

OUTLINE OF “GLOBAL CLIMATE RESPONSE ACT OF 2007”

Recognizing that addressing global climate change could require a fundamental shift in the way America makes and uses energy, this Act establishes a three-phased program of responses through 2050 to allow the U.S. economy to transition away from the use of greenhouse gas-emitting fossil fuels: Phase I (2007-2019) emphasizes incentives, mandates and technology development. Phase II (2020-2029) establishes generation performance standards for power plants and economy-wide carbon intensity targets that are, in turn, applied to the transportation and industrial sectors as well as to the federal government. Phase III (2030-2050) establishes an enforcement mechanism to achieve a 25% reduction of U.S. greenhouse gas emissions from 2000 levels by 2030, with the expectation of dramatic reductions thereafter as a result of domestic and international technology deployment.

I. FINDINGS OF CONGRESS

- A. There is a growing consensus among scientists that greenhouse gas emissions from human activities are altering the composition of the Earth’s atmosphere in ways that are having an impact on the climate and posing risks that may prove significant for society and ecosystems.
- B. These risks justify taking actions now to reduce those emissions, but the selection of actions must take into account scientific and technological uncertainties as well as balance energy, economic, and environmental policies.
- C. Global climate change solutions should preserve a secure, economic and diverse supply of energy for the United States by encouraging investments that maintain adequate reserve margins, support economic growth, and meet customers’ needs for affordable and reliable energy.
- D. Global climate change solutions should be designed to encourage greater deployment of cost-effective energy efficiency programs; economically feasible renewable energy production; and adequate funding for research, development, and deployment of a broad spectrum of innovative technologies targeting low or zero carbon emissions and carbon sequestration at reasonable costs.
- E. A time frame for implementation of greenhouse gas emission reductions must take into account technology availability, reliability and economic feasibility in order to avoid unacceptable impacts on residential consumers and small businesses.
- F. A greenhouse gas reduction program should be phased in over a reasonable period of time to provide a balanced and effective transition for the electricity sector, although flexible interim benchmarks must be developed to ensure progress and to accommodate developments in scientific knowledge and accelerated technology development opportunities.
- G. Given the enormous transitional effects a greenhouse gas reduction program will have on the electricity sector, regulated utilities should be authorized to recover

- all costs necessary to achieve the greenhouse gas emission reduction levels mandated by this Act.
- H. Climate change is a global phenomenon that requires comprehensive, long-term and worldwide responses that address all greenhouse gas sources in all economic sectors.
 - I. A U.S. greenhouse gas emissions reduction program will be effective only if it is part of an international approach that includes all major emitting sectors in both developed and developing countries.
 - J. If international greenhouse gas emissions control regimes emerging after the first commitment period of the Kyoto Protocol in 2012 are not compatible with this Act or if major developed and developing countries fail to participate in such international regimes, self-implementing “off ramps” shall become effective.

II. PHASE I PROGRAM (2007 – 2019)

1. ELECTRIC POWER SECTOR

- a. Research and development program:
 - i. Industry-funded program to cover cost effective:
 - 1. Integrated gasification combined cycle technology;
 - 2. Carbon sequestration and other carbon capture technologies;
 - 3. Next-generation nuclear plants;
 - 4. Transmission and distribution efficiency;
 - 5. Energy efficiency and demand-side management;
 - 6. Renewable energy technologies; and
 - 7. Other innovative technologies that will reduce greenhouse gas emissions at affordable costs.
 - ii. Research and development program to be funded by a ten-year, non-bypassable wires fee of .5 mill per kilowatt hour (which would raise approximately \$1.87b annually (or alternative funding mechanism).
 - iii. Provision for U.S. government research and development funding:
 - 1. Industry program to be matched by the federal government on a 2-to-1 basis; or
 - 2. Separate U.S. government (and national laboratory) research and development programs in these fields.
- b. Federal renewable portfolio standard:
 - i. 12% renewable portfolio standard by 2025 with credit trading:
 - 1. Applied across the board to all load-serving entities, including:
 - a. Investor-owned utilities;
 - b. Municipal-owned utilities;
 - c. Rural electric cooperatives; and

