLICY and sub policies
  - 1. Construct Alaska natural gas pipeline to access large reserves
  - 2. Invest in liquefied natural gas (LNG) receiving terminals to access global supplies
  - 3. Increase land-use planning and permitting to allow more gas exploration on public lands
  - 4. Invest in research and development to find an economical and environmental way to access methane hydrates (ice-like solid structures consisting of water and gases)
  - 5. Inventory on- and off-shore resources to inform future policy decisions

<sup>33</sup> Science Daily <http://www.sciencedaily.com/releases/2009/01/090115164641.htm>.

<sup>34</sup> **Renewable biomass: The term `renewable biomass' means any of the following: trees, logging residue, thinnings, cull trees, pulpwood, and brush removed from naturally-regenerated forests or other non-plantation forests, including for the purposes of hazardous fuel reduction or preventative treatment for reducing or containing insect or disease infestation. (H.R. 2998 §610 (16(H)(ii)).**

6. Create a National Energy Efficient Resource Standard to require natural gas distributors to meet a 10% energy savings through efficiency upgrades by 2020

B. POLICY IMPLEMENTATION

1. Advantages

- a. Natural gas can be a bridge to creating low carbon electricity production
- b. Abundant natural gas reserves have been discovered in Alaska.
- c. Global supplies of liquefied natural gas (LNG) can be accessed because LNG can be transported long distances by ocean vessel
- d. The United States has large deposits of methane hydrate which not only makes up a large, trapped, carbon reservoir; but with the development of new technologies, which trap or scrub, the carbon represents useful methane

2. Administration

a. General

- (1) The market for natural gas is volatile. When natural gas prices spike, more coal is used in lieu of costly natural gas
- (2) It is difficult to access methane hydrate deposits in an economical and environmental manner

b. Opposition

- (1) LNG receiving terminals opposed by local residents due to security concerns, vulnerability to terrorist attacks, flammability of LNG under certain conditions
- (2) Environmental concerns about extracting natural gas from Alaska and Rocky Mountains and building pipelines through fragile ecosystems
- (3) Growing consensus that renewable energies are the energy of the future
- (4) Local property owners who would be forced to sell or lease pipeline right-of-way through productive agricultural and timberlands

c. Support

- (1) Proponents of LNG maintain that hazards can be safely and adequately managed
- (2) Remove impediments to accessing natural gas deposits in the Rocky Mountains
- (3) Labor Unions which see construction of LNG terminals and pipelines as creating massive job opportunities
- (4) State and local politicians who want the income LNG construction and maintenance generate

- d. Neutrals: LNG facilities must satisfy consistency reviews under the Coastal Zone Management Act, which includes state, local, and federal agencies

e. Potential Roadblocks:

- (1) Currently, there is no infrastructure to get Alaska natural gas to lower 48 states
  - (2) The cost of the Alaska natural gas pipeline would be \$20 billion and take over 10 years
  - (3) Not likely to produce any commercially viable natural gas supplies from methane hydrates for at least 20 years
- f. Global links: LNG facilities allow for U.S. to take advantage of global market

### C. RECOMMENDATIONS

1. **Invest in renewable energies while gradually diminishing the country's dependence on natural gas (arguably this has been adopted in H.R. 2998)**
2. **Do not build the Alaska pipeline due to cost, time, and ultimate goal of diminishing natural gas dependency**
3. **Invest in research and development to access methane hydrates in an economic and environmentally sensitive manner (Sec. 424)**
4. **Create a National Energy Efficient Resource Standard to require natural gas distributors to meet a 10% energy savings through efficiency upgrades by 2020. H.R. 2998 phases in prohibitions against natural gas local distribution companies exceeding allowable emission levels requiring entities to establish compliance through**
  - a. **holding emission allowances that equal at least as great as attributable emissions and**
  - b. **using offset credits.**

### V. NUCLEAR ENERGY

#### A. STATEMENT OF THE POLICY and sub-policies

1. General issues
  - a. Address lingering generic issues associated with nuclear energy before re-initiating any new facilities
  - b. Promote nuclear energy as "clean energy" that can play a significant role in mitigating climate change
  - c. At the same time as addressing a. and b. must effectively deal with unresolved issues associated with production
2. Specific issues
  - a. Must address the high cost of building new nuclear facilities. The cost of building new plants is greater than for coal or natural gas
  - b. Must address numerous safety issues, e.g., susceptibility of nuclear facilities to terrorist attack, transportation, storage of nuclear waste
  - c. Government must meet its obligations under existing law to take possession of spent fuel. Government must overcome obstacles to storing waste. This is particularly the case given the Administration has cut funding for repository at Yucca Mountain in Nevada (in effect killing the project)



## B. POLICY IMPLEMENTATION

### 1. Advantages

- a. Nuclear energy can reduce vulnerabilities associated with reliance on petroleum and natural gas from unstable regions of the world
- b. 103 nuclear power plants provide 20% of the country's energy needs

### 2. Administration

#### a. Opposition

- (1) Growing consensus that renewable energy without nuclear will be play a large role in the future
- (2) The public has deep concerns about the cost, safety, and proliferation associated with nuclear energy. For example, the Three Mile Island Incident and Chernobyl still resonate with the American public
- (3) Must improve nuclear facilities' defenses against terrorist attack and ensure against accidents, e.g., meltdowns, lack of progress on defenses
- (4) The future of nuclear energy will be undermined if a nuclear explosion occurs at a civilian nuclear program site

#### b. Support

- (1) Nuclear energy reliance can reduce carbon emissions and mitigate climate change
- (2) If a carbon tax is implemented, nuclear energy will be a less costly alternative than natural gas and coal facilities

#### c. Potential Roadblocks:

- (1) High cost of building new nuclear facilities
- (2) Nuclear facilities are a potential target for terrorist acts
- (3) Past nuclear energy incidents (e.g. Three Mile Island, Chernobyl) still resonate with the American public
- (4) Transportation of nuclear waste presents safety and security issues. Presently, the plan for storage of nuclear waste at Yucca Mountain, at best, is in political limbo given no funding
- (5) No new nuclear facilities have been ordered in the United States since 1978.
- (6) There is a current impasse regarding storage of nuclear waste. Plan to use Yucca Mountain as a nuclear waste storage site has been repeatedly delayed and is dead during the tenure of the current Administration
- (7) Budgetary considerations: nuclear energy facilities cost much more than coal and natural gas

## C. RECOMMENDATIONS:

1. To overcome the nuclear waste impasse, invest in constructing centralized, engineered (dry-cask) spent-fuel storage facilities in at least two separate locations: one east and one west of the Mississippi River. This will reduce concerns associated with transportation **(not specifically included, but there is funding to study waste disposal methods, generally (Sec. 311))**

2. **Increase research and development on advanced nuclear fuel cycles that might increase energy yield from uranium and reduce waste-management burdens (Sec. 401)**
3. **Invest in renewable energy resources and advanced coal rather than nuclear facilities until remaining issues are remedied, including public perception, cost, proliferation, safety, and uncertainties over waste storage (implied through H.R. 2998)**

## VI. WIND ENERGY

- A. Increase subsidy from 1.5 center per kilowatt hour
- B. At the same time, reduce subsidies for fossil fuel generation to induce energy companies to increase their wind power development
- C. Greatly expand wind power generation among federal agencies (for example, the Tennessee Valley Authority only operates 3 wind turbines, which produce 2 megawatts of energy)

## **POLICY GROUP 4 – TECHNOLOGY INNOVATION/IMPROVING ENERGY EFFICIENCY**

STATEMENT OF THE POLICY: *Center for American Progress (CAP)* and *National Commission on Energy Policy (NCEP)* recommended three primary policies for increasing and improving energy efficiency:

- A. **CREATE A WHITE HOUSE NATIONAL ENERGY COUNCIL**
  1. CAP recommendations
    - a. Led by a National Energy Advisor (NEA) who reports directly to President
    - b. Mission is energy transformation of our economy and promotion of these same steps abroad
    - c. Requires fully committed presidential leadership
    - d. Creates a Clean Energy Jobs Corp to promote green collar jobs
    - e. Includes all relevant Cabinet Agency heads
    - f. Coordinates relevant policy of all agencies
    - g. Coordinate outreach with states, localities, and private sector
    - h. Coordinate with U.S. leadership and international efforts
    - i. NEA advises President on enhanced research and development
    - j. Wields the purchasing power of the federal government to promote low carbon technology
    - k. Implements new tax policies that reduce and withstand the effects of global warming
    - l. Creates dedicated federal agencies to address global warming
    - m. Creates an Energy Innovation Council to spur interagency alternative energy related research and development

- n. Develops a multi-year National Energy R&D Strategy
  - o. Finances and executes large-scale commercially credible demonstration projects
  - 2. NCEP 2004: no mention of a National Energy Council, but mentions reducing barriers to the siting of critical energy infrastructure, create incentives for R&D, and need to coordinate agencies
  - 3. NCEP 2007: no mention of a National Energy Council, but mentions tripling federal funding for R&D
- B. MAKE FEDERAL GOVERNMENT A LOW CARBON LEADER
- 1. CAP recommendations
    - a. **Implement an economy-wide (businesses, consumers, and governments alike) cap and trade program for greenhouse gases (Senate calls it a “renewable energy credit trading program”) (H.B. 2454, §702)**
    - b. Transform transportation network by increasing auto fuel efficiency standards, boosting production and availability of low-carbon alternative fuels, and invest in a low-carbon transportation infrastructure
      - (1) averages of 40 mpg by 2020, at least 50 mpg by 2030, with varying standards depending on the type of vehicle
      - (2) Develop hybrid and electric technologies
      - (3) Develop biofuels
        - (a) Increase in production and use of E85 (85% ethanol)
        - (b) “Swift shift” to cleaner cellulosic biofuels and electricity
        - (c) Target: 25% of transportation fuels be biofuels by 2025
        - (d) Require that new biofuels generate in their lifecycle fewer GH gas emissions and are sustainably produced; target = 10% reduction by 2020
        - (e) Renewable fuels certification program with transparent labeling
        - (f) “Pump or plug” mandate that requires 15% of stations to also have electricity plug, as well as biofuel option, if 15% of vehicles can run on those alternative fuels**
      - (4) Incentives to US auto manufacturers to retool their automotive fleets, such as tax benefits for reducing the average mpg for cars manufactured.**
      - (5) Consumer tax credits for purchase of more fuel efficient vehicles (H.B. 2998, §121)**
      - (6) “Green city programs” to encourage redevelopment of urban areas and reduce long commutes and reduce suburban sprawl
        - (a) Regional and interstate high-speed rail
        - (b) New investment in more diverse and inter-modal transportation networks such as local mass-transit networks
    - c. Overhaul our electric industry by:

- (1) **Improving efficiency of energy production and use, e.g., reducing losses over great distances, decreasing electricity use, and increasing efficiency of products (H.R. 2454, §101)**
    - (a) Require a 10% energy savings threshold by 2020 through efficiency upgrades to reduce transmission losses
    - (b) Major upgrade of US electricity grid (H.R. 2454, §101)**
    - (c) Encourage distributive generation
    - (d) Require efficiency upgrades for appliances (H.R. 2998, §144)**
    - (e) Require efficiency upgrades for private, commercial, and federal government buildings (H.R. 2998, §§201-204, 206)**
  - (2) Increase production and consumption of renewable energy;
    - (a) National Renewable Portfolio Standard (RPS) 25% renewable power generation by 2025
    - (b) Increase in distributive generation
    - (c) Facilitate investment by Production Tax Credit (PTC) and availability of low interest loans
  - (3) Promote the use of “advanced coal” through carbon capture and storage systems
    - (a) emission performance standard for all new coal-fired facilities
    - (b) funding for capture-and-storage technology
  - (4) Require the federal government to manage the energy transformation and structure its own operations to reduce global warming and create a low-carbon economy, e.g., requiring government buildings and autos to meet strict requirements and invite local and state governments to follow suit by offering incentives
  - (5) Encourage international global warming policies
2. NCEP recommendations:
- a. “enhance and extend tax incentives” for EPAAct05, and
  - b. ensure DOE meets requirement to issue new efficiency standards
  - c. Establish an Energy Star labeling program for buildings and corporate entities
  - d. Update building codes to require energy efficient residential and commercial new buildings
  - e. Increased attention to education re: green building
  - f. Federally fund collaborative research on efficiency technology
  - g. Vehicle efficiency
    - (1) Each class of vehicle has different standards, but lower mileage vehicles are taxed at time of sale
    - (2) Passenger car tire requirements

