



Economic Stimulus, Recovery, and Climate Mitigation: Policy and Program Opportunities from the States

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The Center for Climate Strategies (CCS) is a nonpartisan, nonprofit partnership organization that helps public officials, private stakeholders, and technical experts develop and implement strategies to reduce greenhouse gas pollution and adapt to a changing climate. We support leadership actions and build solutions by integrating consensus building and cutting-edge technical assistance. Our interdisciplinary team has a full range of experience and expertise in environmental, economic, energy, transportation, and natural resource policy issues for addressing complex problems related to global warming. Our support of climate actions by U.S. states is particularly important because they provide critical leadership and proven solutions to climate change for our nation's leaders. Please contact Tom Peterson at tdp1@mac.com or Jeff Wennberg at wennberg.ccs@gmail.com with any questions about this paper, or with requests for assistance.

Economic Stimulus, Recovery, and Climate Mitigation: Policy and Program Opportunities from the States

Key Finding

A review of 20 state climate action plans reveals that dozens of existing federal and hundreds of existing state and local programs could be effective vehicles for economic stimulus funding that would reduce emissions, create jobs, increase energy security and generate hundreds of millions of dollars in secondary economic stimulus and recovery.

Abstract

Approximately 900 greenhouse gas (GHG) mitigation policy recommendations contained within 20 state climate action plans were studied to qualitatively assess whether the investment of federal stimulus funding would meet the purposes of economic stimulus and recovery, job creation and greenhouse gas mitigation.¹ Policies were assembled into 80 ‘bundles’ and organized by sector, existing program (if any) and the level of government with jurisdiction. Bundles were then graded according to six measures of economic stimulus and recovery, and GHG mitigation potential. The study found that there are up to several dozen policy opportunities that could provide a rapid and effective stimulus to the economy; create substantial new employment; leverage significant state, local and private funds in addition to the federal investment; produce hundreds of millions of dollars in secondary economic benefits and significantly reduce GHG emissions at low cost while also initiating long term economic recovery.

Overview

At the turn of the New Year the United States is facing unprecedented challenges. The Obama Administration and incoming Congress must take immediate action to stabilize the economy in order to mitigate the duration and severity of the current recession, and at the same time address the challenges posed by climate change and energy security. Few would argue that without a healthy and growing economy the resources needed to address other priorities would be severely constrained. Many might therefore assume that the challenges posed by our economic woes take precedent over all others. However, an analysis of the climate mitigation planning completed by 20 states indicates that strategic investments in a wide array of GHG mitigation measures will not only reduce emissions and improve energy security, but will offer a major stimulus to the American economy.

A recent CCS White Paper, “*Climate Policy as Economic Stimulus: Evidence and Opportunities from the States*,”² projects that by implementing a climate plan involving all U.S. states and economic sectors, the U.S. economy would realize a net cumulative savings to of \$535.5 billion between 2009 and 2020. Furthermore, the GHG emissions reductions achieved by this effort

¹ Some major GHG reduction options were not analyzed quantitatively, or only partially (for instance, for GHG benefits but not costs) that could have important stimulus and recovery effects. These include certain transit and smart growth policies with major infrastructure investment and efficiency implications.

² “[Climate Policy as Economic Stimulus: Evidence and Opportunities from the States](#),” CCS Whitepaper Discussion Draft, November 2008.

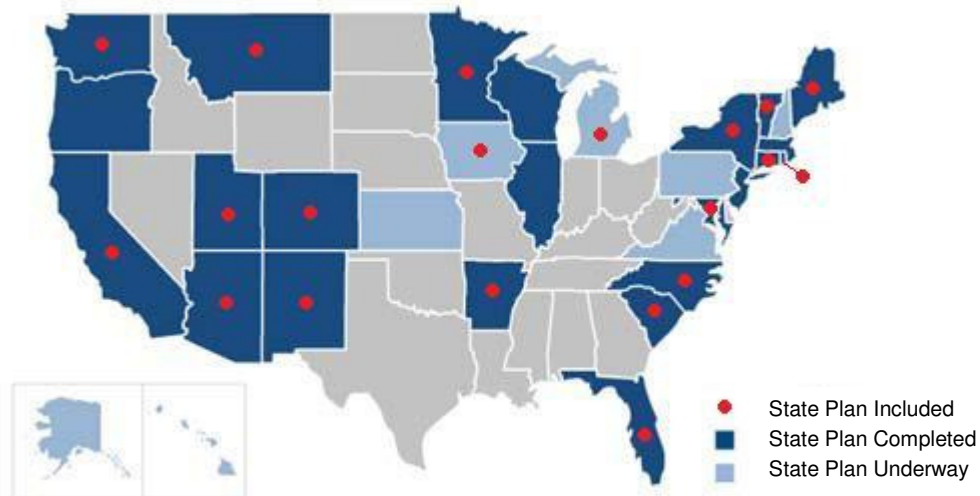
would, if fully implemented at an equivalent level in all 50 states, reduce emissions to below 1990 levels by 2020. The study concluded “. . . that by adopting a portfolio of climate change mitigation policies touching every sector of the economy, the U.S. can stimulate the economy toward recovery, cut consumption of fossil fuels and reduce GHG emissions simultaneously.”

This paper builds on that work by cataloging 80 specific policy ‘bundles’ contained within these state plans according to the level or levels of government with the authority to implement them. The policies are then matched with existing federal or federally-funded programs to produce a menu of opportunities for stimulus investments that would 1) create a rapid injection of capital and investment; 2) maximize opportunities for leveraging federal funding with state, local and private investments; 3) dramatically reduce greenhouse gas emissions; 4) improve energy security by reducing dependence on fossil fuels; 5) improve health through air quality improvements; and 6) produce significant additional economic benefits by reducing energy costs, increasing productivity and spurring employment.

Stimulus Potential

More than 30 states have developed or are in the process of developing climate action plans. Most are built on a model of open, stepwise, democratic, fact based decision-making that identifies and designs climate policy options as a driver of economic benefit, while also stabilizing GHG emissions at levels consistent with science-based stabilization scenarios (typically at or below 1990 emissions levels by 2020). CCS has led or been involved in the facilitation and technical support of nearly all of these planning processes and therefore has access to the most comprehensive multi-state database of GHG mitigation policy designs and analyses. Hundreds of recommended policies from twenty state plans were examined for this study, representing all geographical regions of the nation and a wide diversity of demographics.

Figure 1. States with climate action plans included in this study.



A growing body of economic analysis indicates that these climate policies could have a significant and beneficial effect on job creation and overall economic development. Two important forces are at play.

- First, actions that reduce energy demand and infrastructure expenses save money and, by freeing up scarce capital for other uses, have an expansionary effect on the economy. In many cases they also have an economic stimulus effect by investing in labor-intensive installation of new energy efficient equipment, buildings and facilities.
- Second, actions that shift energy supply away from conventional fossil fuel sources to renewable and alternative sources typically result in proportionately higher use of labor per unit of energy produced. The higher cost of production for some of these options also results in more highly leveraged investments in job creation. This is even more pronounced when new indigenous energy supplies replace imported energy.

The analysis of state climate action plans shows that economic development benefits can result from specific sector-based policies and measures for these reasons, and others.

Actions from these programs are listed in the Table 5. This is a summary gathered from states with climate action plans. The table lists examples of the state, federal and local programs that are already in existence, and indicates at which level of government the program typically runs. The table also indicates the subset of the 20 states surveyed that already have these programs in place or have proposed such programs in their climate action plans. These programs are organized by source sector.

Policy Analysis

State level climate change mitigation plans typically recommend between 30 and 60 specific policies and measures for adoption and implementation. Some recommendations seek to implement a program already in effect in another state by emulation. Others seek to enhance or strengthen policies and programs already in existence in the planning state, and still others are brand new ideas requiring varying degrees of innovation. While each state's plan is unique, there are a number of policies that are common among many of the plans.

Of the approximately 900 policies recommended by the 20 state plans studied, we found 80 unique policy 'bundles'. For example, our study found that 17 of the 20 states recommended the adoption or enhancement of a Renewable Portfolio Standard (RPS) for electricity generation. A slightly different group of 17 states recommended adoption of the so-called "California Clean Car" GHG emissions standards. At the other extreme, 16 of the 80 policies were recommended by only one state. The median number of states endorsing a policy from the list was 3.

Policies were also examined for the level of government having jurisdiction to carry it out. The results here demonstrate the need for a strong federal role in climate mitigation efforts, but they also underline the critical need for a federal-state-local partnership if effective and affordable mitigation is to be achieved. Of the 80 policies studied, 70 fell under state jurisdiction and 22 were local. The federal government was identified as having a role – either funding, implementation or both – in 52 policies. *Indeed, only 3 policies on the list identified the federal government as having exclusive jurisdiction.* This is not a surprise given that these are state-level

mitigation plans. But 18 policies were identified as exclusively within the jurisdiction of states, and 1 exclusively local. Some examples of state-only policy options are renewable or efficiency portfolio standards for utilities, demand-side management programs, low-GHG fuel standards and incentives for distributed power generation.

These results, and the plans that serve as the basis for them, demonstrate the critical fact that the largest pool of cost-effective GHG mitigation opportunities lies outside the traditional regulatory reach of federal authority as currently applied.³ Indeed, if *all* GHG emissions from currently regulated sources (not including GHGs) under the Clean Air Act were to cease, we would not achieve the emissions reductions that most scientists agree are needed to prevent the most damaging climate change effects.

Stimulus Potential

State plan-recommended policies were also evaluated for their suitability to achieve traditional economic stimulus objectives. The value of government spending for the purpose of stimulating growth in the broad economy is enhanced if that spending results in the rapid purchase of labor, goods and services with the principal emphasis on employment. This value is multiplied if the expenditure of federal dollars triggers similar expenditures by states, localities or the private sector. The 80 policy bundles were qualitatively evaluated for 1) the speed with which the availability of the funding may translate into real purchases of labor, goods and services; 2) the degree to which the expenditure will spur the creation of new permanent or temporary employment, and 3) the degree to which the federal expenditure will leverage expenditures by others, multiplying the benefit and freeing up federal funds for other purposes.