- d. Federal power marketing agencies.
- 2. Sets a percentage floor, not a ceiling, so as not to preempt state programs that have higher percentage requirements.
- 3. Includes a mechanism to pay for the above-market cost of the program, such as:
 - a. Cost recovery with reasonable rates of return; and/or
 - b. A long-term extension of the Section 45 production tax credit (see below).
- 4. Defines “renewable energy resources” to include:
 - a. Wind
 - b. Solar (photovoltaic and concentrated solar power)
 - c. Geothermal
 - d. Closed loop biomass
 - e. Open loop biomass
 - f. Incremental hydropower facilities
 - g. Small irrigation power
 - h. Landfill gas
 - i. Trash combustion facilities
 - j. Wave and tidal
- 5. [Note: Bill will need a provision to resolve different state definitions of what qualifies as a “renewable” resource.]
- 6. Establishes nationwide renewable energy credits trading market.
 - ii. Provisions to earn credits under the renewable portfolio standard program through investments in quantifiable energy efficiency and demand reduction programs.
 - iii. Provisions to earn up to 20% of renewable portfolio standard credits through investments in emissions-free or emissions-neutral technologies such as advanced nuclear, integrated gasification combined cycle technology, and/or carbon-capture ready coal.
 - iv. 20% federal renewable purchase requirement by 2030.
- c. Extension of the Section 45 production tax credit for the production of renewable energy:
 - i. Ten-year extension of Section 45 production tax credit, with the amount of the production tax credit phased down to 1.5 cents/kilowatt hour by 2018.
 - ii. Alternative provision: Five-year extension of Section 45 production tax credit with provisions to add a flexibility mechanism to enable baseload renewable resources to utilize the credit:
 - 1. Establish a “deemed” placed-in-service date for qualified facilities if, prior to the “reference” placed-in-service date, the taxpayer has entered into a binding contract for

- construction of a facility designed and constructed so that at least 50% of the output is produced as baseload power.
2. Rather than receiving the full ten years of production tax credit, the taxpayer loses one year of credits for each year the facility is placed in service beyond the statute's reference placed-in-service date.
 3. This provision would cover geothermal, incremental hydropower facilities, small irrigation power closed loop biomass, open loop biomass, landfill gas, and trash combustion facilities.
- d. Energy efficiency incentives and mandates:
- i. Extend and enhance the energy efficiency tax incentives in the Energy Policy Act of 2005:
 1. New tax credits for home retrofits that save energy:
 - a. Sliding scale from \$800 for 20% energy savings up to \$2,000 for 50% energy savings.
 - b. Alternative: Tax credit for 10% of the cost of the retrofit equipment, up to a maximum of \$1,000 annually.
 2. Extend the tax deduction for energy efficient property installed in commercial buildings:
 - a. This covers:
 - i. heating and cooling systems;
 - ii. Interior lighting systems; and
 - iii. Insulation.
 - b. Increase the amount of the deduction from \$1.25 per square foot to \$2.25 per square foot.
 3. Extend the tax credit for the purchase of certain residential energy efficient equipment. The credits range from \$50 to \$300, depending on the equipment.
 4. Extend the \$2,000 tax credit for a new owner-occupied home that is certified to have heating and cooling energy consumption at least 50% below such consumption for a comparable existing home.
 - ii. Mandates for efficiency improvements in:
 1. Electricity transformers;
 2. New fossil electric generation plants;
 3. Appliances and other consumer products;
 4. Residential and commercial buildings.
 - iii. Requirement that states review their regulatory procedures and report to the Department on Energy on measures to update ratemaking principles to encourage investments in energy efficiency.
 - iv. Phase-out of SF₆ from electric breakers.

- e. Provisions to advance zero-emission and low-emissions baseload technologies:
 - i. Requirement to issue uniform federal regulations related to sequestration and storage of carbon dioxide from electric generating plants.
 - ii. Requirement to issue federal regulations related to the interstate transportation of carbon dioxide through pipelines and establishment of federal siting authority over these pipelines.
 - iii. Federal “Price-Anderson”-type indemnification of approved carbon sequestration activities.
 - iv. Federal study of alternatives for 500-year (not 10,000-year) safe management or reprocessing of spent nuclear fuel with fast track presidential recommendation to Congress for action by 2012.
 - v. Consideration of benefits of hydropower with regard to climate change as part of hydro relicensing process.