C. ELIMINATE TAX BREAKS AND SUBSIDIES FOR OIL AND GAS

1. CAP recommendations

- a. End all tax breaks and subsidies to oil and gas producers, including:
  - (1) Royalty relief: Companies drilling for oil and natural gas in public waters and on public lands typically pay royalties or a percentage of the revenue they generate to the government. These royalties provide needed resources to the Land and Water Conservation Fund, Historic Preservation Trust Fund, oil-producing states, and the federal treasury. Schemes that relieve oil companies of their obligation to pay these royalties will cost taxpayers at least \$3.8 billion over the next five years<sup>35</sup>
  - (2) Research and development subsidies: The oil and gas industry received an estimated \$25 million in fiscal year 2008 through the U.S. Department of Energy's Oil Technology Research and Development Program. The program focuses on the exploration and production of crude oil in the United States with goals including the promotion and enhancement of oil drilling in the Alaskan Arctic and the Powder River Basin in Wyoming. There are additional subsidies given for ultra-deepwater drilling. This provision was added to the Energy Policy Act of 2005 conference report after the conference committee was gaveled closed. It creates a \$1.5 billion oil research and development program for ultra-deepwater drilling<sup>36</sup>
  - (3) Using LIFO (last in, first out) inventory accounting, oil companies can sell the last oil (and currently most expensive) placed into their reserves first, before selling longer-held and cheaper reserves. By using this method, in the current environment of high oil prices companies are able to minimize the value of their reserves and therefore their tax burden. The Senate Finance Committee included a provision in S. 2020, the Tax Relief Act of 2005, that would have repealed this form of accounting for major oil companies. Unfortunately, this provision did not make it into the final tax reconciliation bill
- b. Redirect this approximate \$6 billion a year investment towards policies to promote low-carbon energy alternatives. This money will be redirected to fund proposals outlined in (b) of this section

D. POLICY IMPLEMENTATION

1. Administration

- a. Opposition: general
  - (1) Typical concerns are reflected in a press release by Congressman Wu of Oregon, i.e., in federalizing energy policy states may lose control and local concerns will be ignored. For example, LNG

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<sup>35</sup> Friends of the Earth, *Big Oil, Bigger Giveaways*, [http://www.foe.org/pdf/FoE\\_Oil\\_Giveaway\\_Analysis\\_2008.pdf](http://www.foe.org/pdf/FoE_Oil_Giveaway_Analysis_2008.pdf)

<sup>36</sup> *Ibid* at 8

creates grave concern in some western states. Federalizing energy takes this concern away from states and the states may be sacrificed for the federal good

- (2) Carbon capture and sequestration meets very skeptical audiences because there is a fine line between allowing R&D development for dealing with the current number of coal powered plants and technology and innovation leading to the expansion of the number of coal plants<sup>37</sup>
- (3) Also, there are concerns regarding environmental systems such as underground drinking water and the potential for the creation of dead zones in the ocean. Essentially, this may just reach the same impasse that nuclear energy has reached, i.e., can do it only if you find out how to do it in an environmentally responsible manner, which effectively might preclude it as an option<sup>38</sup>
- (4) For a summary of the argument against eliminating tax breaks and subsidies, see:  
<http://www.heritage.org/Research/taxes/wm1816.cfm>. The Heritage Foundation published this article in February 2008 discussing the 2008 House Energy Tax Bill (The Renewable Energy and Energy Conservation Tax Act of 2008, or H.R. 5351, which was never voted on in the Senate) and described the end of oil and gas tax breaks and subsidies as repeating the past mistakes of the energy policies in the late 1970s and early 1980s including the “Windfall Profits Tax” (WPT). The criticism was specifically focused on the perceived justification for the tax increases: that soaring profits in the oil and gas industries meant that those companies should and could afford to be taxed more heavily. The article goes on to describe the economic disadvantages of such action including higher prices for consumers and decreased economic growth. It also criticizes past efforts at subsidizing alternative energy sources and characterizes them as investments in failed technologies that will never become economically viable without government subsidy
- (5) Bureaucratic red tape and increased bureaucracy is expensive; there are already too many federal players in energy policy and enactment, e.g.
  - (a) Congress, the Senate and House of Representatives chambers and committees
  - (b) Office of Management and Budget (OMB)
  - (c) Environmental Protection Agency (EPA)
  - (d) Fish and Wildlife Service (FWS)

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<sup>37</sup> D. Hayes & J. Beauvais, *Carbon Sequestration* in M. Gerrard ed., *Global Climate Change and U.S. Law* 691, 716-719 (2007); P. Glaser et al., *Global Warming Solutions: Regulatory Challenges and Common Law Liabilities Associated with the Geologic Sequestration of Carbon Dioxide*, 6 *Geo. J.L. & Pub. Policy* 429 (2008).

<sup>38</sup> *ibid.*

- (e) Dept of Energy (DOE)
  - (f) Dept of Interior (DOI)
  - (g) Bureau of Land Management (BLM)
  - (h) Bureau of Indian Affairs (BIA)
  - (i) Bureau of Reclamation (BOR)
  - (j) Bureau of Mining (BOM)
  - (k) Mineral Management Services (MMS)
  - (l) Federal Energy Regulatory Commission (FERC)
  - (m) Nuclear Regulatory Commission (NRC)
  - (n) Environmental Protection Agency (EPA)
  - (o) Department of Transportation (DOT)
  - (p) Department of Labor (DOL)
- (6) Arguably there is too much overview, oversight, and delays making it more expensive and less certain for entrepreneurs to enter into renewable energy and other climate change mediation projects. As an example, wind energy siting can already take up to 8 years;<sup>39</sup> wave and tidal energy projects already face uncertainty between jurisdictional wars between MMS, FERC, and state coastal commissions
  - (7) Different agencies working on the same climate change/energy security problems create fragmented, inefficient, and non-integrated solutions
  - (8) There is some concern about the political nature of a National Energy Council
  - (9) Another approach would be to address this problem on the local level—city by city. Encourage Neighborhood District Energy, see [www.climateproject.com](http://www.climateproject.com).
- b. Opposition re: specific sub-policies
    - (1) White House National Energy Council
      - (a) State politicians who represent citizens who worry they will lose their voice via federalization about possibly dangerous energy proposals that may result in health risk and/or property value loss as well as insufficient consideration of regional differences
        - (i) LNG concerns: states do not want to lose control of siting authority
        - (ii) Midwest: wind concerns, e.g., wind turbine syndrome [physical trauma], shadow flicker [changes in light intensity]
        - (iii) Coastal states: offshore energy concerns (aesthetics, fishing, tribal)
        - (iv) Agricultural states: Farmers concerned about competition from solar
        - (v) States in general concerned about change

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<sup>39</sup> : *Kittitas Valley Wind Energy Case*.



- (b) Anti-Federalists who support energy traditionally under the control of each state
  - (c) Possibly agency heads who might see this as a threat, loss of turf
  - (2) Make Federal Government a Low Carbon Leader
    - (a) State politicians represent citizens who worry they will lose their voice via federalization about possibly dangerous energy proposals which may result in health risk and/or property value loss
      - (i) West Coast: wave energy money and biofuels (woody biogas)
      - (ii) Midwest: concern about fuel efficiency standards
      - (iii) Agricultural states: like development of renewable energy, especially biofuel technology
      - (iv) States in general concerned about change
    - (b) Anti-Federalists: some states might want stricter or less strict standards, still some like cap and trade, but all agree building codes are valuable
  - (3) Eliminate Tax Breaks and Subsidies to Oil and Gas: oil and gas industry will rigorously oppose eliminating these benefits, particularly those relating to royalty relief. The oil and gas industries spent over \$52 million on lobbyists in 2008.<sup>40</sup> This may prove to be a significant obstacle to eliminating all of the subsidies described, particularly those that are not industry-specific like the “accounting gimmicks”
- c. Neutrals
- (1) White House National Energy Council
    - (a) Obama supporters, if he supports this fully
    - (b) Democratic party since appointed by Obama, so more control
  - (2) Make federal government a low carbon leader: Republicans might disapprove of amount of money used as incentives, would rather have free markets, object to federal spending on renovations
  - (3) Eliminate tax breaks and subsidies to oil and gas companies: possible that a number of interests including Members of Congress who might otherwise oppose such legislation will choose not to mount a resistance given the unpopularity of the oil industry
- d. Support:
- (1) White House National Energy Council: Federalists as it will result in more power and uniformity if federal government pre-empts the area
  - (2) Make federal government a low carbon leader

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<sup>40</sup> <http://www.mattnetwork.com/2008/8/top-alternative-energy-lobbying-groups.cfm>.



- (a) Big business, unless seen as loading too many costs on the business sector
- (b) Entrepreneurs
- (3) Eliminate tax breaks and subsidies to oil and gas companies
  - (a) Alternative energy producers who stand to gain increased support from legislation that redirects the \$6.2 billion a year from oil and gas to alternative energy
  - (b) The House of Representatives already passed major energy legislation in 2008 with a slight bi-partisan majority (236-182) that would have eliminated most if not all of the subsidies referred to in the CAP white paper; with a larger Democratic majority in the 111th Congress and a Democrat Administration, it seems likely that ending tax subsidies to the oil and gas industry would have widespread support
- e. Potential Roadblocks:
  - (1) White House National Energy Council
    - (a) Resistance from agencies not wanting to lose power
    - (b) Resistance from states not wanting to lose control
    - (c) Congressional approval needed
    - (d) Time to inform, train, and update new agency
    - (e) Time to hire new employees and train them
    - (f) Time to create regulations, policies, and implement
    - (g) Time for energy companies to read, adjust, and fully implement
    - (h) How to coordinate with other agency heads
  - (2) Make federal government a low carbon leader
    - (a) Auto industry lobby group
    - (b) Free market advocates
    - (c) Electric industry unless they get more control and “overhaul” is to their benefit, and not allowing undesirable unreliability of renewables on system without compensation for variability
  - (3) Eliminate tax breaks and subsidies for oil and gas companies
    - (a) One significant argument that opposing interests and members of Congress are sure to make is the need for the US, as part of a national energy policy with many of the goals described by the CAP, to expand domestic oil production in an effort to decrease reliance on foreign oil. Many of the current subsidies were designed to increase and create an incentive for domestic oil production (R&D subsidies). While the effectiveness of the subsidies is open to debate, there is a significant segment of the public and Congress now in favor of efforts to increase domestic supply while at the same time supporting incentives for alternative energy

- (b) It might be argued these tax increases would reduce supplies and increase prices in the years ahead by discouraging investment in new domestic drilling for oil and natural gas.
    - (c) If a compromise needs to be made, allowing subsidies to increase the efficiency of domestic oil supply should be considered negotiable (R&D); it is not reasonable to consider royalty relief as a possibility and should not be on the table
  - f. Budgetary considerations
    - (1) White House National Energy Council
      - (a) Cost: salaries, R&D funds, training, frequent updates
      - (b) Additional costs to create and distribute policies to industry
      - (c) Additional costs and time to inform other agencies on structure
    - (2) Make federal government a low carbon leader: there are education costs, research costs, lots of loans being offered, in short – a lot of money being thrown at the problem to help people reach goals, very paternalistic, no allocation of responsibility of business to meet requirements on their own
    - (3) Eliminate tax breaks and subsidies for oil and gas companies
      - (a) These proposals will result in a net increase in government revenue
      - (b) Once conceivable argument for how it might not is that the disincentive to pursue domestic oil exploration and development might eventually result in a net loss of tax revenues and economic growth
  - g. Global links
    - (1) White House National Energy Council
      - (a) Globally could be positive since unified front/message
      - (b) Uniformity and clarification of U.S. policy from one agency
      - (c) Clear connection and model for other countries to follow/contact
    - (2) Make federal government a low carbon leader: there is a great message that the US is no longer awaiting other countries to step forward first, but are going to be the leader
    - (3) Eliminate tax breaks and subsidies for oil and gas companies
      - (a) This issue revolves around domestic tax policy- the global implications or linkages would probably be relatively small
      - (b) Symbolically, this might have an impact or at least aid the US in sending a message to other countries that our energy priorities have changed
- 2. Promotion Strategies
  - a. White House National Energy Council