Policies have also been evaluated on the basis of attributes to assess their effectiveness as GHG mitigation measures. Altogether, six attributes were assessed. These attributes are,

- **Speed to Implement:** How quickly could the availability of federal funding result in purchases of goods or services and the injection of funds into the broader economy? The standard is the percent of total federal funding that is likely to be expended within one year. F, or fast, means more than 66% of funds will be expended within the first year; M, or medium means between 33% and 66%, and S or slow means less than 33%.
- **Job Creation Potential:** How labor intensive is the mitigation activity? H, or high, means at least two-thirds of the funding will support direct employment. M, or middle, means between one and two-thirds of the funding will support direct employment. L, or low, means one third or less will support direct employment. By direct employment we mean permanent or temporary employment paid for with program or program-enabled funds. Indirect employment, such as that supporting the manufacture of equipment

³ The Clean Air Act could be expanded to cover GHG emissions comprehensively given the Massachusetts v. EPA ruling by the Supreme Court. For a detailed discussion, see [Comments By The Center For Climate Strategies On Advance Notice Of Proposed Rule Making To Regulate Emissions Of Greenhouse Gases Under The Federal Clean Air Act Before The United States Environmental Protection Agency](#), Docket No. EPA-HQ-OAR-2008-0318, by The Center For Climate Strategies, (November 26, 2008)

purchased with program funds is not included, unless the direct effect of the funding is the purchase itself, such as an efficient vehicle tax credit.

- **Leveraging Potential:** How effective is the funding mechanism at attracting non-federal funding? H, or high, means the program will expend at least 2 nonfederal dollars for every federal dollar expended (>2:1). M, or medium, means somewhere between \$0.50 and \$2 of nonfederal expenditures will accompany each federal dollar (2:1< and <1:2). L, or low, means less than \$0.50 of non-federal funding will accompany each federal dollar (<1:2).
- **GHG Mitigation Potential:** How effective is the policy at mitigating GHG emissions? H, or high, means mitigation have more than 3 million megatons carbon dioxide equivalent per year (MMtCO_{2e}) per state. M, or medium, means between 0.5 and 3 MMtCO_{2e} per state per year. L, or low, means less than 0.5 MMtCO_{2e} per state per year would be mitigated.
- **Cost Effectiveness:** On a cost per ton basis, how cost-effective is the policy? Here we mean the total cost to society, not the cost to the owner or the cost of the federal incentive. H, or high, means zero or negative cost, that is, a net savings. M, or medium, means a cost up to \$40 per ton mitigated. L, or low, means cost per ton mitigated in excess of \$40.
- **Funding Class:** What category of funding mechanism would this policy employ? ‘Financial Instrument’ means tax-free bonding authority, loan guarantees, loan loss reserves or other indirect incentive using a financial instrument. ‘RLF’ or revolving loan fund is an existing federally-supported state or local RLF programs. ‘Grant’ means a direct grant of funds to support the activity including entitlement, categorical, competitive and matching grants. ‘Tax Instrument’ means a tax credit or enhanced deduction.

Speed: Since most of the recommended programs are either currently in-place in one or more states, in the process of being implemented, or are an enhancement of an existing program, it is not surprising that the majority of GHG policies were judged to be either ‘moderate’ or ‘fast’ in their ability to inject capital into the economy. Forty-four of the 80 policies were judged to be capable of moving between one-third and 100% of the available funding into the economy within one year. Examples of rapid deployment policies are incentives for low-rolling resistance tires, driver and consumer education, vehicle standards and retrofits, building weatherization, energy efficiency retrofits for buildings, some renewable energy projects, local and state climate planning, urban forestry programs, afforestation programs, soil carbon programs, and forest and wetland protection programs.

If we organize the policies around their potential to effectively serve as a vehicle for economic stimulus we can begin the process of setting priorities and identifying existing programs through which these funds can be directed. As shown in Table 1, of the 14 policy bundles identified as being fast to implement, 9 also were rated as having high job creation potential (with the remaining 5 rated as moderate), and 10 were rated as being highly cost effective ways to mitigate GHGs (three were not quantified and one was moderate).

Table 1: Policy bundles rated as ‘fast’ to implement.

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
RCI-1	Non-Utility Incentives and Funds To Promote Renewable Energy and Energy Efficiency Including Demand-Side Management (DSM) Energy Efficiency Programs for Electricity, Natural Gas, Propane, and Fuel Oil	M	M	F	H	H	grant, tax incentive
RCI-2	Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Operations	M	H	F	H	H	grant
TLU-15	Encourage Low Rolling Resistance Tires and Promote Proper Tire Inflation	L	H	F	H	M	grant, tax incentives
RCI-13	Lead-by-Example Government Buildings, Facilities and Operations	M	H	F	L	M	grant
TLU-17	Heavy-Duty Vehicle Emissions Standards and Retrofit Incentives	L	H	F	M	H	grant, tax incentives
RCI-8	High GWP Reductions from Stationary Sources	M	H	F	M	H	grant
RCI-14	Market Transformation and Technology Development Programs	M	H	F	M	H	financial instrument, grant
RCI-15	Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Training and Education for Building Design, Construction, and Operation	M	H	F	M	H	grant
TLU-20	Idle Reduction/Elimination Policies	M	H	F	M	H	grant
CC-3	Developing emission inventories	NQ	NQ	F	M	H	grant
CC-4	Local Climate Action Plans	NQ	NQ	F	M	H	grant
AFW-3	Urban Forestry Programs	M	H	F	M	M	grant
AFW-9	Improved Agricultural Management Practices	M	H	F	M	M	grant
TLU-16	Driver and Consumer Education	NQ	NQ	F	M	M	grant

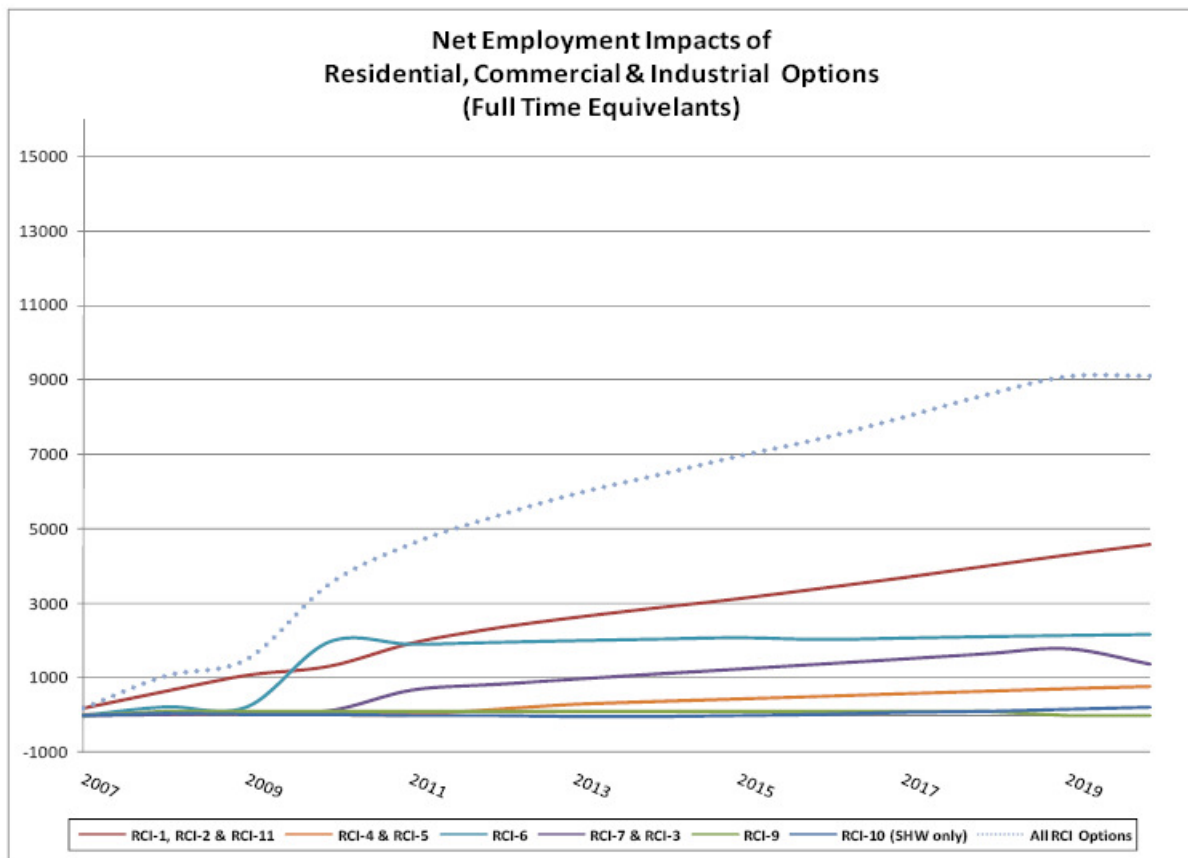
H=High potential; M=Moderate potential; L=Low potential; NQ=Not Quantified; F=Fast; M=Moderate; S=Slow
 Sectors: RCI=Residential, Commercial and Industrial buildings; TLU=Transportation and Land Use;
 AFW=Agriculture, Forestry and Waste Management; CC=Cross Cutting (policies that cut across many sectors)
 [Note: the policy numbers derive from those recommended in state climate action plans.]

Jobs: Sixty-eight of the 80 policy bundles were identified as having high to moderate job creation potential. Here we mean employment directly as a result of the expenditure of federal and leveraged funds. Secondary employment, such as for the manufacture of purchased equipment, is not considered unless the federal support is in the form of a tax credit or other financial instrument the direct result of which is the purchase of specific goods or services. In these instances the employment supported by the demand for the item is included. High job

creation potential programs include weatherization programs, biofuels and biofuels feedstock production, training and planning programs, technical assistance programs, vehicle and building retrofit programs, urban forestry and afforestation programs, and a number of energy efficiency programs.