2. TRANSPORTATION SECTOR

- a. Fuels:
 - i. Increase renewable fuel standard requirements to 50 billion gallons of ethanol and biodiesel per year by 2030.
 - ii. Modifications to the volumetric ethanol tax credit to provide credits proportional to energy inputs in the ethanol refining process.
 - iii. Phase-in requirements for fuel distributors or large oil companies to install E-85 capable pumps at their stations, increasing the number by 5% every year over the next decade based on facility sales volume.
 - iv. Incorporate provisions of the “Coal-to-Liquid Fuel Promotion Act of 2007,” including loan guarantee, tax credits, and other incentives for building coal-to-liquids plans that would use coal to make diesel fuels.
- b. Vehicles:
 - i. Increased mileage – three alternatives:
 - 1. Beginning in 2010, increase Corporate Average Fuel Economy (CAFE) requirements by requiring passenger cars to obtain an average of 40 miles per gallon by 2020, with Secretary of Transportation discretion to reduce or increase requirement by 10 percent based on analysis of vehicle safety, technology, national security and climate science considerations. OR
 - 2. Establish “fee-bates” system for auto manufacturers whereby consumers receive rebates or pay premiums for vehicles based on a carbon-emission based fuel economy standard established by vehicle class. OR

3. Structural reform of Corporate Average Fuel Economy standards, setting targets within classes of vehicles rather than fleet-wide targets.
 - ii. Require that by 2020 all vehicles sold in the United States must be E-85 compatible, together with five-year benchmarks to achieve this goal (either increase flexible fuel vehicle production by 10% annually starting in 2010 or achieve a 50% mark by 2015).
 - iii. Require that by 2012 all federal fleet vehicle purchases, except those used for military or law enforcement purposes, must:
 1. Exceed average CAFE standards by 25%; and
 2. Be E-85 compatible.
 - iv. Provide tax credits to manufacturers that retool their factories to make hybrids, plug-in hybrids, and flexible fuel vehicles.
 - v. Raise the cap on consumer tax credits for the purchase of hybrids and advanced diesel vehicles.
 - vi. Tax credit for using renewable electricity to charge plug-in hybrid electric vehicles.
- c. Ground Freight – Rail and Truck Carriers:
- i. Mandate the Department of Transportation to establish a program to ensure that railroads and trucking companies (consisting of more than five vehicles) increase the fuel efficiency of locomotives and trucks and establish industry practices that significantly reduce greenhouse gas emissions. Such program shall include:
 1. Fuel efficiency standards;
 2. Engine efficiency standards;
 3. Improvement of environmental management systems and operations with an emphasis on reducing idling time for trucks and locomotives; and
 4. Recycling of oil and aluminum.
 - ii. Establish a research and development program to further develop and implement existing and new technologies in a safe and cost-effective manner. Goals of this program shall include:
 1. Reduce greenhouse gas emissions from new trucks and locomotives;
 2. Provide power during idling conditions, allowing engines to be shut down; and
 3. Fuel saving and reduction of exhaust emissions.
- d. Air Transportation:
- i. Findings: Aircraft-related greenhouse gas emissions are expected to increase by as much as 60 percent by 2030 and that the aviation industry will contribute between 6-9 percent of global greenhouse gas emissions by 2030.
 - ii. Direct the Federal Aviation Administration to establish a program with the goal of improving energy efficiency by an average of

greater than 1% annually through 2015, as measured by a three-year moving average, beginning with the three-year average of 2002-2003. Such program shall include:

1. Fuel efficiency standards;
 2. Engine efficiency standards;
 3. Ground support equipment efficiencies;
 4. Traffic management improvements;
 5. Deployment of low-emission technologies in airport operations; and
 6. Changes to fleet average fuel economy for future aircraft.
- iii. Establish a research and development program to further develop and implement existing and new technologies in a safe and cost-effective manner in the areas of:
1. Reduction of greenhouse gas emissions from future aircraft;
 2. Efficient engine technologies, advanced aerodynamic shapes and structures, autonomous avionics, and low-emissions alternative power;
 3. Congestion mitigation programs to reduce aviation-related emissions on the environment;
 4. Alternatives to liquid fossil fuels for aviation fuel; and
 5. Airport operations and ground support.