- (1) states concerns for safety will be fully considered and answered; that state voices will not be lost
- (2) this is not more red tape for corporations, but instead clarification
  - (a) allows for more of a one-stop approval process
  - (b) structured so there is less delay and uncertainty for new energy projects
- (3) this is an opportunity not to be duplicating efforts across agencies
- (4) chance for uniform stance and contact point globally
- b. Make federal government a low carbon leader as current U.S. consumer behavior is not energy efficient or sustainable
  - (1) Buildings account for 39 percent of the energy used in the U.S., 71 percent of electricity use and 39 percent of CO<sub>2</sub> emission, according to the U.S. General Accounting Office (USGBC)
  - (2) “Energy efficiency represents the greatest near-term potential for carbon reduction, bridging the time for less carbon-intensive generation options to come online. The importance of energy efficiency in this regard underscores the need for a comprehensive, fact-based assessment of its achievable potential”<sup>41</sup>
  - (3) Leadership in Energy and Environmental Design (LEED) saves energy on many different levels, including energy related to operations, commuting, water treatment and the lower energy embodied within materials. In operational energy terms, LEED buildings consume approximately 25% less on average than comparable commercial buildings. By 2020, these energy savings amount to more than 1.3 million tons of coal equivalent each year, representing approximately 78 million tons of carbon dioxide (CO<sub>2</sub>) avoided emissions”<sup>42</sup>
- c. Eliminating tax breaks and subsidies for oil and gas companies
  - (1) Promotions in this issue area have, for the most part, already been made and resonated with the general public. Oil companies are wildly unpopular and infamous for their huge profits at times when consumer costs become ever more burdensome
  - (2) A better strategy would be to use the numbers (oil company profits, cost of subsidies, etc.) to convince people of the relative triviality of the subsidies to the oil companies while at the same time describing the huge significance of that same amount of money being put to different uses. This is an argument that is more relevant to the issues surrounding climate change and a need for U.S. citizens and their Government to shift their

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<sup>41</sup> Electric Power Research Institute, see: <http://www.wallstreet-online.de/img.wallstreet-online.de/diskussion/1137033-6951-6960/news-around-the-world>.

<sup>42</sup> Green Building Impact Report 2008, see: <http://www.greenbiz.com/greenbuildingimpactreport>.

priorities and choose to give incentives to energy production that has a sustainable future

3. Recommendations

a. White House National Energy Council

- (1) Council should formulate and publish greenhouse gas emissions disclosure guidelines to allow corporations to have a uniform guide
- (2) Create a series of meetings for current agency heads to discuss national energy problems. This works better since agency heads already know the problems within their field and are experts within their fields, i.e. head of DOT is likely the best to consult on how to update transportation infrastructure
- (3) Encourage a set of interagency agreements to facilitate sharing. This allows dissemination of data, federal goals, inter-agency bridge. Agency specialists maybe able to look beyond issues such as social implications
- (4) If National Energy Council is formed, business should be involved
  - (a) Corporations often design, fund, and direct large scale energy
  - (b) Corporations know the problems, delays, regulatory inefficiencies

b. Make federal government a low carbon leader

- (1) There needs to be a trade in terms of transition of Midwestern plant closures in the auto industry to plant locations for development and production of wind turbines and solar technology. Or incentives for states where the more aggressive RPS goals, the more R&D loans they will receive
- (2) Rocky Mountain Institute recommends:
  - (a) Require energy scorecards (analogous to the German “energy passport” system) for all buildings to inform landlords, lessors, and buyers. Use this scorecard to determine federal incentive or other financing qualifications. Require that a simple score or its equivalent (like a Star system) appear on each “for sale” or “for rent” sign or advertisement, just as cars and appliances now bear efficiency-rating stickers
  - (b) Immediately implement best-in-class building codes for all new buildings, but akin to a key enabler of California’s Title 24 building standards, i.e., implement a national research project to create benchmarks for different building types in different climate zones. Create a point system (an “evaporated computer model” that scores points for each building attribute, such as how much windows area with what insulating and heat-blocking properties are facing in which directions) to predict building performance in a

given climate zone. Make this point system transparent and easy to access. Explore the possibility of using it to create progressive incentives such as “feebates” for buildings (see Goal 3 for more on feebates): a new building would pay a hookup fee or get a rebate depending on how efficient it is, and the fees would pay for the rebates. Unlike energy codes, which are obsolete before the ink is dry and give no incentive to do better, feebates drive continuous improvement

- (c) “Distributed” (decentralized) electrical resources such as small-scale solar panels, recapturing heat from industrial processes, and micro-turbines (natural gas) can save costs and reduce emissions from the electricity sector. Properly recognizing their economic benefit will require regulatory and policy shifts, and should include valuing improvements to system planning, utility construction and operation (especially of the grid), and service quality, and avoided societal costs
- (d) Have FERC create uniform national standards for distributed generation interconnect, akin to Texas’s “plug-and-play rule” so any distributed generator whose interface meets the compatibility and safety standards (UL, NEC) and Institute of Electrical and Electronic Engineers (IEEE 1547) may connect to the grid with no further utility requirements
- (e) Remove discrimination against legitimate cogeneration projects, the U.S. badly lags in adopting combined-heat-and-power (CHP), long a standard practice in much of the world, and throws away waste heat at its power plants that exceeds Japan’s total energy use
- (f) Enable distributed power producers to construct and use private wires to distribute power directly to their customers (currently a factory that pays to discard huge amounts of wasted heat could very profitably use it to make power and sell it over the fence to a neighboring factory is prohibited by the utility’s monopoly power from doing so. It must, therefore, sell at a low price to the utility, which resells to the neighbor at a high price vitiating the potential value of the fuel-saving opportunity and erecting a needless barrier to competition)
- (g) Create siting, permitting, and air quality processes that are appropriate to small-scale distributed generators (especially in air-quality non-attainment areas). Create use-specific (peaking vs. baseload) emissions standards for distributed generation

- (h) Prohibit utilities' widespread fine-print conditions that vitiate "net metering" by charging customers a higher rate for buying electricity than the utilities pay for buying it back at the same time and place
  - (i) Go into a fund that would provide for loans/incentives for adding more net-metering/small scale renewable energy development
  - (j) Industrial Sector: Revise tax code to allow investments in industrial energy efficiency to be expensed, rather than capitalized. This will put such investments on a level financial playing-field with the energy costs they save and should be net stimulative to micro-and macro-economies
- c. Eliminate tax breaks and subsidies for and gas: the effectiveness of ending subsidies to the oil and gas industries is in the minutiae. Politically, it might be relatively easy to end research and development subsidies or royalty reductions. They are more visible and industry specific. There are less noticeable aspects of the tax code, however, from which the oil and gas industries can still gain huge benefits, e.g., the ability to take accelerated depreciation deductions on certain kinds of equipment, for instance, can result in significant benefits to oil companies. Truly eliminating tax breaks and subsidies for the oil and gas industries will mean, to use President Obama's words, a "line by line" analysis of the tax code and its implications for the oil industry

## **POLICY GROUP 5 - ENHANCING CAPACITY, EFFICIENCY, AND RELIABILITY OF ELECTRIC ENERGY TRANSMISSION**

I. STATEMENT OF POLICY: Due to the interstate nature of electrical transmission, increased federal regulation is necessary to increase the efficiency, security, reliability, and affordability of access to the US electrical grid. These goals can be met by setting national standards that will achieve conservation and efficient use of electricity, by encouraging distributed generation, putting in place cost-sharing plans calling for re-investment in the existing grid, and allowing regional organizations to meet those standards as they see fit.

### II. BACKGROUND

A. CAPACITY, PRODUCTION, AND DELIVERY: Forty-percent of the energy used by the US is consumed in the form of electricity — individual homes and businesses are linked to a power plant often located hundreds of miles away. This process is made possible by the US electric grid, the complex network that connects the power generator to the consumer.

The US electricity sector currently has approximately 1 million megawatts of generating capacity connected to users by 200,000 miles of high-voltage transmission lines and 5.5 million miles of distribution lines. The grid, antiquated as it is, responds to consumer demands 99.97% of the time. However, increasingly frequent disruptions cost roughly \$1.5 billion annually (\$500 per person).

- B. **REGULATORY FRAMEWORK:** The grid faces serious challenges in the near future. Most fundamentally, the current grid is ill-suited for the increased demand—expected to rise 30% by 2030—and increased power generation projected to serve that demand. Initially, the grid was built to serve local consumers, and it was run by vertically integrated and highly regulated monopolies — public and public/private companies that owned and managed the entire electrical process from generation to delivery. These local grids were connected to one another for the most part, but this connection served primarily as a hedge against emergencies — if one local grid experienced problems with its generator or couldn't meet demand, then it could pull power from outside the locality.

As electric power became a more lucrative business, generators began to expand into interstate markets. In 1935 the government began regulating wholesale power transactions with the Federal Energy Power Act. States, however, continued to regulate generation, distribution, and intrastate transmission.

This process began to change in the 1970s, as Congress took gradual steps to deregulate the electrical industry (PURPA 1978). Deregulation broke the monopolies in the hopes that market forces would drive the price of electricity down, but the policy has had mixed results at best. It has led to the fragmentation of the industry, with a myriad of competing entities involved in the generation, transmission, and distribution of electricity. The result of this industry fragmentation on the grid is that there is little incentive to invest in existing transmission lines. So the bulk of the grid has seen little improvement since the 1970s.<sup>43</sup>

Though the grid was built to serve a local level, the Energy Policy Act of 1992 (EPAct 92) — which in part sought to prevent companies owning transmission lines from denying competitors that produced cheaper electricity from using the lines — created incentives for economies of scale. Thus, the electric industry became much more centralized. Many companies merged, and the model developed whereby a large power plant would serve the bulk of the demand for a huge service area. Due to pushback from communities not wanting a power plant in their locality, these generators are often sited in rural areas, far away

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<sup>43</sup> Bill Richardson, former energy secretary in the Clinton administration, called the US grid a third-world grid. In its 2009 *Report Card for America's Infrastructure*, the American Society of Civil Engineers gave the grid a grade of D+, up from a D in its 2005.

from most consumers. Electricity must travel much longer distances under this model, which leads to congestion and stress on an aging grid as well as electrical loss and inefficiencies. Centralized generation also leaves the grid vulnerable to large-scale blackouts. Relying on just a few large-scale generators rather than many smaller generators increases the consequences if the large-scale generator happens to fail.

The final challenge facing the grid is that a lack of a uniform set of regulations or regulating body has led to the balkanization of both the grid and the electrical industry and market. The grid was set up on a local level and initially run by local and state governments. The federal government has since begun to regulate on a piecemeal basis. The result is a hodgepodge of policy and control.

III. RECOMMENDATIONS: The wisest policy seems to be a multi-faceted approach that 1) decreases demand through conservation, 2) improves the existing grid to increase efficiency, 3) promotes decentralized or distributed generation to hook up to the existing grid, and 4) creates a concrete federal regulatory structure that oversees the grid. Specific steps could include:

A. DECREASING DEMAND

1. Promoting energy efficiency at the consumer level through a series of tax incentives
2. Encouraging states and localities to pass more energy efficient building codes
3. Providing federal grants, loans, and market incentives for the electric industry to create a more transparent electric market. Consumers could see the price of electricity in real time; thus, they could curb consumption during peak and expensive times and lower demand. This is a component of Smart Grid technology.