Three states – Arizona, New Mexico and North Carolina – commissioned additional economic studies to explore the impact of some planned policies on jobs and income. While not all policies among the 80 bundles were analyzed in this fashion, some key results have helped inform this investigation. North Carolina’s study⁴ is the only secondary economic impact study that looked at all the recommended policies; therefore those results are most valuable here.

Figure 2. Employment impact of various residential, commercial and industrial (RCI) policies in North Carolina over time.⁵



Note: RCI-1, RCI-2 & RCI-11 are energy efficiency and DSM programs, included under the RCI-1 bundle in this analysis. RCI-4 & RCI-5 are market transformation and appliance standards, included under the RCI-14 bundle here. RCI-6 is building codes, included under RCI-6 here. RCI-7 & RCI-3 are distributed renewable energy and high performance buildings, included under RCI-5 and ES-5 here. RCI-9 is state purchasing of efficient appliances, included under RCI-13 here. RCI-10 is solar water heating, included under RCI-7 here.

⁴ [“Secondary Economic Impact Analysis of Greenhouse Gas Mitigation Options for North Carolina,”](#) Appalachian State University Energy Center, October, 2008.

⁵ Ibid

North Carolina policies that demonstrated the greatest near-term job creation potential tended to be in the energy efficiency/demand-side management, building codes, biofuels and forestry sectors. The study looked at job and income effects over time, and as can be seen in Figure 2, above, policies differed regarding not only how many jobs would be gained or lost, but also when the gains or losses would occur.

Overall, the North Carolina study found that by 2020, the mitigation options analyzed would result in the creation of more than 15,000 jobs, \$565 million in employee and proprietor income, and \$302 million in gross state product. For the study period, 2007–2020, the mitigation options analyzed would generate more than \$2.2 billion net present value (NPV) in net additional employee and proprietor income and more than \$1.2 billion (NPV) in net gross state product. Of greater interest here are the results for the near term. The results for 2010 showed over 5,000 new jobs, \$134 million in new employee and proprietor income and \$116 million in new gross state product.

In addition to speed to implement, the other principle measure of stimulus potential is jobs. Table 2 presents the 31 policies rated as offering a high potential for job creation. This large number is consistent with the findings of the state-level economic studies, and given the large number, there is a wide range of policies with favorable ratings among the other attributes.

Table 2. Policy bundles rated as having a ‘high’ job creation potential.

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
RCI-1	Non-Utility Incentives and Funds To Promote Renewable Energy and Energy Efficiency Including Demand-Side Management (DSM) Energy Efficiency Programs for Electricity, Natural Gas, Propane, and Fuel Oil	M	M	F	H	H	grant, tax incentive
RCI-2	Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Operations	M	H	F	H	H	Grant
TLU-17	Heavy-Duty Vehicle Emissions Standards and Retrofit Incentives	L	H	F	M	H	grant, tax incentives
RCI-8	High GWP Reductions from Stationary Sources	M	H	F	M	H	grant
RCI-14	Market Transformation and Technology Development Programs	M	H	F	M	H	financial instrument, grant
RCI-15	Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Training and Education for Building Design, Construction, and Operation	M	H	F	M	H	grant
TLU-20	Idle Reduction/Elimination Policies	M	H	F	M	H	grant
CC-3	Developing emission inventories	NQ	NQ	F	M	H	grant
CC-4	Local Climate Action Plans	NQ	NQ	F	M	H	grant
TLU-8	Voluntary Fleet Emissions Reductions	L	NQ	M	H	H	grant, tax incentives
AFW-21	Afforestation and/or Restoration of Non-forested Lands	M	M	M	H	H	grant

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
AFW-4	Enhanced Solid Waste Recovery and Recycling	H	M	M	M	H	grant, tax incentives
ES-3	Energy Efficiency	H	H	M	M	H	grant, tax incentive, financial instrument
RCI-17	Promote Voluntary Programs and Actions	L	NQ	M	M	H	grant
TLU-11	Transit, Ridesharing, and Commuter Choice Programs	M	H	M	M	H	grant
AFW-13	Reductions In On-Farm Energy Use and Improvements in Energy Efficiency	M	H	M	M	H	grant
TLU-10	High GWP Reductions from Mobile Sources	L	M	S	H	H	grant
RCI-5	"Beyond Code" Building Design Incentives and Programs for Smart Growth	M	H	S	H	H	grant, tax incentive
RCI-6	State/local building codes and more Stringent Appliance/Equipment/ Lighting Efficiency Standards, and Product Recycling and Design	M	H	S	H	H	grant
TLU-13	Improved Vehicle Efficiency	M	NQ	S	H	H	tax incentives
CC-1	State Government	NQ	NQ	S	H	H	financial instrument, grant
TLU-2	Research and Development of Renewable Transportation Fuels	L	L	S	M	H	financial instrument, tax incentive
AFW-1	Programs to Support Local Farming/Buy Local	L	M	S	M	H	grant
AFW-20	Expanded Use of Wood Products for Building Materials	L	M	S	M	H	grant, tax incentive
AFW-22	Improve Forest Ecosystem Management - Residential Lands	L	H	S	M	H	grant
AFW-12	In-State Production of Biofuels and Biofuels Feedstocks	M	M	S	M	H	grant, tax incentives, financial instrument
RCI-9	Promotion and Incentives for Improved Community Planning and Improved Design and Construction (Third-party Sustainability, Green, and Energy Efficiency Building Certification Programs) in the Private and Non-State Public Sectors	M	H	S	M	H	grant
TLU-3	Smart Growth and Related Planning	M	NQ	S	M	H	grant
TLU-14	Promote Use of Renewable Fuels	M	M	S	M	H	financial instrument, tax incentive
AFW-23	Improve Forest Ecosystem Management - Other Lands	M	H	S	M	H	grant
ES-6	Technology Research & Development, plus Technology-Focused Initiatives	M	NQ	S	M	H	grant

Potentials: H=High, M=Moderate, L=Low; Speed to Implement: NQ=Not Quantified; F=Fast, M=Moderate, S=Slow
Sectors: RCI=Residential, Commercial and Industrial buildings, continued, next page.

Sectors, continued: TLU=Transportation and Land Use; AFW=Agriculture, Forestry and Waste Management; CC=Cross Cutting (policies that cut across many sectors) [Note: the policy numbers derive from those recommended in state climate action plans.]

Leverage: The federal government may inject this capital into the economy in a variety of ways. Grants, grants to capitalize revolving loan funds, loans, tax credits, subsidized interest and guaranteed loans are just a sample of the tools available to federal policy makers. For the purpose of evaluating the climate policy options we have organized these into the funding classes of grants, financial instruments, tax incentives and revolving loan funds. Recommended policies have been matched to one or more of these funding classes.

This mapping of policies to federal funding classes allows a rough estimate of the leveraging potential for each policy. For example, if a tax credit is the preferred instrument the federal tax subsidy will be ‘matched’ by significant private funds, the exact proportion being dependent on the policy design and the avoided tax rate of the taxpayer. Financial instrument funding such as loans, loan guarantees and loan loss reserves typically offer the greatest potential for leveraging federal funds. Federal funding of state and local programs generally cannot take advantage of tax and financial instruments (with some exceptions, such as the authority to issue federally tax exempt bonds), and more typically take the form of grants and capitalization of RLFs. Grant support can be matched or unmatched, and RLF capitalization can be granted or have varying degrees of recapture.

Estimates of the leveraging potential for policies is based upon the class of funding mechanism used and an assessment of the incremental support needed to achieve the degree of market acceptance necessary to meet the GHG reduction goals. Of the 80 policies studied, 29 were judged to be achievable with non-federal funds accounting for more than two-thirds of the program support. See Table 3. Examples of high-leverage-potential tax incentive policies are a wide variety of new technology investments such as large and small-scale renewable generation and efficient vehicle purchases. Other high-leverage-potential policies include renewable and efficiency portfolio standards, forestland preservation, diesel engine retrofits and efficiency retrofits for existing buildings.

Table 3. Policy bundles with high potential for leveraging federal funding with state, local or private dollars.

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
RCI-1	Non-Utility Incentives and Funds To Promote Renewable Energy and Energy Efficiency Including Demand-Side Management (DSM) Energy Efficiency Programs for Electricity, Natural Gas, Propane, and Fuel Oil	M	M	F	H	H	grant, tax incentive
RCI-2	Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Operations	M	H	F	H	H	grant

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
TLU-8	Voluntary Fleet Emissions Reductions	L	NQ	M	H	H	grant, tax incentives
AFW-21	Afforestation and/or Restoration of Non-forested Lands	M	M	M	H	H	grant
TLU-10	High GWP Reductions from Mobile Sources	L	M	S	H	H	grant
RCI-5	"Beyond Code" Building Design Incentives and Programs for Smart Growth	M	H	S	H	H	grant, tax incentive
RCI-6	State/local building codes and more Stringent Appliance/Equipment/ Lighting Efficiency Standards, and Product Recycling and Design	M	H	S	H	H	grant
TLU-13	Improved Vehicle Efficiency	M	NQ	S	H	H	tax incentives
CC-1	State Government	NQ	NQ	S	H	H	financial instrument, grant
RCI-3	CHP Programs	M	L	M	H	L	tax incentive, grant
AFW-17	Landfill Methane Reduction Programs	M	M	M	H	L	grant
TLU-19	Reduced GHG Emissions from Aviation	NQ	NQ	M	H	L	grant
TLU-1	Adopt California Clean Car Standards	M	H	S	H	L	grant
TLU-7	Climate-Friendly Transportation Pricing/Pay as You Drive	M	H	S	H	L	grant
ES-10	Utility Revenue Decoupling	NQ	NQ	S	H	L	grant
TLU-15	Encourage Low Rolling Resistance Tires and Promote Proper Tire Inflation	L	H	F	H	M	grant, tax incentives
RCI-12	Utility-based Demand-Side Management Programs, Efficiency Funds and Requirements (and Financial Incentives)	H	H	M	H	M	financial instrument, tax incentive
RCI-7	Solar Water Heating	L	M	M	H	M	tax incentive, grant
RCI-11	Distributed Generation Renewable Energy Applications	M	M	M	H	M	tax incentive, grant
ES-13	Small New Hydro and Efficiency Improvements at Existing Hydro, Identifying Other Small Renewables and Removing Barriers	M	M	M	H	M	grant
ES-14	Methane and CO2 Reduction in Oil and Gas Operations, Including Fuel Use and Emissions Reduction in Venting and Flaring	M	H	M	H	M	grant