3. INDUSTRIAL SECTOR

- a. Mandate the U.S. Environmental Protection Agency and the Department of Energy to develop a program for each of the major emitting manufacturing industries (chemicals, cement, metals, and oil), with the goal of further improving the energy efficiency of their operations as well as establish practices that significantly reduce the intensity per unit of output of their greenhouse gas emissions.
- b. Establish a research and development program to further develop and implement existing and new technologies in a safe and cost-effective manner.

4. FEDERAL GOVERNMENT POLICY

- a. Conduct a comprehensive review of all federal policies and programs including tax, transportation, resource, agriculture and housing to identify recommendations to slow, stop and reverse increases in greenhouse gas emissions.
- b. Every U.S. government agency shall improve energy efficiency and reduce greenhouse gas emissions by 3% annually through the end of fiscal year 2015 or 30% by the end of fiscal year 2015 relative to a 2003 baseline.

III. PHASE II PROGRAM (2020 – 2029)

1. ESTABLISHMENT OF ECONOMY-WIDE CARBON INTENSITY TARGETS

- a. Level and schedule of target carbon intensity targets.
- b. Establish a safety valve allowance mechanism and price escalation schedule.
- c. Require the President to issue reports every five years beginning in 2015 as to whether to reduce or increase carbon intensity targets by plus or minus 10% based on technology, national security, economic, international cooperation, and climate science considerations.

2. ESTABLISHMENT OF GENERATION EFFICIENCY PERFORMANCE STANDARDS FOR ELECTRIC GENERATION FACILITIES

- a. Establish a federal generator efficiency standards program measured in terms of greenhouse gas intensity, applicable to all U.S. fossil fuel-based electricity and steam producers (when in conjunction with electricity production), both existing and proposed.
- b. “Greenhouse gas intensity” means the measure of greenhouse efficiency as the emission rate of greenhouse gases from fuel burning expressed in pounds of carbon dioxide equivalents per megawatt-hour sent out. For cogeneration, this is discounted for steam/heat production.
- c. Model the program after the successful Australian program (see <http://www.greenhouse.gov.au/ges/index.html>).
- d. In 2015, the Secretary of Energy shall:
 - i. Promulgate a minimum generation performance standard for all electric generation facilities based on fuel type at ___% of efficiency of units in operation as of the date of enactment of this act.
 - ii. Determine best practice greenhouse efficiency standards for existing and refurbished power and cogeneration plants;
 - iii. Determine best practice greenhouse efficiency standards for new power and cogeneration plants;
 - iv. Determine the actual greenhouse intensity for power plants based on total fuel burning over a twelve month period and the corresponding energy output as electricity, and steam if applicable.
- e. The Secretary or Energy shall review and reassess these standards every five years.
- f. These standards shall apply to all grid and off-grid generating plants that meet all of the following criteria:
 - i. 25-megawatt electrical capacity or above;
 - ii. 50-gigawatt per annum electrical output; and

- iii. Capacity factor of 5% or more in the last three years.
 - g. Beginning in 2020, require all electric generating facilities to meet minimum generation performance standards for fuel conversion efficiency based on fuel type.
 - h. Increase generation performance standards for fuel conversion by 10% for each succeeding five-year interval.
- 3. ESTABLISHMENT OF MILEAGE PERFORMANCE STANDARDS FOR PASSENGER VEHICLES
 - a. Beginning in 2020, require all vehicles to meet minimum carbon-based mileage performance standards based on vehicle class.
 - b. Increase generation performance standards for carbon-based fuel economy by 10% for each five-year interval.
- 4. ESTABLISHMENT OF ENERGY EFFICIENCY STANDARDS FOR COMMERCIAL AIRCRAFT – need placeholder
- 5. ESTABLISHMENT OF ENERGY EFFICIENCY STANDARDS FOR RAIL TRANSPORTATION – need placeholder
- 6. ESTABLISHMENT OF ENERGY EFFICIENCY STANDARDS FOR INDUSTRIAL SECTOR – need placeholder
- 7. FEDERAL GOVERNMENT REQUIREMENTS
 - a. Beginning on January 1, 2020, the federal government is required to take physical title and assume all legal responsibility for spent commercial nuclear fuel.
 - b. Should the federal government not meet the obligation to take physical title and assume all legal responsibility for spent commercial nuclear fuel, it shall make a lump-sum payment to utilities for all monies paid into the nuclear trust fund since its creation, plus interest.