B. IMPROVE EXISTING GRID

1. It is estimated that the installation of Smart Grid technology (which would help the industry monitor the flow of electricity better & allow consumers to become more active participants in their use) could increase the amount of electricity flowing through existing corridors by 50 to 300 percent. New legislation should provide federal grants and loans and market incentives to install Smart Grid. Planning for increased transmission capacity should:
  - a. Identify existing corridors that can support new development while working to obtain rights-of-way for new corridors
  - b. Identify existing transmission lines that can be upgraded for use with Smart Grid technology
  - c. Develop a comprehensive replacement scheme with coordinated implementation of new lines and phased demolition/abandonment of old lines
2. A fair and equitable system for grid improvement and maintenance needs to be implemented



C. DISTRIBUTED GENERATION

1. Create incentives for small-scale, locally owned power generators. Smaller generators are often far more efficient than large-scale generators. Efficiency is also gained in transmission because small-scale generators are closer to the consumer.
2. Set up Net Metering and Load Response Programs in all regions, allowing consumers who generate their own power to receive payment from the utilities for the power generated on-site.
3. Encourage municipality-owned and cooperative utilities, moving away from investor-owned utilities.

D. REGULATORY STRUCTURE

1. Require FERC to divide the grid into regions and require each region to set up a Regional Transmission Organization (RTO). RTOs should be non-profit entities that to control transmission in each region, allowing for willing sellers of power—*i.e.* generators—to connect with willing buyers—*i.e.* distributors—without a private third party involved in the transaction. Having a single operator would lead to efficiency in delivery and would allow the government to monitor the wholesale electric market. Under current law, FERC encourages RTOs, but they are not required. Investor-owned utilities will likely refrain from participation in RTOs if they are not mandated.
2. Each region should be required to adopt a plan — to be approved by FERC — that would meet the conservation and distributed generation goals set by FERC. The plan must also include a fair system to ensure that the grid is maintained and upgraded when necessary.
3. FERC should monitor the market to ensure that prices are consistent with demand and protect consumers from market manipulation.

IV. BENEFITS OF RECOMMENDATIONS: There are many positives to the above recommendations that might not be apparent, such as:

- A. Focusing on energy conservation at the outset relieves the aging grid of the stress caused by the increasing demand for electricity while the grid is being updated with Smart Grid technology and other needed capital investments. This incremental process provides greater efficiency and does so without building new transmission lines, instead it uses existing corridors. Construction of new transmission lines often meets with resistance.
- B. The siting of local, small-scale generators should be less contentious if the community knows it will be locally owned, for local use, and efficient.
- C. Distributed generation increases the reliability of the grid overall and decreases the security threat posed by an attack on a major electrical generator.
- D. Dividing the grid into regions and requiring each region to come up with its own plan to meet the federal requirements allows for local solutions to local challenges.

- E. Many electricity industry leaders are concerned about the current mix of regulatory bodies and fearful of an uncertain regulatory future. The recommendations bring stability and foreseeability to the electric market.
- V. CHALLENGES: The primary challenge seems to be the stakeholders in the current system who benefit from the status quo. Many states have been hesitant in the past to regulate the industry. Additionally, federalism concerns—*i.e.* state’s rights supporters—may hamper control of project siting. Policymakers should rely heavily on preemption and commerce clause doctrine precedent to avoid unnecessary jurisdictional battles.

Also, there will likely be push-back from the industry because it changes the dynamics of the current system dramatically and would likely call for significant capital investments on their parts. Investor-owned utilities have significant resources and may seek to derail comprehensive government control of transmission facilities. Policymakers must be mindful of inadequate investment in infrastructure; all beneficiaries should pay according to their gain. Research and development funding might be scarce. Federal dollars should be spent early and often to encourage development.

During the planning stage, various stakeholders will have varying concerns and opinions for implementation. For example, private property advocates and/or environmental interests may oppose development; siting on private land and near wilderness/significant public lands will certainly draw fire. States and local entities and federal agencies may vie for authority, thus a comprehensive policy must clearly delineate responsibilities. Policymakers must strive to gather input from all interested parties, but cannot allow disagreements to halt progress.

It is also possible that grid security and reliability could be jeopardized as changes are implemented. Policymakers should consider contingency and redundancy plans to avoid wide-ranging outages.

- VI. RECENT AND PENDING LEGISLATION ADDRESSING THESE ISSUES: Both the House and Senate have spoken on, or are considering, energy efficiency, renewable energy, existing generation, and climate change measures. Policy recommendations for each of those are discussed in other sections of this white paper. In order to avoid duplication, this section addresses only recent and pending legislation most closely related to transmission and the grid.

- A. **SENATE—S. 1733: CLEAN ENERGY JOBS AND AMERICAN POWER ACT:**
  - 1. **Tit. I § 152 authorizes up to \$20 million in grant money to advance entrepreneurship of Smart Grid technology and potentially small-scale renewable generation projects, as well as other clean energy technology businesses.**

2. **Tit. II, § 202 requires EPA to distribute the bulk of money generated from carbon emission allowances to promote energy efficiency, renewable energy, electric transmission, and Smart Grid technology.**

**B. HOUSE—H.R. 2454: AMERICAN CLEAN ENERGY AND SECURITY ACT (AS PASSED BY HOUSE):**

1. **Tit. I, Subtit. E takes steps to begin the study of incorporating Smart Grid technology into the grid. Additionally, it takes steps to implement tax incentives on rebate programs for Smart Grid-capable appliances.**
2. **Tit. I, Subtit. F**
  - a. **Directs FERC to develop national transmission planning principles. with an emphasis on renewable and carbon neutral sources, Smart Grid Technology, and distributed generation. In addition, FERC is directed to require regional planning entities to submit electric grid plans 18 months before FERC releases its planning principles. The regional planners must then update their plans every 3 years and receive FERC approval.**
  - b. **Mandates that all federal agencies and facilities be provided the option of net metering.**
  - c. **Provides loan guarantees and grant money for developing efficient transmission technology and implementing those technologies.**

VI. SOURCES:

A. US DOE

1. Office of Electricity Delivery & Energy Reliability, *Overview of the Grid*, available at <http://sites.energetics.com/gridworks/grid.html>.
2. *What a Smart Grid Means to Our Nation's Future—Policymakers*, available at <http://www.oe.energy.gov/DocumentsandMedia/Policymakers.pdf>.
3. Energy Information Administration, *The Changing Structure of the Electric Power Industry 2000: An Update* (Oct. 2000)

B. ARTICLES

1. APPA Fact Sheet, *A Brief Description of the Six Regional Transmission Organizations (RTOs)*, Feb. 2008.
2. Bluvus, Kristen, *Distributed Generation: A Step Forward in the United States Energy Policy*, 70 Albany L. Rev. 1589 (2007).
3. Sherman, Brad, *A Time to Act: A Historical Perspective on the Energy Policy Act of 2005 and the Changing Electrical Energy Market*, 31 William & Mary Env. L. & Pol. Rev. 211 (2006).
4. The Oil Drum, *The US Electric Grid: Will it be Our Undoing?* (May 2008)

C. BOOKS: Joseph P. Tomain and Richard D. Cudahy, *Energy Law in a Nutshell* (2004)

## **POLICY GROUP 6 – TRANSPORTATION**

- I. ENERGY CONSUMPTION IN THE TRANSPORTATION SECTOR CAN BE REDUCED by increasing efficiency for existing technologies, infrastructure, and fuels as well as reducing the overall and per capita volume of transportation. In working to meet these goals it should be noted approximately two-thirds of carbon emissions from the transportation sector come from private vehicle travel, the remaining one-third from freight hauling, aircraft, trains, and boats. Thus, while increased efficiency in private vehicle travel should be prioritized, the other sources (especially the transportation of freight) are significant and should be addressed as well.
  
- II. INCREASE VEHICLE FUEL ECONOMY
  - A. STATEMENT OF THE POLICY AND SUB-POLICIES
    1. Increase fuel economy moving forward – targets differ depending on the source (CAP: 40 mpg by 2020 and 55 mpg by 2030)
      - a. Develop fuel-efficient technologies (hybrid, electric, plug-in hybrid) and low-carbon biofuels
      - b. Provide incentives to US auto manufacturers to retool their fleets
      - c. Provide incentives to consumers to purchase fuel efficient cars and stop using less efficient cars
    2. Increase gas tax to curtail unnecessary driving
    3. Pair increased vehicle fuel economy with programs to reduce the number of vehicle miles driven (e.g., increased ride sharing, public transit ridership, walking, bicycling, telecommuting)
  
  - B. ADVANTAGES
    1. Reduce dependency on foreign oil and consumption of fossil fuels
    2. Reduce CO<sub>2</sub> emissions. Transportation currently accounts for about 25% of worldwide CO<sub>2</sub> emissions which will continue to grow
    3. Encourage manufacturing of and demand for practical and efficient vehicles to meet the needs of individuals in a sustainable fashion
  
  - C. ADMINISTRATION
    1. The current dual CAFE standard gives incentives to auto makers to increase the weight of vehicles so they fall under the less rigorous light truck category. Because of the boom in the light truck sector (over 50% of cars are light trucks), the total average for fuel efficiency has not improved over the last 20 years even though the average for passenger cars hovers around 30 mpg
    2. Opposition
      - a. oil lobby opposes, but the big three U.S. car manufacturers actually supported the Administration's recent tightening of CAFÉ standards and they already make efficient vehicles for Europe and other markets

- b. Some believe that the simplest solution is to implement a higher gas tax to solve excess driving issues
- 3. Potential Roadblocks
  - a. Getting support in Congress is a big issue because of the power of oil and auto industry lobby groups
  - b. Getting the public to understand that increasing fuel efficiency of cars doesn't mean that they are less safe on the road
  - c. Consumers generally opposed any increase in gas tax
  - d. Light truck usage has taken over passenger usage and thus the dual standards for CAFE may have to be reconsidered
- 4. Budgetary Considerations
  - a. U.S. automakers are in financially dire straits and currently are expected to spend more money in developing technology
  - b. Any increase in the gas tax could go toward subsidizing some of these costs
- 5. Global Links: any CAFE standard implementations should consider China's experience in this area

#### D. RECOMMENDATIONS

- 1. Others
  - a. Eliminate the dual CAFE standards and have one standard for all vehicles
  - b. Allow manufacturers to buy/sell fuel economy credits between themselves and across the light truck and passenger car classifications (currently, any credits are restricted to the manufacturer alone and to a specific classification)
  - c. Increase the penalty for failing to satisfy the CAFE standard – currently \$55 per mpg if below CAFE (the penalty was \$50 per mpg in 1985)
  - d. Eliminate tax incentives for businesses to purchase luxury vehicles. Increase consumer tax credit for highly efficient vehicles to make the vehicles more affordable to the general public. Grant tax credit based on fuel efficiency (mpg) values of the cars and not just for being a hybrid since some hybrids are not very efficient
  - e. Eliminate the cap on the number of vehicles that are eligible for the tax credit. Currently, tax credits are limited only to the first 50,000 units sold by each manufacturer
  - f. Promote early purchase of plug-in vehicles by offering a large tax credit for the first 1 million purchases, then offer a lower tax credit to others. Increase gas tax to curtail unnecessary driving
- 2. Authors
  - a. Retain the dual CAFE standards for light trucks and passenger cars, but also establish a minimum mpg target that every vehicle model must meet, regardless of their classification (e.g. All models: 22 mpg, Light trucks: 25 mpg, Passenger cars: 32 mpg)