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
AFW-2	Forest Management and Establishment for Carbon Sequestration	H	M	S	H	M	grant
ES-1	Renewable and/or Environmental Portfolio Standard	H	M	S	H	M	grant
ES-9	Nuclear Power	H	L	S	H	M	tax incentive, financial instrument
ES-5	Distributed renewable energy incentives and/or barrier removal	L	L	S	H	M	grant, tax incentive
RCI-16	Net Metering for Distributed Generation	M	L	S	H	M	grant
ES-8	Combined Heat and Power (CHP) and Thermal Energy Recovery and Use	M	M	S	H	M	tax incentive
ES-12	Tax credits and incentives to finance renewable energy generation facilities	M	L	S	H	M	tax incentives, financial instrument
ES-11	State Purchases of Electricity from Renewable Sources	NQ	NQ	S	H	M	grant

Potentials: H=High; M=Moderate potential; L=Low potential;
Speed to Implement: NQ=Not Quantified; F=Fast; M=Moderate; S=Slow
Sectors: RCI=Residential, Commercial and Industrial buildings; TLU=Transportation and Land Use;
AFW=Agriculture, Forestry and Waste Management; CC=Cross Cutting (policies that cut across many sectors) [Note: the policy numbers derive from those recommended in state climate action plans.]

GHG Mitigation Potential

State climate action plans calculate for each policy the state-specific GHG mitigation potential in MMtCO₂e and the cost effectiveness in dollars-per-ton mitigated. The cost analysis is based on the net present value of a stream of costs (or savings) and a stream of tons mitigated. The timeframe typically runs from the delivery of the plan to the mid-term goal date, which is usually 2020 for older plans and 2025 for more recent plans. It should also be noted that for a small number of policies GHG reductions and costs are not calculated for a variety of reasons.

The mitigation potential and cost effectiveness are assessed at the state level, therefore the same policy applied in several states will yield different results. For the purpose of this qualitative analysis, we grouped policies into the same three coarse categories of high, medium and low potential for mitigation and cost effectiveness. If a policy is proposed by multiple states with differing results (H-M; M-L) we rounded down. If the results from different states ranged from low to high, we used medium. On balance, however, results from multiple states were consistent; inconsistent results were rare.

Policies that yielded the greatest GHG mitigation potential included demand side management programs, low-GHG fuel standards, carbon sequestration and forest management, solid waste

programs, biomass for electricity and heat, renewable and energy efficiency portfolio standards, and power-sector energy efficiency programs.

Policies that proved to be the most cost-effective included a wide range of energy efficiency programs, “California clean car” and heavy-duty vehicle standards, various transit programs, urban forestry programs, water and wastewater management programs, forest ecosystem management programs, power-sector energy efficiency programs and emissions reduction programs for oil and gas extraction.

All 80 policy bundles represents either direct or enabling GHG mitigation opportunities or they would not be listed, but as discussed above, state-level analysis indicates that some policies are more effective – they reduce larger amounts of GHGs – and some are more efficient – they reduce GHGs at a more favorable cost or cost savings. If we organize the bundles around those with the greatest GHG reduction potential we can set priorities for stimulus funding that also have a significant impact on GHG emissions. Table 4 lists these 10 top GHG mitigation policies. A quick scan of these policies shows that half can be implemented with moderate speed, half are judged to be relatively slow to implement (that is, less than one-third of the funding could be moved into the broader economy within one year). This is because several of these policies involve large capital investments and complex regulatory approval processes, such as renewable portfolio standards (the time to finance, permit and construct large-scale renewable generation) and nuclear energy. This group does offer good job creation potential and generally favorable per-ton cost effectiveness.

Table 4. Policy bundles rated as having high GHG mitigation potential.

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
RCI-12	Utility-based Demand-Side Management Programs, Efficiency Funds and Requirements (and Financial Incentives)	H	H	M	H	M	financial instrument, tax incentive
AFW-2	Forest Management and Establishment for Carbon Sequestration	H	M	S	H	M	grant
ES-1	Renewable and/or Environmental Portfolio Standard	H	M	S	H	M	grant
ES-9	Nuclear Power	H	L	S	H	M	tax incentive, financial instrument
AFW-4	Enhanced Solid Waste Recovery and Recycling	H	M	M	M	H	grant, tax incentives
ES-3	Energy Efficiency	H	H	M	M	H	grant, tax incentive, financial instrument
RCI-4	Reduction of Energy Use by Energy Intensive Industries	H	M	M	M	M	grant
AFW-7	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production	H	M	M	M	M	grant

TLU-5	Low-GHG Fuel Standard	H	M	S	M	M	financial instrument, tax incentive
AFW-14	Waste Management Strategies	H	H	S	M	M	grant

Potentials: H=High, M=Moderate, L=Low, NQ=Not Quantified; Speed: F=Fast; M=Moderate; S=Slow
Sectors: AFW=Agriculture, Forestry and Waste Management, ES=Energy Supply; RCI=Residential, Commercial and Industrial buildings; TLU=Transportation and Land Use; [Note: the policy numbers derive from those used in state climate action plans.]

Federal Program and Funding Opportunities

As stated above, any new funding must enter commerce as quickly as possible to be effective as a counter-cyclical economic stimulus. Policies that require the creation of new programs with new staff and new rules and procedures typically take years to set up. Table 5 is a listing of all policy bundles by sector with examples of existing federal, state and local programs that deliver at least a portion of the recommended programs. If rapid infusion of stimulus funding into the economy is the priority, the funding should be directed to the federal, state and local programs supporting these policies.

Table 5, starting on page 16, lists 79 distinct, existing federal programs that could be expanded, augmented or enhanced to carry out many of these policy objectives without the need for creating new programs and bureaucracies. Examples of existing federal programs within this group are the DOE Weatherization Assistance Program, the Low Income Home Energy Assistance Program, EPA Energy Star, EPA Responsible Appliance Disposal Program, DOE's Industrial Technologies Program, Federal Energy Management Program, EPA Clean School Bus USA Program, EPA Smartway Transport Program, the Urban and Community Forestry Grant Program, USFS Forest Stewardship and Stewardship Incentive Programs, and the USDA Farm Bill Cost Share Programs. A great many more state and local programs are also listed and can be cross-referenced for additional federal funding opportunities through grants to states and localities.

Table 5 also lists hundreds of state and local programs that could do the same. The state and local list is far from comprehensive; these are merely examples of the types of programs currently in effect around the nation.

Stimulus funding could therefore be delivered in multiple ways. Congress could increase funding, and in some cases authority and mission, to about dozens of existing federal programs. Congress could make new or increased funding available to support local and state programs. Such funding could also serve to incent states without similar programs to adopt them. And Congress can enact tax incentives and financial instruments to encourage private investment in GHG mitigation. Opportunities for effective climate change stimulus investments can be found using all three.

Conclusion

States have developed comprehensive menus of policies and measures to achieve significant GHG reductions, and are implementing those policies. The federal government could support, accelerate and enable these measures, as well as implement or expand effective national

programs and provide a meaningful stimulus to the national economy by funding selective federal, state and local GHG mitigation programs.

There are up to several dozen policy opportunities that could provide a rapid and effective stimulus to the economy; create substantial new employment; leverage significant state, local and private funds in addition to the federal investment; produce hundreds of millions of dollars in secondary economic benefits and significantly reduce GHG emissions at low cost while also initiating long term economic recovery. The federal government cannot achieve GHG reductions sufficient to avoid damaging effects of climate change without either assuming jurisdiction traditionally vested in the states and localities or working in partnership with states and localities to implement an array of policies and measures across all sectors.