IV. PHASE IV PROGRAM (2030 – 2050)

- 1. DETERMINATION OF APPROPRIATE METHODOLOGY FOR ACHIEVING MANDATORY REDUCTIONS IN U.S. GREENHOUSE GAS EMISSIONS
 - a.. By July 1, 2025, the President shall submit a legislative recommendation to Congress on the enforcement mechanism to achieve a 25% reduction of U.S. greenhouse gas emissions from 2000 levels by 2030.
 - b. The President's recommendation shall take into account technology availability, reliability and economic feasibility.

- c. Congress shall consider the President's recommendation under "fast track" legislative procedures within 90 days of the submittal of the recommendation.
- d. Through the enforcement mechanism, the United States shall achieve additional emissions reductions of 10% in each succeeding five-year period.
- e. Authorize regulated electric utilities to recover all reasonable costs necessary to achieve the greenhouse gas emission reduction levels mandated by this Act.
 - i. Options for recovery of cost could include:
 - 1. A non-bypassable wires charge;
 - 2. Mandatory "check off" program (similar to programs enacted for heating oil, propane and milk industries);
 - 3. Carbon tax; or
 - 4. Adoption of Public Utility Regulatory Policies Act's "avoided cost" requirement.
 - ii. Non-bypassable wires charge:
 - 1. Adopt language from the Atomic Energy Act, which imposes fees to recover nuclear decommissioning costs.
 - 2. Cost recovery in rates to be approved by the Federal Energy Regulatory Commission for wholesale costs and states for retail costs.
 - 3. Funds, once collected, will be used by utilities to offset costs incurred in complying with federal mandates to reduce emissions through the use of:
 - a. Carbon capture and sequestration;
 - b. Integrated gasification combined cycle technology (IGCC) technologies and permitting costs; and
 - c. Other technology deployment.
 - 4. A non-bypassable wires charge could be implemented in addition to a cap and trade system or a carbon tax to allow utilities to recover costs.
- f. In 2025 and in each succeeding five-year period, the President may reduce or increase the carbon emissions reduction target by plus or minus 10% based on technology, national security, economic, international cooperation and climate science considerations.
- g. Preemption versus grandfathering:
 - i. Ideally, federal legislation in this area would preempt all state laws or regional regimes that regulate greenhouse gas emissions.
 - ii. Politically, many legislators are attached to what their states have enacted, even if those programs go beyond what could likely be achieved through federal legislation.
 - iii. Short of complete preemption, adopt a grandfathering provision:
 - 1. Grandfather in programs already adopted at the state level thus far, without permitting other states to adopt additional standards.

2. Use as a model the provisions of the Energy Policy Act of 2005, which recognized state actions under Section 111(d) of the Public Utility Regulatory Policies Act if states had considered certain issues within a certain time frame.

2. COORDINATION WITH INTERNATIONAL GREENHOUSE GAS EMISSIONS REDUCTIONS PROGRAMS

- a. The President shall take appropriate measures to ensure that any international greenhouse gas emissions control regime emerging after the first commitment period of the Kyoto Protocol in 2012 is compatible with this Act.
- b. If, by July 1, 2015, the President notifies Congress that major developed and developing countries have failed to participate in such an international greenhouse gas emissions control regime, this Act shall be null and void effective January 1, 2016.
- c. Alternative provision: Use the “soft linkage” in Senator Bingaman’s climate bill:
 - i. By 2016, and every five years thereafter, an interagency group appointed by the President shall study and make recommendations relating to all of the emission reductions programs established by this Act in light of a review of international greenhouse gas emission reduction actions and programs:
 1. For OECD countries, the reviewers shall determine whether actions taken were comparable to those taken in the United States.
 2. For rapidly developing countries, the reviewers would determine whether the actions taken were “significant, contemporaneous, and equitable” as compared with actions taken in the United States.
 - ii. The review could culminate in a recommendation to modify the requirements imposed by this Act on U.S. greenhouse gas emitters.
- d. Alternative provision: Imposition of a border tax, tariff or other cost or duty on all imported products from any country:
 - i. Without a mandatory greenhouse gas emissions control regime or with a less stringent one than the United States; or
 - ii. Which has imposed such cost on any U.S. product due to claims the United States lacks sufficient mandatory greenhouse gas emissions controls or is not a signatory to any existing or future international agreement to reduce greenhouse gas emissions.