- b. Must develop a defined method to assess whether cars are meeting the fuel efficiency standards and do not rely primarily on the automakers' testing
- c. Must also develop a plan to punish automakers who do not meet the standards. A tax does not seem to be sufficient because automakers treat it as a cost of doing business and/or pass it on to the consumer
- d. Have safety valves in place to allow US automakers to adapt to the stricter fuel efficiency standards. As an example allow CAFE offsets (similar process as used in carbon offsets) to be bought and sold between manufacturers. An offset program can be part of the short term solution (maybe first 5-10 years) but, should not be part of any long term solution because it won't encourage all manufacturers to strive for higher efficiency
- e. Introduce an appropriate CAFE standard for vehicles exceeding 8,500 lbs (these vehicles are currently exempt)
- f. To reduce anxiety about safety, establish appropriate maximum and minimum weights for passenger vehicles and light trucks to assuage safety concerns
- g. Replace all current government cars with more efficient vehicles
- h. Consider including buses under CAFE standards
- i. Provide large tax incentives for manufacturers to not only meet, but supersede the CAFE standard. For example, if a manufacturer's entire fleet has an average that is 15% above CAFE, then they get a large tax break or if a particular model line is 25% above CAFE then they get a smaller tax break
- j. Any consumer tax credit for purchasing fuel-efficient cars should be refundable to give purchasing incentives to those with lower tax liability. It is worth considering something similar for those that pay alternative minimum tax. Finally, create an incentive for businesses to purchase fuel-efficient cars
- k. In May 2009 the National Highway Transportation Association (NHTSA) proposed/promulgated regulations to cover model year 2012 to model year 2016 ultimately requiring an average fuel economy standard of 35.5 miles per US gallon (6.63 L/100 km; 42.6 mpg-imp) in 2016 (of 39 miles per gallon for cars and 30 mpg for trucks). The result is a projected reduction in oil consumption of approximately 1.8 billion barrels over the life of the program and a projected total reduction in greenhouse gas emissions of approximately 900 million metric tons. Ten car companies and the UAW embraced the national program because it provides certainty and predictability to 2016 and includes flexibilities that will significantly reduce the cost of compliance. The new rules do not dictate the size of cars, trucks and SUVs that manufacturers can produce; rather the rules require that all sizes of vehicles become more energy efficient, reduce air pollution in the form of greenhouse gas emissions and other conventional pollutants, and creates one

national policy for all automakers, instead of three standards (a DOT standard, an EPA standard and a California standard that would apply to 13 other states)

### III. LOW CARBON FUELS

#### A. STATEMENT OF POLICY and sub-policies

1. Increase alternative low-carbon fuels such as cellulosic ethanol and biodiesel<sup>44</sup>
2. Increase use of biofuels to replace oil
3. R&D to improve processes for converting to low carbon fuels and making them more viable on a commercial scale
4. Incentives to invest in production of biofuels
5. Incentives for consumers to purchase flex fuel vehicles
6. Increase the national Renewable Fuel Standard to mandate production of biofuels (i.e. 20% by 2025)
7. Specific fuels
  - a. Cellulosic Ethanol
    - (1) CAP
      - (a) Increase use of E85 and flex fuel vehicles
      - (b) Renewable Fuel Standard (RFS): 25% by 2025
      - (c) Make Volumetric Ethanol Excise Tax Credit (VEETC) a variable credit, based on price of oil
      - (d) Establish a low-carbon fuel standard to reduce lifecycle emissions from transportation fuels by 10% by 2020
      - (e) Establish a renewable fuels certification program
      - (f) Mandate 15% of fuel pumps provide low-carbon alternative fuels
    - (2) NCEP
      - (a) Re-evaluate ethanol subsidies and tariffs to direct more public funding to cellulosic ethanol, biobutanol, and diesel fuel derived from organic wastes
      - (b) Address infrastructure concerns
      - (c) Re-evaluate policies aimed at reducing U.S. oil dependence that cause more harm than good (i.e. oil shale)
  8. **Develop goals to promote clean energy technologies in vehicles and fuels that will substantially reduce the reliance of the United States on foreign sources of energy and insulate consumers from the volatility of world energy markets (S. 1462 Sec. 104)**

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<sup>44</sup> See: <http://thehill.com/leading-the-news/obamas-ethanol-dream-team-2008-12-17.html>; <http://www.technologyreview.com/energy/18227/page2/>; <http://earth2tech.com/2008/06/03/12-companies-racing-to-build-cellulosic-ethanol-plants-in-the-us/>; <http://www.ethanol-gec.org/information/briefing/20a.pdf>; <http://blog.oregonlive.com/breakingnews/2008/01/pacific-ethanol-wins-grant-for.html>; [http://www.ethanolproducer.com/article.jsp?article\\_id=2538](http://www.ethanolproducer.com/article.jsp?article_id=2538); [http://www.seco.cpa.state.tx.us/re\\_ethanol\\_incentives.htm](http://www.seco.cpa.state.tx.us/re_ethanol_incentives.htm); and [http://www.afdc.energy.gov/afdc/ethanol/incentives\\_laws.html](http://www.afdc.energy.gov/afdc/ethanol/incentives_laws.html).

**9. Petroleum is not a reliable source of fuel because it is controlled by interests that maybe adverse to those of the United States. Therefore, Flexible Fuel automobiles that use biodiesel, E85, and M85 must be increased. (H.R. 2998 Sec. 127)**

**B. ADVANTAGES**

1. Cellulosic
  - a. Lower emissions than oil and corn-based ethanol
  - b. Lower tailpipe emissions than oil
  - c. Uses less land to produce crops than corn-based
  - d. Uses land that would not otherwise be productive for food crops (also does not adversely effect food prices as corn-based ethanol does)
  - e. Uses waste products from other industries
  - f. Creates jobs in rural communities
2. Biodiesel: requires virtually no changes to current auto technology or fueling infrastructure to be used
3. Other types of biofuels that need more R&D
  - a. Biobutanol
    - (1) Similar advantages to cellulosic, but also
    - (2) more like gasoline so less corrosive on current engine technologies and more suitable for distribution through gasoline pipelines
  - b. Algae-based biofuel
    - (1) Algae naturally produces oil and can be processed to make biocrude (equivalent to petroleum). This can be further refined to make gasoline, jet fuel, diesel, and almost any other product that can be made with crude oil
    - (2) Some strains of algae produce more carbohydrates than oil and can be processed to make ethanol
    - (3) Algae can also clean up waste by processing nitrogen from wastewater and carbon dioxide from power plants
    - (4) can be grown on marginal lands that are otherwise useless for agriculture
  - c. Fuel efficient technology
    - (1) Reduces amount of fuel needed to power same or larger-sized fleet
    - (2) Means less land will need to be used for ethanol production

**C. ADMINISTRATION**

1. Cellulosic is currently in a “demonstration phase.” Demonstration facilities have been built in several states to prove to investors that it can be economically viable on a commercial scale
2. R&D
  - a. Declining budget to spend on R&D
  - b. Nuclear and oil get a big share of the R&D budget
3. Incentives to produce biofuels are expensive. Where to find resources?



4. Technology hurdles: many of the biofuels are not ready for primetime or are marginally ready if technology hurdles are not overcome may be wasting money on R&D and building infrastructure and production facilities
5. **The secretary shall promulgate regulations that require a minimum percentage of each automobile manufacturer's annual inventory of light-duty vehicles be fuel-choice enabled if the standard is a cost-effective way to achieve energy independence. Cost effectiveness is determined by future availability of the alternative fuel supply and infrastructure for delivering the fuel. (H.R. 2998 Sec. 127)**
6. Opposition
  - a. General
    - (1) Oil companies
    - (2) Auto manufacturers
  - b. Changing to cellulosic (over corn-derived) ethanol
    - (1) Corn-derived ethanol producers
    - (2) Oil companies
    - (3) Oil producing states (i.e., Alaska, Texas) (TX might be persuaded because cellulosic ethanol would benefit them due to high potential for production in TX)
7. Support:
  - a. Environmental groups
  - b. States with high potential for production of cellulosic ethanol but with low investment in oil and corn-derived ethanol production
  - c. Members of Congress (such as Oregon Senators Jeff Merkely and Ron Wyden)
  - d. Cellulosic ethanol producers
  - e. Timber companies (can sell timber waste products to use for production of ethanol)
  - f. Farmers
  - g. Rural communities
8. Potential Roadblocks
  - a. Cellulosic: conversion technology/fuel efficient vehicles: Only worthwhile/feasible if done in tandem with increases in fuel economy and improvements in biomass to ethanol conversion efficiency because current fuel demands and rates of conversion would require the use of over 100 million acres of land (impinging on food production and other land uses). With fuel efficient vehicles and better conversion rates it would only take 30 million acres of fuel crop land
  - b. Infrastructure (see 3.3): Need more fueling stations that can pump E85 which cannot be transported through pipelines, must be trucked/shipped
9. Global links: Brazil is largest producers of ethanol in world (makes up 40% of fuel); Primarily derived from sugar

10. Policy promotion strategy
  - a. Cellulosic ethanol: most potential for development: CA, IA, MN, IL, TX, and IN;
  - b. Political pressures to pander to IA corn-derived ethanol are alleviated if state opinion leaders see the benefit of cellulosic ethanol; may be able to work with corn-derived industry to switch over to cellulosic
  - c. CA: CA democrats hold important positions in both chambers of Congress: e.g., Senator Waxman, Chairman of Senate Energy Committee; Nancy Pelosi, Speaker of the House.
  - d. TX: as oil is a major industry in TX it is important that any replacement for oil benefits businesses in that state; cellulosic ethanol fits that bill
  - e. OR, WA, VT, and other green states offer good potential for support with right public opinion campaigns
  - f. Administration cellulosic support is led by the President and Energy Secretary Chu
  - g. Key selling points: job creation; economic stimulus

#### D. RECOMMENDATIONS/MODELS

1. Authors
  - a. Tax Incentives and Issues
    - (1) Production tax credit for biofuels: this would act as an incentive for investment just as it does for production of electricity from renewable sources
    - (2) Raise gas tax
    - (3) Lower gas tax for gasoline blends containing biofuels by the percentage of biofuel in the mix (i.e. lower gas tax for E85 by 85%; lower 10% ethanol blend by 10%; do not tax the sale of biodiesel)
    - (4) Provide incentives for investors to fund the building of commercial-scale production facilities
    - (5) Expand loan guarantee program at Department of Energy
    - (6) Tax incentives for production (look at a possible production tax credit like the one in place for renewable electricity producers)
    - (7) Prohibit Federal agencies from purchasing alternative fuels with lifecycle greenhouse gas emissions that exceed such emissions from the equivalent conventional fuel produced from conventional petroleum sources (S. 1462 Sec. 356)**
  - b. Research and Development
    - (1) Invest in R&D for biodiesel and biobutanol fuels
    - (2) Invest in R&D to make conversion process more efficient (produce more ethanol with less plant matter)
    - (3) Cap the amount of corn-derived ethanol that may be produced to meet the RFS; this would drive the focus of ethanol production away from corn and toward cellulosic

- (4) For corn-based fuels, invest in R&D to make conversion more efficient (reduces pressure on food prices, acreage demands, and energy spent to produce)
- (5) Transportation Roadmap Study: National Academy of Sciences shall (1) conduct a comprehensive analysis of energy use within the light-duty vehicle transportation sector; and (2) use the analysis to conduct an integrated study of the technology options for alternative fuels, including electricity, natural gas, hydrogen, and advanced technologies (including battery, hybrid and fuel cell electric, advanced internal combustion, and lean burn diesel technologies), that could reduce petroleum consumption and greenhouse gas emissions (S. 1462 Sec. 151)**
- (6) Conduct a study on the end-of-useful life options for motor vehicle batteries, including batteries used in electric drive vehicles and recommendations for stationary storage applications and recyclability design specifications (S. 1462 Sec. 155)**
- (7) Conduct a research program on manufacturing batteries and battery systems to support electric drive vehicles (S. 1462 Sec. 422)**
- c. Fuel efficient technologies (hybrid, plug-in hybrid, plug-in electric)
  - (1) R&D: carry out a research and demonstration program to evaluate the emissions from the use of alternative transportation fuels and to evaluate the effect of using alternative transportation fuels on land and air engine exhaust emissions (S. 1462 Sec. 609)**
  - (2) Consumer incentives to purchase**
  - (3) Manufacturer incentives to retool**
  - (4) Renewable energy so we are trading oil for coal (See Policy Group 3 - renewable energy)**
  - (5) Plug-in Electric Vehicles:**
    - (a) Market Assessment and Recharging Infrastructure Study for plug-in electric vehicles (S. 1462 Sec. 152)**
    - (b) establish a program to support the deployment and integration of plug-in electric drive vehicles in multiple regions of the United States through the provision of financial support to State and local governments and other entities to assist in the installation of recharging facilities for electric drive vehicles (S. 1462 Sec. 152)**
    - (c) report to Congress containing recommendations for establishing and adopting consensus or industry standards for electric drive transportation (S. 1462 Sec. 153)**
    - (d) establish a pilot program for a federal fleet of plug-in electric drive vehicles by providing grants for (A) the**

**incremental cost of precommercial plug-in electric drive vehicles for purchase or lease in an amount not to exceed \$10,000 per vehicle purchased or \$1,500 per year per vehicle leased; and (B) recharging infrastructure at Federal facilities in conjunction with the vehicles (S. 1462 Sec. 154)**