**Table 5: Policy ‘Bundles’ by sector with federal, state and local program examples.
Residential, Commercial and Industrial (RCI) Policy Bundles**

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs / Action Plans
		Federal	State	Local	
Residential, Commercial, and Industrial					
RCI-1	Non-Utility Incentives and Funds To Promote Renewable Energy and Energy Efficiency Including Demand-Side Management (DSM) Energy Efficiency Programs for Electricity, Natural Gas, Propane, and Fuel Oil	Federal Weatherization Program; Energy Star Qualified Manufactured Homes; DOE's Weatherization Assistance program; Climate Challenge Program; Low-Income Home Energy Assistance Program (LIHEAP)	Arkansas Weatherization Program; State of Washington Treasurer's Program COP and LOCAL loan program; OR's Business Energy Tax Credit (BETC) program; SC Business Tax Credit; NW Energy Efficiency Alliance; State Energy Office grants; MPCA grants and loans; MnTAP; MnDOC Conservation Improvement Program (CIP); CA Energy Commission PIER program; CA Solar Electric Incentives programs; NC Public Benefits Charge program; The EmPOWER Maryland goal; ME PUC's Carbon Free Homes Program; ME State Energy Programs; UT Weatherization Assistance Program; Alaska Weatherization Program (Bonding)		AR, WA, SC, MD, CO, MI, FL, IA, NM, VT, MN, CA, NC, CT, UT, ME, AK

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs / Action Plans
		Federal	State	Local	
Residential, Commercial, and Industrial					
RCI-2	Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Operations	EPA Energy Star	Natural Gas Commercial and Industrial energy Audits; Iowa Energy Efficiency Fund, IA Governor Culver's Executive Order #6, Executive Order #41 (Governor Vilsack); NM State Government Energy Management Program; The Rebuild New Mexico Program; UT State Energy Programs; NM State Government Energy Management Program; NM Public School Building Plan Review Program; NM Clean Energy Grants Program; Rebuild Michigan Program; MI DEQ Retired Engineers Technical Assistance Program; MI DEQ Small Business Pollution Prevention Loan Program; CO Public Utilities Commission energy efficiency programs	Energy Efficiency Programs in Berkeley, San Francisco, and Davis, CA; EE programs in Burlington, VT	WA, AR, UT, VT, MI, CO, FL
RCI-3	CHP Programs	EPA Combined Heat and Power Partnership	Maryland Strategic Energy Investment Program (SB 268); and EmPOWER MD (HB 374).		AR, MD
RCI-4	Reduction of Energy Use by Energy Intensive Industries	EPA's Natural Gas STAR program; Title IV, Subtitle D of the Federal Energy Independence and Security Act of 2007			CA

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs / Action Plans
		Federal	State	Local	
Residential, Commercial, and Industrial					
RCI-5	"Beyond Code" Building Design Incentives and Programs for Smart Growth	Energy Star	Green Communities (MN); tax incentives and faster permitting for private developers to meet Green Building Standards (SC)	Tucson-Pima Sustainable Energy program; City of Scottsdale Green Building program	MN, SC, MD, AZ, CO
RCI-6	State/local efficiency standards and building codes	Energy Star	Maryland Energy Efficiency Standards Act of 2007, WA Electronic Product Recycling Program; NY End-Use Renewable Programs;		MN, SC, MD, WA, NC, NY, RI
RCI-7	Solar Water Heating		CA Public Utilities Commission pilot solar water heating program; ME Solar Hot Water Heater Program; ME Solar Photovoltaic (PV) Buy Down Program		CA, ME, NC
RCI-8	High GWP Reductions from Stationary Sources	EPA Responsible Appliance Disposal program; DOE's Industrial Technologies Program and ENERGY STAR; EPA's voluntary aluminum industrial partnership (VAIP) program	Minnesota Technical Assistance Program (MnTAP)		CA, MN, WA
RCI-9	Promotion and Incentives for Improved Community Planning and Improved Design and Construction (Third-party Sustainability, Green, and Energy Efficiency Building Certification Programs) in the Private and Non-State Public Sectors		WA DGA's Sustainable Design and Construction program; WA Dept of Ecology's Solid Waste and Financial Assistance program	LEED Incentive Programs; Seattle's Built Green Incentive program	WA, IA

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs / Action Plans
		Federal	State	Local	
Residential, Commercial, and Industrial					
RCI-10	Rate structures and Technologies to Promote Reduced GHG Emissions (including Decoupling of Utility Sales and Revenues)		WA Utilities and Transportation Commission Avista and Cascade pilot programs		WA, IA, MD
RCI-11	Distributed Generation Renewable Energy Applications		AZ Solar and Wind Equipment Sales Tax Exemption		AZ
RCI-12	Utility-based Demand-Side Management Programs, Efficiency Funds and Requirements (and Financial Incentives)	EPA Energy Star	MT Universal Systems Benefits Program; Energy Efficiency and Conservation Programs in AR; Net Metering Service; Iowa Energy Efficiency Fund; AZ Corporation Commission (ACC) APS demand-side management (DSM) program		AZ, MT, NC, AR, IA, CO, NM, SC,
RCI-13	Lead-by-Example Government Buildings, Facilities and Operations	Federal Energy Management Program Super Energy Savings Performance Contracts Program; EPA ENERGY STAR; Federal Energy Management Program	The Montana State Buildings Energy Program; MT State Buildings Energy Program; NM State Government Energy Management Program; NC Solar Schools Program; UT State Building Energy Efficiency Program		MT, CT, AZ, NM, IA, SC, MD, NC, UT
RCI-14	Market Transformation and Technology Development Programs		Energy Improvement Loan Program; NC Weatherization Assistance Program; MT DEQ energy efficiency loan program		NC, MT
RCI-15	Residential, Commercial, and Industrial Energy and Emissions Technical Assistance, Training and Education for Building Design, Construction, and Operation		NC DPPEA Energy Management Program and Steam Trap Program		NC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs / Action Plans
		Federal	State	Local	
Residential, Commercial, and Industrial					
RCI-16	Net Metering for Distributed Generation		MI state voluntary net metering program; SC H. 3395 Established net metering statewide;		MI
RCI-17	Promote Voluntary Programs and Actions		ME Governor's Carbon Challenge Program;	CT towns joined the International Council for Local Environmental initiatives Cities for Climate Protection program; CT universities joined Clean Air-Cool Planet's Campuses for Climate Protection program; CT towns joined Rebuild America Program;	CT, ME, SC

**Table 5 (cont'd): Policy 'Bundles' by sector with federal, state and local program examples.
Transportation and Land Use (TLU) Policy Bundles**

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Transportation and Land Use					
TLU-1	Adopt California Clean Car Standards		CA Clean Car Standards		MN, CA, MD, NY, MA, AZ, CO, CT, DE, ME, NM, OR, RI, VT, WA, FL, UT, SC
TLU-2	Research and Development of Renewable Transportation Fuels		Center of Excellence on BioFuels and BioBased Products; Tax Credits for Biofuel Development (SC)		AR, SC, NC
TLU-3	Smart Growth and Related Planning		Metropolitan Livable Communities Program Tax Base Revitalization Account (TBRA); Oregon's Transportation and Growth Management technical Assistance program; NY Quality Communities Program; Variety of MT state programs; NC Cooperative State-Local Program; NM Targeted Brownfields Assessment Program; VT Downtown Law Program; Vtrans Policies/Programs; VT Economic Progress Council (VEPC) Programs;	Phoenix Infill Housing Program; Variety of local programs available throughout CO; Variety of MT local programs	MN, AZ, CO, NY, MT, NC, NM, VT, FL, IA, AR, CA, WA

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Transportation and Land Use					
TLU-4	Expand Transit, Bicycle, and Pedestrian Infrastructures	Federal Safe Routes to School program	UCLA Transit Initiatives Program; Main Street Arkansas Program; WA and AR State Bicycle and Pedestrian Safety Programs; WA State Safe Route to School program; NC Statewide Transportation Demand Management Program (TDM);		MN, CA, AR, WA, NC, CT
TLU-5	Low-GHG Fuel Standard		Ethanol Production Incentives Program; WSDOA Energy Freedom Program and Energy Freedom Loan Program; ME Alternative Fuel Incentive program		MN, WA, ME, SC, IA, MD, RI
TLU-6	Infrastructure Management	CMAQ funding program	SC DOT Incident Responder Program		MN, SC, MD
TLU-7	Climate-Friendly Transportation Pricing/Pay as You Drive	FHWA Value Pricing Pilot Program	PAYD insurance pilot program;	WA King County mileage-based insurance pilot program	MN, WA, NC, VT, CO, ME, NC, UT
TLU-8	Voluntary Fleet Emissions Reductions	EPA Smartway Transportation Partnership	Project Green Fleet; Idle Reduction Program		MN

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Transportation and Land Use					
TLU-9	Freight Mode Shifts: Intermodal and Rail	EPA funding programs; EPA Smartway	Minnesota PCA small business environmental low-interest loan program	The Detroit Intermodal Freight Terminal project; West Detroit Junction rail project; Ports of Los Angeles and Long Beach voluntary vessel speed reduction (VSR) program	MN, MI, NM, CA, AR,
TLU-10	High GWP Reductions from Mobile Sources		CA's vehicular inspection and maintenance (I/M) program		CA
TLU-11	Transit, Ridesharing, and Commuter Choice Programs	EPA's Best Workplace for Commuters National Standard of Excellence; CMAQ program;	WSDOT Regional Mobility Grant program; WSDOT Commute Trip Reduction (CTR) program; WSDOT Trip Reduction Performance Program; WSDOT Trip Reduction Performance Program, Public Transit Aids (SC); Maryland Commuter Benefits Act of 2000; RI Public Transit Authority programs; VT Rideshare Program; VT Transportation Management Associations programs	WA Local Demand Management Programs; MN Employee Discount Transit Passes; VT Local Transportation Facilities Program	WA, MN, SC, MD, CO, RI, VT, IA, NY

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Transportation and Land Use					
TLU-12	Transit infrastructure Development	EPA Small Starts program, EPA's Best Workplaces for Commuters Program.	Maryland Comprehensive Transit Plan		IA, SC, MD
TLU-13	Improved Vehicle Efficiency	Corporate Average Fuel Economy	Tax Credits for Advanced Vehicle Purchases		FL, SC, IA
TLU-14	Promote Use of Renewable Fuels		Palmetto State Clean Fuels Coalition, The Renewable Fuels Promotion Act of 2005 (MD), Chapter 623 of 2007 (HB 745) (MD); NY State Alternative Fuel Vehicle Tax Incentive; NY Biodiesel and biofuel Development and Deployment programs;	Albuquerque Oxygenated Fuel Program;	SC, NM, NY
TLU-15	Encourage Low Rolling Resistance Tires and Promote Proper Tire Inflation		CA Energy Commission State Efficient Tire Program		AZ, CA, NM, MI, MT, FL, IA, NY, UT
TLU-16	Driver and Consumer Education			High School Driver Training Programs	CO, AZ, NM
TLU-17	Heavy-Duty Vehicle Emissions Standards and Retrofit Incentives	EPA Retrofit Technology Verification program; EPA Voluntary Diesel Retrofit Program; CMAQ program;	NC pilot school bus retrofit programs; CT Clean Diesel Program;		MT, NC, AZ, SC, CT
TLU-18	Procurement of Efficient Fleet Vehicles	EPA's Smartway Transport program		NC City gov't. programs	MT, NC, AZ,

