

*Chapter 2*

# Summary of the WCI

This chapter provides a summary of the WCI initiative and process, its goals, its recommendations for a regional greenhouse gas emission cap-and-trade system, the scenarios it analyzed and its findings.

## 2.A. WCI Initiative and Process

The Western Climate Initiative (WCI) is a cooperative effort of seven U.S. states and four Canadian provinces (the "Partners") that are collaborating to design policies to reduce GHG emissions across the West. According to its authors, the WCI report is the result of an 18-month effort involving numerous government officials (U.S. and Canadian), consultants, and business, industry, labor, and environmental stakeholders.<sup>4</sup>

The Initiative began in February 2007 with the Governors of Arizona, California, New Mexico, Oregon, and Washington, who have since been joined by the premiers of British Columbia, Manitoba, Ontario, and Quebec, and the Governors of Montana and Utah.<sup>5</sup>

The WCI program is the most comprehensive cap-and-trade program designed in the U.S. to date, and nearly 90 percent of GHG emissions in the West will be covered by the cap if and when it is fully implemented in 2015.<sup>6</sup>

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<sup>4</sup> Western Climate Initiative, *Design Recommendations for the WCI Regional Cap and Trade Program*, September 23, 2008.

<sup>5</sup> WCI observers include the U.S. states of Alaska, Colorado, Idaho, Kansas, Nevada, and Wyoming; the Canadian province of Saskatchewan, and the Mexican states of Baja California, Chihuahua, Coahuila, Nuevo Leon, Sonora, and Tamaulipas.

<sup>6</sup> It will include more sectors and emissions than either the Regional Greenhouse Gas Initiative (RGGI) in the northeastern United States or the European Union's Emissions Trading Scheme (EU ETS). The RGGI covers only the electricity sector, while the EU ETS does not cover transportation or residential and commercial fuel use.

## 2.B. WCI Goals

On August 22, 2007, the WCI jurisdictions announced a regional GHG reduction goal of an aggregate reduction of 15 percent below 2005 levels by 2020. Several metrics were used to establish this goal, including:

- i) The aggregation of GHG emissions and emissions goals;
- ii) Currently available state and provincial emissions inventories; and
- iii) Consumption-based emissions estimates for the electricity sector reflecting emissions associated with generating electricity, regardless of whether the electricity was generated in or out of the state or province. The Partner jurisdictions also committed to reducing regional GHG emissions over the long-term.

### 2.B.1. WCI Subcommittees

Five WCI subcommittees were formed to help design the program:<sup>7</sup>

1. **Reporting:** Recommend the GHG emissions reporting system needed to support the WCI cap-and-trade program.
2. **Electricity:** Recommend the point of regulation for the electricity sector.
3. **Scope:** Recommend what other sectors and sources should be included in the cap-and-trade program, in addition to the electricity sector, and the appropriate point of regulation.

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<sup>7</sup> Each subcommittee was chaired by a representative of one of the WCI Partner jurisdictions, was composed of staff from WCI Partner and observer jurisdictions, and had support from various consultants and advisors working under contract to the Western Governors' Association. The subcommittees met regularly by conference calls and also held face-to-face meetings, and the subcommittees incorporated stakeholders' involvement and feedback. Stakeholders' input was solicited through five regional workshops, held between January and July 2008, stakeholder conference calls, opportunities for review and comment in writing, and the WCI website.

4. **Allocations:** Recommend how to apportion and distribute emissions allowances among the WCI Partner jurisdictions.
5. **Offsets:** Recommend whether and how emissions offsets should be included. In addition to the five subcommittees, an Economic Modeling Team was established to assess the economic impact of the program.

### **2.B.2. WCI Continuing Work**

The design recommendations published in the WCI September 2008 document<sup>8</sup> represent the final design elements for the cap-and-trade program, but many of the design aspects require further development. The WCI Partners are developing a work plan that identifies and prioritizes those items and developing a schedule for their completion.