- (e) require each electric utility to develop a plan to support the use of plug in electric drive vehicles including heavy-duty electric drive vehicles. This may include private and public charging stations. Any plan could also include battery exchanges, and any other elements that the states deems necessary to support plug-in electric vehicles. (HR 2998 Sec 121)**
- (f) Each state regulatory authority and each utility shall require (A) charging equipment to be interoperable between auto manufacturers. (B) minimums for deployment of electric charging infrastructure in order to support electric vehicles. (HR 2998 Sec 121)**
- (g) Smart Grid integration shall: (A) establish protocols for integrating new plug-in infrastructure; (B) include to the extent possible, a method of individually identifying customers wherever they plug-in, in order to associate charges with the customer's electric utility account. (C) determine whether time-of-use pricing should be enabled in order to enable the plug-inn vehicles to contribute to meeting peak-load power needs. (HR 2998 Sec 121)**
- (h) the Secretary of Energy shall establish a program to provide financial assistance to automakers to facilitate the manufacture of plug-in vehicles in order to assist in reconstruction of facilities and the purchase of vehicle batteries. (HR 2998, Sec 123)**

2. Iowa laws:

[http://www.afdc.energy.gov/afdc/progs/ind\\_state\\_laws.php/IA/ETH](http://www.afdc.energy.gov/afdc/progs/ind_state_laws.php/IA/ETH)

- a. A tax credit is available to retail service stations where more than 60% of total gallons of gasoline is sold and tracked through metered pumps and blended with ethanol. Once station owners surpass the 60% threshold, they are eligible for a tax credit of \$0.025 for every additional gallon of gasoline blended with ethanol and sold during the tax year
- b. A tax credit is available to retail stations dispensing E85 for use in motor vehicles in the amount of \$0.25 per gallon sold in calendar year 2008, \$0.20 per gallon for calendar years 2009 and 2010, and \$0.10 per gallon in calendar year 2011. After 2011, the tax credit decreases by \$0.01 per year and expires after December 31, 2020

- c. Cost-share grants are available for retailers to upgrade or install new E85 or biodiesel infrastructure up to 70% of the total cost of the project or \$50,000, whichever is less. Applicants may also qualify for supplemental incentives to upgrade or replace an E85 fueling dispenser up to 75% of the cost of making the improvement or \$30,000 whichever is less
  - d. The goal of the Iowa Renewable Fuel Standard is to replace 25% of gasoline in the state with biofuels (ethanol or biodiesel) by January 1, 2020
3. OR biofuels laws:  
[http://www.afdc.energy.gov/afdc/progs/ind\\_state\\_laws.php/OR/ETH](http://www.afdc.energy.gov/afdc/progs/ind_state_laws.php/OR/ETH)
- a. Tax credit up to \$200 per year for state resident who purchases gasoline blended with 85% ethanol (E85) or biodiesel blends of at least 99% (B99) for use in an alternative fuel vehicle (AFV)
  - b. Property tax exemption for biofuel producing property
  - c. State tax credit of up to 50% for investment in alternative fuel production or infrastructure
  - d. State loan program for energy efficiency, renewable resource, and alternative fuel projects
  - e. RFS requirement of 10% ethanol, but tied to level of production so could be lower if low production
  - f. All diesel fuel sold in the state must be blended with 2% biodiesel, but tied to level of production so could be lower if low production
  - g. All state agencies and transit districts must purchase AFVs and use alternative fuels to operate their vehicles to the maximum extent possible
  - h. Forest health legislation to promote thinning of forests (which could be used to produce cellulosic fuel) is being pressed

#### IV. INVEST IN LOW-CARBON TRANSPORTATION INFRASTRUCTURE

- A. STATEMENT OF POLICY and sub-policies
  - 1. move away from greenhouse gas-producing transportation
  - 2. invest in mass-transit systems, including regional high-speed rail, light-rail, and streetcars
  - 3. promote smart growth planning of communities and urban redevelopment
  - 4. mandate 15 percent of fuel pumps to have low-carbon alternative fuels where 15 percent of vehicles can run on these alternative fuels
- B. ADVANTAGES
  - 1. Cuts America's dependence on foreign oil
  - 2. Reduces the transportation sector's CO<sub>2</sub> emissions
  - 3. Creates green jobs
  - 4. Increases the livability and viability of our urban areas

C. ADMINISTRATION

1. General
  - a. Expensive to implement as there is not much current infrastructure to use
  - b. People and cities are “hardwired” for cars making mass-transit harder to promote.
2. Opposition
  - a. A majority of oil and gas companies
  - b. A majority of auto manufacturers
  - c. Some city governments (mostly suburban cities)
3. Support
  - a. Environmental groups
  - b. Urban planners and planning groups
  - c. Large urban centers
  - d. California (voters in the state have approved a billion-dollar high-speed rail line)
4. Budget Concerns: the current economic climate is a huge hurdle for implementation. Tax revenues are down and money is being sought for many programs
5. Global Links: both Europe and Asia have extensive mass-transit systems and commuter rail. We could collaborate
6. Policy Promotion Strategy
  - a. An emphasis should be placed on what mass-transit systems and progressive transit can offer American cities and citizens
  - b. Can be pitched as another WPA project creating thousands of new jobs for out-of-work Americans
  - c. The new administration has looked to California for ideas on greening America. The fact that California is starting their high-speed rail system can be used to sell similar projects

D. RECOMMENDATIONS:

1. Reduce vehicle miles traveled per person by increasing public transit use and by creating compact communities with infrastructure designed to facilitate alternative transit options, including efficient and reliable public transit, walking, and bicycling
2. Promote and fund alternative transit and smart urban growth policies and infrastructure projects
3. Study the efficacy of various bio-fuel options and fund a nationwide distribution system **(1) carry out a research and demonstration program to evaluate the emissions from the use of alternative transportation fuels and to evaluate the effect of using alternative transportation fuels on land and air engine exhaust emissions (S. 1462 Sec. 609)**

4. Study and invest in mitigating energy consumption and carbon emissions from other segments of the transportation sector, including freight trucks, aircraft, trains, and boats<sup>45</sup>
  - a. Complete comprehensive analysis of lifecycle freight hauling energy use and carbon emissions, including consideration of:
    - (1) alternative freight hauling and fuel technologies
    - (2) potential for increased efficiency of freight hauling infrastructure, routes, and improved coordination among haulers and transported goods
    - (3) opportunities to reduce the amount of freight hauled, and especially to re-localize the production of goods and food and minimize freight hauling needs
  - b. Study other opportunities to minimize energy consumption and carbon emissions from aircraft, trains, and boats

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<sup>45</sup> According to the U.S. EPA, freight trucks, aircraft, trains, and boats account for approximately one-third of carbon dioxide emissions by the U.S. transportation sector. EPA has responded by forming the SmartWay Transport Partnership: <http://www.epa.gov/smartway/transport/index.htm>

## ADDENDUM I - RECOMMENDATIONS BY POLICY GROUP

### POLICY GROUP 1 – ENHANCING OIL SECURITY:

- A. OTHERS: Oppose all “Use It or Lose It” legislation <sup>46</sup>
  - 1. Finding the best place to drill on a piece of land is complicated and may take more than 10 years
  - 2. Exploratory drilling is expensive—oil companies have a very real incentive to take their time and get it right the first time
  - 3. It is unlikely that there is a profitable way to exploit the resources of the unused land if the company that currently holds the lease has not done so
  
- B. AUTHORS
  - 1. ANWR drilling will not ensure oil security. The EIA estimates it will not be until 20 years after opening that ANWR will reach its peak oil production of only 780,000 barrels per day.<sup>47</sup> Given this small likely output ANWR drilling should not be pursued
  - 2. Coal must be part of the national strategy to reduce oil dependency, but, coal plants must use the BACT. Using the stricter Lowest Achievable Control Technology (or Lowest Achievable Emission Rate [LAER]) for coal plants would greatly impair the use of coal as an alternative to oil.

### POLICY GROUP 2 – REDUCING RISKS FROM CLIMATE CHANGE:

- A. The most important action now is swift and thorough implementation of Clean Air Act provisions to address climate change, as ordered by the Supreme Court in *Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438 (2007)
- B. Use the EU model and the SO<sub>2</sub> trading program as a model. Both of these have been successful and Congress can learn from both the successes and failures
- C. Sell allowances to end users and use proceeds as a way to alleviate any increased financial burden caused by a rise in energy prices on the poor
- D. Give businesses two to three years before the cap-and-trade system becomes effective in order to give a grace period (much like the EU model)

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<sup>46</sup> Use It or Lose It Legislation, H.R.6251, 110<sup>th</sup> Cong. (2008), available at <http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.06251>. Our recommendation against this legislation was made in part upon the arguments of scientists and other critics which claim the numbers found in the House Natural Resources Committee Majority Staff report, *The Truth About America's Energy: Big Oil Stockpiles Supplies and Pockets Profits*, are based on non-scientific methods and results in completely unreliable numbers about the amount of oil reserves on leased federal lands. American Association of Petroleum Geologists June 23, 2008 letter to the U.S. House of Representatives discusses why the realities of domestic oil exploration and exploitation on leased federal lands are not as simplistic as the assumptions that the House makes them appear to be.

<sup>47</sup> Energy Information Administration, *Analysis of Crude Oil Production in the Arctic National Wildlife Refuge*, SR/OIAF/2008-03 (May 2008), available at <http://www.eia.doe.gov/oiaf/servicerpt/anwr/pdf/sroiaf%282008%2903.pdf>.



- E. Through a series of tax breaks and National Laboratory initiatives, make the US the world leader in green technology. By allowing other countries to take the lead, the US is losing potential market share to other countries, such as China, Germany, and France
- F. Work with the WTO, UN, and other nations to impose a tariff on other countries that do not take efforts to reduce GHG emissions. If the tariff is low enough, then this will prod nations such as India and China to address GHG emissions without the stringency of caps
- G. Work with petroleum companies to use carbon sequestration as a way to retrieve more fossil fuels while permanently storing CO<sub>2</sub>

**POLICY GROUP 3 - EXPANDING ENERGY SUPPLIES:**

- A. **ADVANCED COAL TECHNOLOGIES:**
  - 1. Implement clean coal technologies such as carbon capture and sequestration (Sec. 371)**
  - 2. Implement clean coal technologies such as carbon capture and sequestration.**
    - a. Sets forth provisions for certification and permitting geological sequestration as well as regulating sequestration sites.
    - b. H.R. 2998 Subtitle B in general creates a National Strategy for the utilization of CCS. Specifically §114 sets out procedures for the creation of a Carbon Capture Sequestration and Early Deployment Program(s). This section calls for the creation of a “Carbon Storage Research Corporations” to establish and administer a program to accelerate the commercial availability of carbon dioxide capture and storage technologies and methods, including technologies which capture and store.
  - 3. Require all proposed and future coal-fired power plants to implement clean coal technology including but not limited to carbon capture and sequestration.**
    - a. H.R. 2998 includes §113 calling for a wide array of studies and reports regarding carbon sequestration: including a study of the Legal Framework for Geologic Sequestration Sites and the Establishment of a Task Force (The study indicates that the recommendation below may be a little premature and are pending a finding that the sequestration sites are indeed safe.)
    - b. Performance standards for new coal fired power plants are adopted. H.R. 2998 adopts performance standards for new coal powered power plants. One of the requirements is for 4 years after the various studies (a) above are finished, that plants are capturing and sequestering in the aggregate at least 12 million tons of carbon dioxide per year, calculated on an aggregate annualized basis. (H.R. 2998, §812, 2(A)(iii).
  - 4. Require all existing coal-fired power plants to retrofit their facilities with clean coal technology including but not limited to carbon capture and

sequestration. **H.R. 2998 adopts performance standards for new coal powered power plants, but these also apply to existing coal plants because H.R. 2998 §116 amends the Clean Air Act by inserting §812 (SEC. 812. PERFORMANCE STANDARDS FOR NEW COAL-FIRED POWER PLANTS) into the Clean Air Act. One of the requirements is for 4 years after the various studies are finished, that plants are capturing and sequestering in the aggregate at least 12 million tons of carbon dioxide per year, calculated on an aggregate annualized basis. (H.R. 2998, §812, 2(A)(iii).**