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Transportation and Land Use					
TLU-19	Reduced GHG Emissions from Aviation	Voluntary Airport Low Emissions (VALE) Program			MT
TLU-20	Idle Reduction/Elimination Policies	EPA Clean School Bus USA Program; EPA's Smartway Transport program	NC TSE pilot programs; MT DEQ Clean Air Zone Montana Voluntary Program; ADEQ School Bus Idling program; Heavy-Duty Vehicle Idling Reduction (FL); WA Dept of Ecology emission reduction programs for public fleets; WA State Clean School Bus program	NC counties adopted school bus idling programs	NC, MI, CO, NM, NC, MT, AZ, CA, FL, WA

Table 5 (cont'd): Policy 'Bundles' by sector with federal, state and local program examples. Agriculture, Forestry and Waste (AFW) Management Policy Bundles

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-1	Programs to Support Local Farming/Buy Local	Rural Business Enterprise Grants (RBEG) Program; Rural Cooperative Development Grant Program (RCDG); Appropriate Technology Transfer for Rural Areas (ATTRA) Program; Rural Business Opportunity Grant (RBOG) Program	The Agriculture Department Farmers' Market program; University of Montana-Missoula Farm to College Program; Grow Montana Program; MDA has recently been revitalized and is actively promoting a Buy Local program; Arizona Grown Program; The 5-A-Day for Better Health Program; Farmer's Market Nutrition Program; VT Sustainable Jobs Fund; Connecticut Farm Fresh program; CT Farm to School Program; NM Farm to School, Cooking with Kids, and Buy Local Food programs; Rural Washington Loan Fund	Local Foods Plymouth	AR, MT, MD, AZ, VT, CT, ME, NM, WA, FL, SC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-2	Forest Management and Establishment for Carbon Sequestration	USFS Forest Inventory and Analysis National Program; USFS Forest Stewardship Program; Forest Legacy Program; Forest Stewardship Program; Forest Land Enhancement Program; Forest Resource Management Program; Forest Resource Protection Program; Urban & Community Forest Program;	MI Forest Carbon Offset and Trading Program; MI Forest Stewardship program; MN DNR's Division of Forestry programs: Forest Stewardship Program, Urban and Community Forest Program; Minnesota ReLeaf; Minnesota Terrestrial Carbon Sequestration Initiative; WA DNR Forest Health Program; Iowa's: Forest Reserve Law, Forest Land Enhancement Program; NC Forest Development Program; VT Use Value Appraisal Program; MSU Extension Forestry program; MT DNRC's Forest Stewardship Program; MT Cost-Share Assistance Programs; MT DEQ Open Burning Program; MT DNRC Forestry Assistance Programs;		AR, MN, WA, IA, NC, VT, RI, MT, FL, MD
AFW-3	Urban Forestry Programs	America the Beautiful program; The Urban and Community Forestry Grant Program; USFS Forest Stewardship and Stewardship Incentive Programs;	Urban and Community Forestry Program (FL); Urban Community Forestry Act (MD); WA's Community and Urban Forestry Program; MT DNRC's Urban and Community Forestry (U&CF) Program; MSU Extension Forestry program; MT DNRC's Forest Stewardship Program; MT DNRC Forestry Assistance Programs; CT DEP urban forestry grant program;	Denver's Tree Initiative; Trees Across Raleigh; trees Across Asheboro, NC	CO, FL, MD, WA, MT, NC, CT, RI, IA, CA, NY

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-4	Enhanced Solid Waste Recovery and Recycling	EPA Landfill Methane Outreach Program (LMOP)	MT State Gov't. Waste Reduction and Recycling Program; AR Recycling Programs; WA's Environmentally Preferable Procurement program; WA Electronic Product Recycling Program; WA Ecology Coordinated Prevention Grants; WA Ecology Public Participation Grants; CO Dept of Public Health and Environment solid waste reduction programs; VT Business Environmental Partnership Program; VT Technology and Info Transfer and Exchange Program; VT Construction & Demolition Waste Reduction Assistance Program; MN State Resource Recovery Program; MN SCORE Programs;	Opportunity to Recycle (regional program)	CO, FL, MD, WA, MT, NC, CT, RI, IA, CA, NY

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-5	Manure Digesters/Other Waste Energy Utilization	Federal financial incentives programs: USDA Rural Development Sec. 9006 grants, Energy Freedom Loans, and Federal Tax Credits; NRCS Cost Share Program; EPA AgSTAR Program; • USDA Farm Bill Renewable Energy and Energy Efficiency Loan and Grant Program; Value-Added Grants Program; EPA Landfill Methane Outreach Program	Washington State University Climate Friendly Farming Project; IA DNR Anaerobic Digestion Outreach Program; MI Biomass Energy Program; MI Conservation and Climate Initiative Program; South Carolina alternative energy bills establish tax incentives for industrial purchase of LFG equipment;		MT, AR, WA, CO, VT, MN, FL, SC, NC
AFW-6	Land Use Management Approaches for Protection and Enrichment of Soil Carbon	USDA Conservation Reserve Enhancement Program; NRCS Cost Share Program;	Reinvest in Minnesota (RIM) program from MN Dept of Natural Resources; NC Agriculture Cost Share Program;		WA, IA, NC, NM, NC, MI, SC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-7	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production	DOE EERE Biomass Program	MN RIM-CE program; AR Alternative Fuels Development Program; MI Biomass Energy Program; MI DEQ education and outreach programs; MI Agriculture Environmental Assurance Program; SC Equipment Tax Credit and Incentives Payment; MT Alternative Energy Revolving Loan Program; MT DNRC Forestry Assistance Programs; Biomass Utilization Fuels for Schools and Beyond Program;		MN, FL, NC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-8	Forestland Protection	USFS and WA DNR Forest legacy Program; NRCS Conservation Innovation Grants Program and Healthy Forests Reserve Program; NRCS Wildlife Habitat incentives Program; USFS and WA DNR Forest Land Enhancement Program; Grassland Reserve Program; Forest Legacy Program; Forest Stewardship Program; Forest Land Enhancement Program; Forest Resource Management Program; Forest Resource Protection Program; Urban & Community Forest Program; USDA Conservation Reserve Program (CRP); CREP; USDA Farm Bill cost-share programs;	Chesapeake Executive Council Forest Conservation Directive (No. 06-1); CA Forest Improvement Program (CFIP); WA Conservation Commission Conservation Reserve Enhancement Program; WA Dept of Fish and Wildlife Landowner Incentive Program; WA DNR Forestry Riparian Easement Program and Riparian Open Space Program; NM Forest Legacy Program; NM Natural Lands Protection Program; NM Land Conservation Incentive Program; NC Forest Legacy Program; NC Conservation Tax Credit Program; VT Use Value Appraisal Program;	Local open space programs	MD, CA, WA, UT, NM, NC, VT, FL, ME, AZ, NY, IA

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-9	Improved Agricultural Management Practices	USDA Farm Bill cost-share programs (RNEG, RCDG, RBOG, and RBEG programs);	Florida Agricultural Promotional Campaign; Minnesota DOA: Agriculture Best Management Practices program; WSU Grant Conservation District "Building Better Soils" Program; WSU perennial wheat breeding program; WSDOE Beyond Waste program and Agricultural Burning Alternatives program; Conservation District program; MSU Farm Energy Audit Program; MI "Garden for Growth" Program; MDA Select Michigan Program; MI Community Food Projects Competitive Grants Program;		FL, MN, WA, MI
AFW-10	Improved Manure Management	USDA's ARS is conducting research on thermo chemical waste-to-energy conversion from animal manures for AFO waste streams; NRCS Environmental Quality Incentives Program (EQIP), a cost share program; EPA Ag STAR program; USDA Rural Development 2006 Renewable Energy Systems and Efficiency Grants Program; USDA Farm Bill Renewable Energy and Energy Efficiency Loan and Grant Program;	E.O. 07-127 (Renewable Portfolio Standard) may create additional demand for methane digesters; VT Best Management Practices cost share program; VT Nutrient Management Plan Cost Share Program; VT Farm Agronomics Practices cost share program; Conservation District Technical Assistance Program; UVM Extension Program; VT Clean Energy Fund; Central Vermont Public Service (CVPS) Biomass Grants Program;		SC, VT, NC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-11	Wetlands Preservation	DNR's Greenprint Program.	MDE's Wetlands and Waterways Program.		MD, IA, RI
AFW-12	In-State Production of Biofuels and Biofuels Feedstocks	Renewable Fuel Standard, Renewable Fuels Incentive Act; USDA Renewable Energy/Energy Efficiency Grant and Guaranteed Loan Program; USDA Conservation Reserve Program (CRP)	WA Energy Freedom Program; WSU/USDA-ARS bioenergy crops projects; WSU R&D on biofuel co-product development; RIM-CE program; MI Agriculture Environmental Assurance Program; Alternative Fuels Production Incentive (FL); Renewable Energy Technologies Grants Program (FL); Production Tax Credits (SC); MT State Trust Lands Forest Management Program; CO Dept of Ag's Renewable Energy Grant program; Tax credits for R&D into cellulosic ethanol and algae-derived biodiesel.		WA, MN, MI, FL, SC, MD, IA, MT, CO, AZ, NC
AFW-13	Reductions In On-Farm Energy Use and Improvements in Energy Efficiency	USDA farm programs - CRP, CSP, and EQIP programs; USDA Renewable Energy/Energy Efficiency Grant and Guaranteed Loan Program	WSU Grant Conservation District "Building Better Soils" Program; WSU perennial wheat breeding program; WSDOE Beyond Waste program and Agricultural Burning Alternatives program; Conservation District program; Biomass Energy Production Incentive, Renewable Energy Grant Program, or the Renewable Energy Revolving Loan Program, SC Solar Heating and Cooling; CO Dept of Ag's Renewable Energy Grant program		WA, SC, CO, MT, IA, SC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-14	Waste Management Strategies		ADEQ Waste Reduction Assistance Grants program		AZ, IA, NC
AFW-15	Water Use and Wastewater Management		AZ Dept of Water Resources water management programs; Various Projects include: Bayou Metro Water Management District, Boeuff Tensas Water Management District, and White River Irrigation District; MI DEQ Water Bureau water management programs; Maryland Department of Public Works [DPW] Bureau of Water and Wastewater operates three reservoir watersheds, and has a plan for each;		AZ, AR, SC, MD
AFW-16	Improve Commercialization of Biomass Gasification and Combined Cycle Technologies	USDA/DOE Biomass Initiative			AZ
AFW-17	Landfill Methane Reduction Programs	EPA's Landfill Methane Outreach Program (LMOP)	CO Dept of Public Health and Environment solid waste reduction programs		CO, NC