**B. RENEWABLE ELECTICITY TECHNOLOGIES:**

1. As outlined in the promotion strategy above, the West stands in a unique position to use natural resources to generate electricity *in a sustainable* manner **through the incorporation of renewable biomass. In H.R. 2998 the definition of biomass is expanded to include a greater amount of materials including timber harvest waste.**
2. **Basically, continue the tax incentives to allow projects such as the one planned by Seneca Sawmill Company in Oregon. (Sec. 401) <sup>48</sup>**

**C. BIO FUELS/NON PETROLEUM TRANSPORTATION FUELS:**

1. There may be opportunities for wood resources and similar “waste” to become a major player in biofuel production<sup>49</sup>
2. As mentioned above, there has been a focus on corn and other agricultural products as a means for developing biofuels. Additional source materials that do not require use of or expansion of farmland would be ideal. Biomass as mentioned above is defined in terms designed to further the program to increase retail electricity suppliers output of renewable energy to 20% by 2039.
3. **Biomass other than agricultural corn, as defined in H.R. 2998 and above could further be utilized for the production of transportation fuels.**

**D. OPTIONS FOR EXPANDING AND ENSURING FUTURE SUPPLIES OF NATURAL GAS:**

1. **Invest in renewable energies while gradually diminishing the country's dependence on natural gas (arguably this has been adopted in H.R. 2998)**

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<sup>48</sup> Continue the tax incentives to allow projects such as the one planned by Seneca Sawmill Company in Oregon. Construction is scheduled to be complete by fall 2010 on the \$45 million, 18.8 megawatt facility that will have the capacity to power 13,000 homes. This facility will not require additional timber harvests to feed it, but will utilize waste materials including limbs that are typically left in the woods and burned as slash – this should reduce fire hazard associated with stockpiles of slash in the woods. This is a good example of a sustainable program that should be encouraged, but does not appear in legislation to date.

<sup>49</sup> **Renewable biomass: The term `renewable biomass' means any of the following: trees, logging residue, thinnings, cull trees, pulpwood, and brush removed from naturally-regenerated forests or other non-plantation forests, including for the purposes of hazardous fuel reduction or preventative treatment for reducing or containing insect or disease infestation. (H.R. 2998 §610 (16(H)(ii)).**

2. Do not build the Alaska pipeline due to cost, time, and ultimate goal of diminishing natural gas dependency
3. Invest in research and development to access methane hydrates in an economic and environmentally sensitive manner (Sec. 424)
4. Create a National Energy Efficient Resource Standard to require natural gas distributors to meet a 10% energy savings through efficiency upgrades by 2020. H.R. 2998 phases in prohibitions against natural gas local distribution companies exceeding allowable emission levels requiring entities to establish compliance through
  - a. holding emission allowances that equal at least as great as attributable emissions and
  - b. using offset credits.

E. WIND ENERGY:

1. Increase subsidy from 1.5 cent per kilowatt hour
2. At the same time, reduce subsidies for fossil fuel generation to induce energy companies to increase their wind power development
3. Greatly expand wind power generation among federal agencies (for example, the Tennessee Valley Authority only operates 3 wind turbines, which produce 2 megawatts of energy)

**POLICY GROUP 4 – TECHNOLOGY INNOVATION/IMPROVING ENERGY EFFICIENCY:**

A. WHITE HOUSE NATIONAL ENERGY COUNCIL

1. Council should formulate and publish greenhouse gas emissions disclosure guidelines to allow corporations to have a uniform guide
2. Create a series of meetings for current agency heads to discuss national energy problems. This works better since agency heads already know the problems within their field and are experts within their fields, i.e. head of DOT is likely the best to consult on how to update transportation infrastructure
3. Encourage a set of interagency agreements to facilitate sharing. This allows dissemination of data, federal goals, inter-agency bridge. Agency specialists maybe able to look beyond issues such as social implications
4. If National Energy Council is formed, business should be involved
  - a. Corporations often design, fund, and direct large scale energy
  - b. Corporations know the problems, delays, regulatory inefficiencies

B. MAKE FEDERAL GOVERNMENT A LOW CARBON LEADER

1. There needs to be a trade in terms of transition of Midwestern plant closures in the auto industry to plant locations for development and production of wind turbines and solar technology. Or incentives for states where the more aggressive RPS goals, the more R&D loans they will receive
2. Rocky Mountain Institute recommends:
  - a. Require energy scorecards (analogous to the German “energy passport” system) for all buildings to inform landlords, lessors, and

buyers. Use this scorecard to determine federal incentive or other financing qualifications. Require that a simple score or its equivalent (like a Star system) appear on each “for sale” or “for rent” sign or advertisement, just as cars and appliances now bear efficiency-rating stickers

- b. Immediately implement best-in-class building codes for all new buildings, but akin to a key enabler of California’s Title 24 building standards, i.e., implement a national research project to create benchmarks for different building types in different climate zones. Create a point system (an “evaporated computer model” that scores points for each building attribute, such as how much windows area with what insulating and heat-blocking properties are facing in which directions) to predict building performance in a given climate zone. Make this point system transparent and easy to access. Explore the possibility of using it to create progressive incentives such as “feebates” for buildings (see Goal 3 for more on feebates): a new building would pay a hookup fee or get a rebate depending on how efficient it is, and the fees would pay for the rebates. Unlike energy codes, which are obsolete before the ink is dry and give no incentive to do better, feebates drive continuous improvement
- c. “Distributed” (decentralized) electrical resources such as small-scale solar panels, recapturing heat from industrial processes, and micro-turbines (natural gas) can save costs and reduce emissions from the electricity sector. Properly recognizing their economic benefit will require regulatory and policy shifts, and should include valuing improvements to system planning, utility construction and operation (especially of the grid), and service quality, and avoided societal costs
- d. Have FERC create uniform national standards for distributed generation interconnect, akin to Texas’s “plug-and-play rule” so any distributed generator whose interface meets the compatibility and safety standards (UL, NEC) and Institute of Electrical and Electronic Engineers (IEEE 1547) may connect to the grid with no further utility requirements
- e. Remove discrimination against legitimate cogeneration projects, the U.S. badly lags in adopting combined-heat-and-power (CHP), long a standard practice in much of the world, and throws away waste heat at its power plants that exceeds Japan’s total energy use
- f. Enable distributed power producers to construct and use private wires to distribute power directly to their customers (currently a factory that pays to discard huge amounts of wasted heat could very profitably use it to make power and sell it over the fence to a neighboring factory is prohibited by the utility’s monopoly power from doing so. It must, therefore, sell at a low price to the utility, which resells to the neighbor at a high price vitiating the potential value of the fuel-saving opportunity and erecting a needless barrier to competition)

- g. Create siting, permitting, and air quality processes that are appropriate to small-scale distributed generators (especially in air-quality non-attainment areas). Create use-specific (peaking vs. baseload) emissions standards for distributed generation
  - h. Prohibit utilities' widespread fine-print conditions that vitiate "net metering" by charging customers a higher rate for buying electricity than the utilities pay for buying it back at the same time and place
  - i. Go into a fund that would provide for loans/incentives for adding more net-metering/small scale renewable energy development
  - j. Industrial Sector: Revise tax code to allow investments in industrial energy efficiency to be expensed, rather than capitalized. This will put such investments on a level financial playing-field with the energy costs they save and should be net stimulative to micro-and macro-economies
- C. **ELIMINATE TAX BREAKS AND SUBSIDIES FOR OIL AND GAS:** the effectiveness of ending subsidies to the oil and gas industries is in the minutiae. Politically, it might be relatively easy to end research and development subsidies or royalty reductions. They are more visible and industry specific. There are less noticeable aspects of the tax code, however, from which the oil and gas industries can still gain huge benefits, e.g., the ability to take accelerated depreciation deductions on certain kinds of equipment, for instance, can result in significant benefits to oil companies. Truly eliminating tax breaks and subsidies for the oil and gas industries will mean, to use President Obama's words, a "line by line" analysis of the tax code and its implications for the oil industry

**POLICY GROUP 5 - ENHANCING CAPACITY, EFFICIENCY, AND RELIABILITY OF ENERGY TRANSMISSION:** The wisest policy seems to be a multi-faceted approach that 1) decreases demand through conservation, 2) improves the existing grid to increase efficiency, 3) promotes decentralized or distributed generation to hook up to the existing grid, and 4) creates a federal regulatory structure that oversees the grid. Specific steps should include:

- A. **DECREASING DEMAND**
  - 1. Promoting energy efficiency at the consumer level through a series of tax incentives
  - 2. Encouraging states and localities to pass more energy efficient building codes
  - 3. Providing federal grants, loans, and market incentives for the electric industry to create a more transparent electric market. Consumers could see the price of electricity in real time; thus, they could curb consumption during peak and expensive times and lower demand. This is a component of Smart Grid technology.
- B. **IMPROVE EXISTING GRID**
  - 1. It is estimated that the installation of Smart Grid technology (which would help the industry monitor the flow of electricity better & allow consumers

to become more active participants in their use) could increase the amount of electricity flowing through existing corridors by 50 to 300 percent. New legislation should provide federal grants and loans and market incentives to install Smart Grid. Planning for increased transmission capacity should:

- a. Identify existing corridors that can support new development while working to obtain rights-of-way for new corridors
  - b. Identify existing transmission lines that can be upgraded for use with Smart Grid technology
  - c. Develop a comprehensive replacement scheme with coordinated implementation of new lines and phased demolition/abandonment of old lines
2. A fair and equitable system for grid improvement and maintenance needs to be implemented

#### C. DISTRIBUTED GENERATION

1. Create incentives for small-scale, locally owned power generators. Smaller generators are often far more efficient than large-scale generators. Efficiency is also gained in transmission because small-scale generators are closer to the consumer.
2. Set up Net Metering and Load Response Programs in all regions, allowing consumers who generate their own power to receive payment from the utilities for the power generated on-site.
3. Encourage municipality-owned and cooperative utilities, moving away from investor-owned utilities.

#### D. REGULATORY STRUCTURE

1. Require FERC to divide the grid into regions and require each region to set up a Regional Transmission Organization (RTO). RTOs should be non-profit entities that to control transmission in each region, allowing for willing sellers of power—*i.e.* generators—to connect with willing buyers—*i.e.* distributors—without a private third party involved in the transaction. Having a single operator would lead to efficiency in delivery and would allow the government to monitor the wholesale electric market. Under current law, FERC encourages RTOs, but they are not required. Investor-owned utilities will likely refrain from participation in RTOs if they are not mandated.
2. Each region should be required to adopt a plan — to be approved by FERC — that would meet the conservation and distributed generation goals set by FERC. The plan must also include a fair system to ensure that the grid is maintained and upgraded when necessary.
3. FERC should monitor the market to ensure that prices are consistent with demand and protect consumers from market manipulation.

#### E. BENEFITS OF RECOMMENDATIONS:

1. Focus on energy conservation at the outset relieves the aging grid of the stress caused by the increasing demand for electricity while the grid is

being updated with Smart Grid technology and other needed capital investments. This incremental process provides greater efficiency and does so without building new transmission lines, instead it uses existing corridors. Construction of new transmission lines often meets with resistance.

2. The siting of local, small-scale generators should be less contentious if the community knows it will be locally owned, for local use, and efficient.
3. Distributed generation increases the reliability of the grid overall and decreases the security threat posed by an attack on a major electrical generator.
4. Dividing the grid into regions and requiring each region to come up with its own plan to meet the federal requirements allows for local solutions to local challenges.
5. Many electricity industry leaders are concerned about the current mix of regulatory bodies and fearful of an uncertain regulatory future. The recommendations bring stability and foreseeability to the electric market.

## **POLICY GROUP 6 - TRANSPORTATION:**

### **A. INCREASE VEHICLE FUEL ECONOMY**

1. Others
  - a. Eliminate the dual CAFE standards and have one standard for all vehicles
  - b. Allow manufacturers to buy/sell fuel economy credits between themselves and across the light truck and passenger car classifications (currently, any credits are restricted to the manufacturer alone and to a specific classification)
  - c. Increase the penalty for failing to satisfy the CAFE standard – currently \$55 per mpg if below CAFE (the penalty was \$50 per mpg in 1985)
  - d. Eliminate tax incentives for businesses to purchase luxury vehicles. Increase consumer tax credit for highly efficient vehicles to make the vehicles more affordable to the general public. Grant tax credit based on fuel efficiency (mpg) values of the cars and not just for being a hybrid since some hybrids are not very efficient
  - e. Eliminate the cap on the number of vehicles that are eligible for the tax credit. Currently, tax credits are limited only to the first 50,000 units sold by each manufacturer
  - f. Promote early purchase of plug-in vehicles by offering a large tax credit for the first 1 million purchases, then offer a lower tax credit to others. Increase gas tax to curtail unnecessary driving
2. Authors
  - a. Retain the dual CAFE standards for light trucks and passenger cars, but also establish a minimum mpg target that every vehicle model must meet, regardless of their classification (e.g. All models: 22 mpg, Light trucks: 25 mpg, Passenger cars: 32 mpg)

- b. Must develop a defined method to assess whether cars are meeting the fuel efficiency standards and do not rely primarily on the automakers' testing
- c. Must also develop a plan to punish automakers who do not meet the standards. A tax does not seem to be sufficient because automakers treat it as a cost of doing business and/or pass it on to the consumer
- d. Have safety valves in place to allow US automakers to adapt to the stricter fuel efficiency standards. As an example allow CAFE offsets (similar process as used in carbon offsets) to be bought and sold between manufacturers. An offset program can be part of the short term solution (maybe first 5-10 years) but, should not be part of any long term solution because it won't encourage all manufacturers to strive for higher efficiency
- e. Introduce an appropriate CAFE standard for vehicles exceeding 8,500 lbs (these vehicles are currently exempt)
- f. To reduce anxiety about safety, establish appropriate maximum and minimum weights for passenger vehicles and light trucks to assuage safety concerns
- g. Replace all current government cars with more efficient vehicles
- h. Consider including buses under CAFE standards
- i. Provide large tax incentives for manufacturers to not only meet, but supersede the CAFE standard. For example, if a manufacturer's entire fleet has an average that is 15% above CAFE, then they get a large tax break or if a particular model line is 25% above CAFE then they get a smaller tax break
- j. Any consumer tax credit for purchasing fuel-efficient cars should be refundable to give purchasing incentives to those with lower tax liability. It is worth considering something similar for those that pay alternative minimum tax. Finally, create an incentive for businesses to purchase fuel-efficient cars
- k. In May 2009 the National Highway Transportation Association (NHTSA) proposed/promulgated regulations to cover model year 2012 to model year 2016 ultimately requiring an average fuel economy standard of 35.5 miles per US gallon (6.63 L/100 km; 42.6 mpg-imp) in 2016 (of 39 miles per gallon for cars and 30 mpg for trucks). The result is a projected reduction in oil consumption of approximately 1.8 billion barrels over the life of the program and a projected total reduction in greenhouse gas emissions of approximately 900 million metric tons. Ten car companies and the UAW embraced the national program because it provides certainty and predictability to 2016 and includes flexibilities that will significantly reduce the cost of compliance. The new rules do not dictate the size of cars, trucks and SUVs that manufacturers can produce; rather the rules require that all sizes of vehicles become more energy efficient, reduce air pollution in the form of greenhouse gas emissions and other conventional pollutants, and creates one



national policy for all automakers, instead of three standards (a DOT standard, an EPA standard and a California standard that would apply to 13 other states)

## B. LOW CARBON FUELS

### 1. Authors

#### a. Tax Incentives and Issues

(1) Production tax credit for biofuels: this would act as an incentive for investment just as it does for production of electricity from renewable sources

(2) Raise gas tax

(3) Lower gas tax for gasoline blends containing biofuels by the percentage of biofuel in the mix (i.e. lower gas tax for E85 by 85%; lower 10% ethanol blend by 10%; do not tax the sale of biodiesel)

(4) Provide incentives for investors to fund the building of commercial-scale production facilities

(5) Expand loan guarantee program at Department of Energy

(6) Tax incentives for production (look at a possible production tax credit like the one in place for renewable electricity producers)

**(7) Prohibit Federal agencies from purchasing alternative fuels with lifecycle greenhouse gas emissions that exceed such emissions from the equivalent conventional fuel produced from conventional petroleum sources (S. 1462 Sec. 356)**

#### b. Research and Development

(1) Invest in R&D for biodiesel and biobutanol fuels

(2) Invest in R&D to make conversion process more efficient (produce more ethanol with less plant matter)

(3) Cap the amount of corn-derived ethanol that may be produced to meet the RFS; this would drive the focus of ethanol production away from corn and toward cellulosic

(4) For corn-based fuels, invest in R&D to make conversion more efficient (reduces pressure on food prices, acreage demands, and energy spent to produce)

**(5) Transportation Roadmap Study: National Academy of Sciences shall (1) conduct a comprehensive analysis of energy use within the light-duty vehicle transportation sector; and (2) use the analysis to conduct an integrated study of the technology options for alternative fuels, including electricity, natural gas, hydrogen, and advanced technologies (including battery, hybrid and fuel cell electric, advanced internal combustion, and lean burn diesel technologies), that could reduce petroleum consumption and greenhouse gas emissions (S. 1462 Sec. 151)**

**(6) Conduct a study on the end-of-useful life options for motor vehicle batteries, including batteries used in electric drive**

- vehicles and recommendations for stationary storage applications and recyclability design specifications (S. 1462 Sec. 155)
- (7) **Conduct a research program on manufacturing batteries and battery systems to support electric drive vehicles (S. 1462 Sec. 422)**
- c. Fuel efficient technologies (hybrid, plug-in hybrid, plug-in electric)
- (1) **R&D: carry out a research and demonstration program to evaluate the emissions from the use of alternative transportation fuels and to evaluate the effect of using alternative transportation fuels on land and air engine exhaust emissions (S. 1462 Sec. 609)**
- (2) Consumer incentives to purchase
- (3) Manufacturer incentives to retool
- (4) Renewable energy so we are trading oil for coal (See Policy Group 3 - renewable energy)
- (5) **Plug-in Electric Vehicles:**
- (a) **Market Assessment and Recharging Infrastructure Study for plug-in electric vehicles (S. 1462 Sec. 152)**
- (b) **establish a program to support the deployment and integration of plug-in electric drive vehicles in multiple regions of the United States through the provision of financial support to State and local governments and other entities to assist in the installation of recharging facilities for electric drive vehicles (S. 1462 Sec. 152)**
- (c) **report to Congress containing recommendations for establishing and adopting consensus or industry standards for electric drive transportation (S. 1462 Sec. 153)**
- (d) **establish a pilot program for a federal fleet of plug-in electric drive vehicles by providing grants for (A) the incremental cost of precommercial plug-in electric drive vehicles for purchase or lease in an amount not to exceed \$10,000 per vehicle purchased or \$1,500 per year per vehicle leased; and (B) recharging infrastructure at Federal facilities in conjunction with the vehicles (S. 1462 Sec. 154)**
- (e) **require each electric utility to develop a plan to support the use of plug in electric drive vehicles including heavy-duty electric drive vehicles. This may include private and public charging stations. Any plan could also include battery exchanges, and any other elements that the states deems necessary to support plug-in electric vehicles. (HR 2998 Sec 121)**
- (f) **Each state regulatory authority and each utility shall require (A) charging equipment to be interoperable**

**between auto manufacturers. (B) minimums for deployment of electric charging infrastructure in order to support electric vehicles. (HR 2998 Sec 121)**

**(g) Smart Grid integration shall: (A) establish protocols for integrating new plug-in infrastructure; (B) include to the extent possible, a method of individually identifying customers wherever they plug-in, in order to associate charges with the customer's electric utility account. (C) determine whether time-of-use pricing should be enabled in order to enable the plug-in vehicles to contribute to meeting peak-load power needs. (HR 2998 Sec 121)**

**(h) the Secretary of Energy shall establish a program to provide financial assistance to automakers to facilitate the manufacture of plug-in vehicles in order to assist in reconstruction of facilities and the purchase of vehicle batteries. (HR 2998, Sec 123)**

2. Iowa laws:

[http://www.afdc.energy.gov/afdc/progs/ind\\_state\\_laws.php/IA/ETH](http://www.afdc.energy.gov/afdc/progs/ind_state_laws.php/IA/ETH)

- a. A tax credit is available to retail service stations where more than 60% of total gallons of gasoline is sold and tracked through metered pumps and blended with ethanol. Once station owners surpass the 60% threshold, they are eligible for a tax credit of \$0.025 for every additional gallon of gasoline blended with ethanol and sold during the tax year
- b. A tax credit is available to retail stations dispensing E85 for use in motor vehicles in the amount of \$0.25 per gallon sold in calendar year 2008, \$0.20 per gallon for calendar years 2009 and 2010, and \$0.10 per gallon in calendar year 2011. After 2011, the tax credit decreases by \$0.01 per year and expires after December 31, 2020
- c. Cost-share grants are available for retailers to upgrade or install new E85 or biodiesel infrastructure up to 70% of the total cost of the project or \$50,000, whichever is less. Applicants may also qualify for supplemental incentives to upgrade or replace an E85 fueling dispenser up to 75% of the cost of making the improvement or \$30,000 whichever is less
- d. The goal of the Iowa Renewable Fuel Standard is to replace 25% of gasoline in the state with biofuels (ethanol or biodiesel) by January 1, 2020

3. OR biofuels laws:

[http://www.afdc.energy.gov/afdc/progs/ind\\_state\\_laws.php/OR/ETH](http://www.afdc.energy.gov/afdc/progs/ind_state_laws.php/OR/ETH)

- a. Tax credit up to \$200 per year for state resident who purchases gasoline blended with 85% ethanol (E85) or biodiesel blends of at least 99% (B99) for use in an alternative fuel vehicle (AFV)
- b. Property tax exemption for biofuel producing property

- c. State tax credit of up to 50% for investment in alternative fuel production or infrastructure
  - d. State loan program for energy efficiency, renewable resource, and alternative fuel projects
  - e. RFS requirement of 10% ethanol, but tied to level of production so could be lower if low production
  - f. All diesel fuel sold in the state must be blended with 2% biodiesel, but tied to level of production so could be lower if low production
  - g. All state agencies and transit districts must purchase AFVs and use alternative fuels to operate their vehicles to the maximum extent possible
  - h. Forest health legislation to promote thinning of forests (which could be used to produce cellulosic fuel) is being pressed
- D. INVEST IN LOW CARBON TRANSPORTATION INFRASTRUCTURE
- 1. Reduce vehicle miles traveled per person by increasing public transit use and by creating compact communities with infrastructure designed to facilitate alternative transit options, including efficient and reliable public transit, walking, and bicycling
  - 2. Promote and fund alternative transit and smart urban growth policies and infrastructure projects
  - 3. Study the efficacy of various bio-fuel options and fund a nationwide distribution system **(1) carry out a research and demonstration program to evaluate the emissions from the use of alternative transportation fuels and to evaluate the effect of using alternative transportation fuels on land and air engine exhaust emissions (S. 1462 Sec. 609)**
  - 4. Study and invest in mitigating energy consumption and carbon emissions from other segments of the transportation sector, including freight trucks, aircraft, trains, and boats<sup>50</sup>
    - a. Complete comprehensive analysis of lifecycle freight hauling energy use and carbon emissions, including consideration of:
      - (1) alternative freight hauling and fuel technologies
      - (2) potential for increased efficiency of freight hauling infrastructure, routes, and improved coordination among haulers and transported goods
      - (3) opportunities to reduce the amount of freight hauled, and especially to re-localize the production of goods and food and minimize freight hauling needs
    - b. Study other opportunities to minimize energy consumption and carbon emissions from aircraft, trains, and boats

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<sup>50</sup> According to the U.S. EPA, freight trucks, aircraft, trains, and boats account for approximately one-third of carbon dioxide emissions by the U.S. transportation sector. EPA has responded by forming the SmartWay Transport Partnership: <http://www.epa.gov/smartway/transport/index.htm>