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-18	Agricultural Soil Carbon Management – Conservation/No-Till	<p>NCRS Conservation Reserve Program; Conservation Security program (CSP); Environmental Quality Incentives Program (EQIP); USDA Conservation Reserve Program (CRP); Federal Conservation Compliance programs</p>	<p>Montana Salinity Control Program; Montana State University Land Resource and Environmental Sciences (LRES) program; MSU Agriculture Research and Development Programs; NM Extension educational programs</p>		CO, MI, IA
AFW-19	Preserve Open Space and Working Lands – Agriculture and Forests	<p>Forest Legacy Program; The Habitat Conservation Plan Land Acquisition Grants Program; Forest Stewardship Program; NCRS Farm and Ranch Lands Protection Program; USDA farm programs - CRP and CREP programs; USFWS reforestation and wetlands programs; EQIP, Waste Reduction Partners (WRP), CRP, CREP, and USDA's Wildlife Habitat Incentives Program (WHIP);</p>	<p>Habitat Montana Program; Montana FWP Wildlife Mitigation Program; Natural Resource Damage Program; MI Carbon Offset and Trading Program; MI Commercial Forest Program; MI Qualified Forest Program; VT Use Value Appraisal Program; NY Open Space Conservation Program; RI Green Acres Program; WA Wildlife and Recreation Program; Florida's FWC Landowner Assistance Program; NC Conservation Tax Credit Program;</p>	<p>WA King County Farmland Preservation Program; WA Skagit County Farmland Legacy Program</p>	MT, MI, VT, NY, RI, WA, FL, NC, CT

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-20	Expanded Use of Wood Products for Building Materials		MT DNRC State Trust Land Forest Management Program; WSU Forestry Extension Program; WA DNR Forest Stewardship Program; VT Use Value Appraisal Program; VT Sustainable Job Funds		MT, WA, VT, CT, ME
AFW-21	Afforestation and/or Restoration of Non-forested Lands	Federal Conservation Reserve Program; Federal Conservation Reserve Enhancement Program;	NC Ag Cost-Sharing Program; NC Forest development Program;		NC, FL, IA, CA
AFW-22	Improve Forest Ecosystem Management - Residential Lands	Federal Collaborative Forest Restoration Program; FIREWISE program; DOE and USDA Forest Service grant programs;	NM Forest and Watershed Restoration Institute; many other state, federal, and local initiatives		NM
AFW-23	Improve Forest Ecosystem Management - Other Lands	Federal Collaborative Forest Restoration Program; FIREWISE program; DOE and USDA Forest Service grant programs;			NM

Sector	Name of State Climate Action/Policy	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Agriculture, Forestry, and Waste					
AFW-24	Agricultural Nutrient Management Programs	USDA NRCS Grassland Reserve Program; NRCS Environmental Quality Incentives Program (EQIP), a cost share program;	VT Best Management Practices cost share program; VT Nutrient Management Plan Cost Share Program; VT Farm Agronomics Practices cost share program; Conservation District Technical Assistance Program; UVM Extension Program; NY Agricultural Environmental Management Program;		VT, NY, FL, IA, ME, NY
AFW-25	Reduce Use of Non-Farm Fertilizer		CT Freedom Lawn Program;		CT

**Table 5 (cont'd): Policy 'Bundles' by sector with federal, state and local program examples.
Energy Supply (ES) Policy Bundles**

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Energy Supply					
ES-1	Renewable and/or Environmental Portfolio Standard		MI Renewable Energy Program; ME PUC's Efficiency Maine Program; Alternative Energy Law (Iowa's Renewable Portfolio Standard); Montana's Universal System Benefits Program (USBP)	Long Island Power Authority renewable and clean energy programs;	MN, MI, ME, NY, IA, FL, MD, MT, SC, AR, AZ, CA, CT, MI, NC, NM, RI
ES-2	Voluntary GHG Targets	EPA's Climate Leader's program; EIA 1605(b) Voluntary GHG Emission Reduction program; Chicago Climate Exchange (CCX) pilot program			MN, IA
ES-3	Energy Efficiency		CA Energy Commission PIER program; CA Solar Electric Incentives programs; HB 697 and HB 7135 call for the energy efficiency requirements of the Florida Energy Efficiency Code be incrementally scaled up (FL)		CA, FL, SC
ES-4	Million Solar Roofs (including California Solar Initiative and New Solar Homes		CA Million Solar Roofs Program; CEC's Emerging Renewables		CA

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Energy Supply					
	Partnership) (Existing Program Target)		Program; CA Public Utilities Commission's Self Generation Incentive Program		
ES-5	Distributed renewable energy incentives and/or barrier removal	DOE State Energy Program; EPA Landfill Methane Outreach Program	Section 476C of the Iowa Code, Energy Research Grants from the Energy Research Center; VT SPEED Program; MT Alternative Energy Revolving Loan Program; MT Universal System Benefits Programs; MI voluntary net metering program; MI Energy Office solar thermal domestic water-heating program;	Chelan County PUD Sustainable Natural Alternative Power Producers Program	WA, IA, VT, MT, SC, MI, MN, NM, NC
ES-6	Technology Research & Development, plus Technology-Focused Initiatives	DOE Pacific Northwest National Laboratory	Washington Technology Center programs; Washington State University Energy Extension Service; WSU and DOE Waste to Fuels Technology Project; CA Public Interest Energy Research (PIER) program; NY State Energy Research and Development Agency (NYSERDA); South Carolina Biotechnology Incubation Program, South		CO, WA, MN, CA, NY, SC, IA, MD, AR, MI, NM, NC

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Energy Supply					
			Carolina Hydrogen and Fuel Cell Alliance, South Carolina Biomass Council, South Carolina Institute for Energy Research; Advanced coal technology program		
ES-7	Transmission system capacity, access, efficiency, and Smart Grid	DOE BPA NonWires Solutions program; DOE Pacific Northwest GridWise Testbed project			WA, IA, MN, NM
ES-8	Combined Heat and Power (CHP) and Thermal Energy Recovery and Use	Title IV, Subtitle D of the federal Energy Independence and Security Act of 2007	OR's Business Energy Tax Credit (BETC) program;		WA, FL, MD, AR, MI, NC
ES-9	Nuclear Power		HB 7135 added the recovery of expenses associated with transmission lines for the operation of a nuclear power plant		FL, IA, SC, MI, NM
ES-10	Utility Revenue Decoupling		HB 7135, which ordered the PSC to analyze utility revenue decoupling		FL
ES-11	State Purchases of Electricity from Renewable Sources			Montgomery County Wind Power Purchasing Group	MD
ES-12	Tax credits and incentives to finance renewable energy generation facilities	Federal production tax credit			CO, SC, IA, MD

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Energy Supply					
ES-13	Small New Hydro and Efficiency Improvements at Existing Hydro, Identifying Other Small Renewables and Removing Barriers	US Bureau of Reclamation uprate program	CO Statewide mapping program		CO
ES-14	Methane and CO2 Reduction in Oil and Gas Operations, Including Fuel Use and Emissions Reduction in Venting and Flaring	EPA Natural Gas STAR program	NM's San Juan VISTAS program		MT, NM, CO

**Table 5 (cont'd): Policy 'Bundles' by sector with federal, state and local program examples.
Cross Cutting (CC) Policy Bundles**

Sector	Name of State Climate Action/Plan	Type of Existing Programs			States With Programs/ Action Plans
		Federal	State	Local	
Cross-Cutting					
CC-1	State Government	IRS Clean Renewable Energy Bonds (CREB) program; Title V of the Energy Independence and Security Act of 2007	CA DGS State Green Lodging Program; DGS Energy Services Companies (ESCO) program; 1992 South Carolina Energy Efficiency Act	Bill 17-06 and Green School Focus (MD)	CA, SC, MD
CC-2	Improved Govt. Vehicle Fleet		Governor's Executive Order 07-127(FL), Chapter 425 of 2006 SB 54)(MD)		FL, MD
CC-3	Developing emission inventories		SC DHEC Title V Inventories		SC
CC-4	Local Climate Action Plans			Local Climate Action Plan created for Columbia, SC	SC

Table 6: Policy Bundles Attributes – Residential, Commercial and Industrial (RCI) Sector

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local						
Residential, Commercial, and Industrial										
RCI-1	Non-Utility Incentives and Funds To Promote Renewable Energy and Energy Efficiency Including Demand-Side Management (DSM) Energy Efficiency Programs for Electricity, Natural Gas, Propane, and Fuel Oil	x	x		M	M	F	H	H	grant, tax incentive
RCI-2	Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Operations	x	x	x	M	H	F	H	H	grant
RCI-3	CHP Programs	x	x		M	L	M	H	L	tax incentive, grant
RCI-4	Reduction of Energy Use by Energy Intensive Industries	x			H	M	M	M	M	grant
RCI-5	“Beyond Code” Building Design Incentives and Programs for Smart Growth	x	x	x	M	H	S	H	H	grant, tax incentive
RCI-6	State/local building codes and more stringent appliance/Equipment/ Lighting Efficiency Standards, and Product Recycling and Design	x	x		M	H	S	H	H	grant
RCI-7	Solar Water Heating		x		L	M	M	H	M	tax incentive, grant
RCI-8	High GWP Reductions from Stationary Sources	x	x		M	H	F	M	H	grant

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local						
Residential, Commercial, and Industrial										
RCI-9	Promotion and Incentives for Improved Community Planning and Improved Design and Construction (Third-party Sustainability, Green, and Energy Efficiency Building Certification Programs) in the Private and Non-State Public Sectors		x	x	M	H	S	M	H	grant
RCI-10	Rate structures and Technologies to Promote Reduced GHG Emissions (including Decoupling of Utility Sales and Revenues)		x		L	H	S	L	L	grant
RCI-11	Distributed Generation Renewable Energy Applications		x		M	M	M	H	M	tax incentive, grant
RCI-12	Utility-based Demand-Side Management Programs, Efficiency Funds and Requirements (and Financial Incentives)	x	x		H	H	M	H	M	financial instrument, tax incentive
RCI-13	Lead-by-Example Government Buildings, Facilities and Operations	x	x		M	H	F	L	M	grant
RCI-14	Market Transformation and Technology Development Programs		x		M	H	F	M	H	financial instrument, grant

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local						
Residential, Commercial, and Industrial										
RCI-15	Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Training and Education for Building Design, Construction, and Operation		x		M	H	F	M	H	grant
RCI-16	Net Metering for Distributed Generation		x		M	L	S	H	M	grant
RCI-17	Promote Voluntary Programs and Actions		x	x	L	NQ	M	M	H	grant

Table 6 (cont'd): Policy Bundles Attributes – Transportation and Land Use (TLU) Sector

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	State Level Interest	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local							
Transportation and Land Use											
TLU-1	Adopt California Clean Car Standards		x		M	H	H	S	H	L	grant
TLU-2	Research and Development of Renewable Transportation Fuels		x		L	L	M	S	M	H	financial instrument, tax incentive
TLU-3	Smart Growth and Related Planning		x	x	M	NQ	H	S	M	H	grant
TLU-4	Expand Transit, Bicycle, and Pedestrian Infrastructures	x	x		M	M	M	M	M	M	grant
TLU-5	Low-GHG Fuel Standard		x		H	M	M	S	M	M	financial instrument, tax incentive
TLU-6	Infrastructure Management	x	x		L	NQ	M	M	L	M	grant
TLU-7	Climate-Friendly Transportation Pricing/Pay as You Drive	x	x	x	M	H	H	S	H	L	grant
TLU-8	Voluntary Fleet Emissions Reductions	x	x		L	NQ	L	M	H	H	grant, tax incentives
TLU-9	Freight Mode Shifts: Intermodal and Rail	x	x	x	M	M	M	S	M	M	grant, financial instrument
TLU-10	High GWP Reductions from Mobile Sources	x	x		L	M	L	S	H	H	grant

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	State Level Interest	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local							
Transportation and Land Use											
TLU-11	Transit, Ridesharing, and Commuter Choice Programs	x	x	x	M	H	H	M	M	H	grant
TLU-12	Transit infrastructure Development	x	x		L	H	M	M	L	M	grant
TLU-13	Improved Vehicle Efficiency	x	x		M	NQ	M	S	H	H	tax incentives
TLU-14	Promote Use of Renewable Fuels		x	x	M	M	M	S	M	H	financial instrument, tax incentive
TLU-15	Encourage Low Rolling Resistance Tires and Promote Proper Tire Inflation		x		L	H	H	F	H	M	grant, tax incentives
TLU-16	Driver and Consumer Education			x	NQ	NQ	M	F	M	M	grant
TLU-17	Heavy-Duty Vehicle Emissions Standards and Retrofit Incentives	x	x		L	H	M	F	M	H	grant, tax incentives
TLU-18	Procurement of Efficient Fleet Vehicles	x		x	L	H	M	M	M	M	grant
TLU-19	Reduced GHG Emissions from Aviation	x			NQ	NQ	L	M	H	L	grant
TLU-20	Idle Reduction/Elimination Policies	x	x	x	M	H	H	F	M	H	grant

Table 6 (cont'd): Policy Bundles Attributes – Agriculture, Forestry and Waste Management (AFW) Sector

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	State Level Interest	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local							
Agriculture, Forestry, and Waste											
AFW-1	Programs to Support Local Farming/Buy Local	x	x	x	L	M	H	S	M	H	grant
AFW-2	Forest Management and Establishment for Carbon Sequestration	x	x		H	M	H	S	H	M	grant
AFW-3	Urban Forestry Programs	x	x	x	M	H	H	F	M	M	grant
AFW-4	Enhanced Solid Waste Recovery and Recycling	x	x	x	H	M	H	M	M	H	grant, tax incentives
AFW-5	Manure Digesters/Other Waste Energy Utilization	x	x		M	M	M	S	M	M	grant, tax incentives, financial instrument
AFW-6	Land Use Management Approaches for Protection and Enrichment of Soil Carbon	x	x		M	M	M	M	M	M	grant
AFW-7	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production	x	x		H	M	M	M	M	M	grant

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	State Level Interest	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local							
Agriculture, Forestry, and Waste											
AFW-8	Forestland Protection	x	x	x	M	M	H	S	M	L	grant, tax incentives
AFW-9	Improved Agricultural Management Practices	x	x		M	H	M	F	M	M	grant
AFW-10	Improved Manure Management	x	x		L	L	M	M	M	L	grant
AFW-11	Wetlands Preservation	x	x		L	L	M	M	M	L	grant
AFW-12	In-State Production of Biofuels and Biofuels Feedstocks	x	x		M	M	H	S	M	H	grant, tax incentives, financial instrument
AFW-13	Reductions In On-Farm Energy Use and Improvements in Energy Efficiency	x	x		M	H	M	M	M	H	grant
AFW-14	Waste Management Strategies		x		H	H	M	S	M	M	grant
AFW-15	Water Use and Wastewater Management		x		M	H	M	M	M	M	RLF, grant
AFW-16	Improve Commercialization of Biomass Gasification and Combined Cycle Technologies	x			NQ	NQ	L	S	M	M	grant
AFW-17	Landfill Methane Reduction Programs	x	x		M	M	L	M	H	L	grant
AFW-18	Agricultural Soil Carbon Management – Conservation/No-Till	x	x		L	M	M	M	M	M	grant
AFW-19	Preserve Open Space and Working Lands – Agriculture and Forests	x	x	x	L	L	H	S	L	L	grant, tax incentive

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	State Level Interest	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local							
Agriculture, Forestry, and Waste											
AFW-20	Expanded Use of Wood Products for Building Materials		x		L	M	M	S	M	H	grant, tax incentive
AFW-21	Afforestation and/or Restoration of Non-forested Lands	x	x		M	M	M	M	H	H	grant
AFW-22	Improve Forest Ecosystem Management - Residential Lands	x	x		L	H	L	S	M	H	grant
AFW-23	Improve Forest Ecosystem Management - Other Lands	x			M	H	L	S	M	H	grant
AFW-24	Agricultural Nutrient Management Programs	x	x		L	L	M	M	L	M	grant
AFW-25	Reduce Use of Non-Farm Fertilizer		x		L	NQ	L	M	L	L	grant

Table 6 (cont'd): Policy Bundles Attributes – Energy Supply (ES) Sectors

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local						
Energy Supply										
ES-1	Renewable and/or Environmental Portfolio Standard		x	x	H	M	S	H	M	grant
ES-2	Voluntary GHG Targets	x			NQ	NQ	M	M	M	grant
ES-3	Energy Efficiency		x		H	H	M	M	H	grant, tax incentive, financial instrument
ES-4	Million Solar Roofs (including California Solar Initiative and New Solar Homes Partnership) (Existing Program Target)		x		M	H	S	M	M	grant, tax incentive
ES-5	Distributed renewable energy incentives and/or barrier removal	x	x	x	L	L	S	H	M	grant, tax incentive
ES-6	Technology Research & Development, plus Technology-Focused Initiatives	x	x		M	NQ	S	M	H	grant
ES-7	Transmission system capacity, access, efficiency, and Smart Grid	x			NQ	NQ	S	M	M	grant
ES-8	Combined Heat and Power (CHP) and Thermal Energy Recovery and Use	x	x		M	M	S	H	M	tax incentive
ES-9	Nuclear Power		x		H	L	S	H	M	tax incentive, financial instrument
ES-10	Utility Revenue		x		NQ	NQ	S	H	L	grant

	Decoupling									
ES-11	State Purchases of Electricity from Renewable Sources		x	x	NQ	NQ	S	H	M	grant
ES-12	Tax credits and incentives to finance renewable energy generation facilities	x			M	L	S	H	M	tax incentives, financial instrument
ES-13	Small New Hydro and Efficiency Improvements at Existing Hydro, Identifying Other Small Renewables and Removing Barriers	x	x		M	M	M	H	M	grant
ES-14	Methane and CO2 Reduction in Oil and Gas Operations, Including Fuel Use and Emissions Reduction in Venting and Flaring	x	x		M	H	M	H	M	grant

Table 6 (cont'd): Policy Bundles Attributes – Cross Cutting (CC) Issues

Sector	Name of State Climate Action/Policy	Type of Existing Programs			GHG Mitigation Potential	Cost Effectiveness	Speed to Implement	Leveraging Potential	Job Creation Potential	Funding Class
		Federal	State	Local						
Cross-Cutting										
CC-1	State Government	x	x	x	NQ	NQ	S	H	H	financial instrument, grant
CC-2	Improved Govt. Vehicle Fleet		x		NQ	NQ	M	M	M	grant
CC-3	Developing emission inventories		x		NQ	NQ	F	M	H	grant
CC-4	Local Climate Action Plans			x	NQ	NQ	F	M	H	grant