## **2.C. WCI Cap-and Trade Design Recommendations**

The WCI jurisdictions recommended a broad cap-and-trade program as part of a comprehensive regional effort to reduce GHG emissions and achieve the WCI 2020 regional goal. The GHGs covered are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The emissions sources covered are these:

- Electricity generation, including emissions from electricity generated outside the WCI jurisdictions, that is delivered into a jurisdiction.
- Combustion at industrial and commercial facilities.
- Industrial process emission sources, including oil and gas process emissions.
- Residential, commercial, and industrial fuel combustion at facilities with emissions below the WCI thresholds.

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<sup>8</sup> Western Climate Initiative, op.cit.

- Transportation fuel combustion from gasoline and diesel.

The cap-and-trade program can be expanded over time, including adjusting applicability thresholds. Prior to each compliance period, the jurisdictions will decide whether to include new sources in the program.

### **2.C.1. Point of Regulation**

- For industrial sources the point of regulation will be at the point of emission.
- For electricity, it will be the First Jurisdictional Deliverer (FJD).<sup>9</sup>
- For residential, commercial, and industrial fuel combustion at facilities with emissions below the threshold, it will be where the fuels enter commerce in the jurisdictions.
- For transportation fuel combustion, it will be where the fuels enter commerce in the jurisdictions.

### **2.C.2. Thresholds**

- 25,000 tons of carbon dioxide equivalent (CO<sub>2</sub>-eq) annually defines the entities that will have a compliance obligation.<sup>10</sup>
- A method will be developed to prevent entities or facilities from avoiding coverage.<sup>11</sup>

### **2.C.3. Carbon Tax and Other Fiscal Measures**

- Each jurisdiction may use fiscal measures that contribute to achieving comparable GHG emission

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<sup>9</sup> For sources within WCI jurisdictions, the FJD is the generator. For power generated outside the WCI jurisdictions, the FJD is the first entity that delivers that electricity over which the consuming WCI partner jurisdiction has regulatory authority. See Franz Litz and Nicholas Bianco, “Developing a Definition for FJD,” World Resources Institute, [www.wri.org](http://www.wri.org).

<sup>10</sup> Mandatory reporting data may be used to adjust this threshold for specific industries.

<sup>11</sup> Such as by breaking themselves into separate power deliverers that each deliver electricity with emissions below the threshold.

reductions and internalize the carbon price through the cap-and-trade program for transportation and residential/commercial fuels.

#### **2.C.4. Setting the Regional Cap**

The aggregate regional cap for the cap-and-trade program will:

- Equal the sum of the jurisdictions' allowance budgets;
- Include annual caps (with 3-year compliance periods) from the beginning of the program in 2012 through 2020;<sup>12</sup> and
- Decline over time. The regional cap trajectory will be a straight line from the year of initial coverage to 2020.

The regional cap for 2020 will be set so that reductions achieved by the cap plus reductions from other GHG reduction policies for uncapped sources will achieve the WCI regional 2020 goal.

#### **2.C.5. Apportionment**

Apportionment will be as follows:

- Each jurisdiction will have an annual allowance budget within the declining regional cap from 2012 to 2020.
- For 2012, each jurisdiction's allowance budget will be based on an estimate of expected emissions for sources covered in the cap-and-trade program in the jurisdiction in 2012.
- For 2015, each jurisdiction's allowance budget will be set by adding the estimate of expected actual

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<sup>12</sup> The annual caps will be set in advance of the program start in 2012 so that the total number of allowances issued in each 3-year compliance period through 2020 is known.

emissions in 2015 from transportation fuels and residential, commercial, and industrial fuels to the emissions trajectory for the sources first included in the program in 2012.

- From 2015-2020, the trajectory for each jurisdiction's annual allowance budget for covered sectors will be a straight line from the year of initial coverage to 2020.
- For years post-2020, the jurisdictions will set allowance budgets three years in advance.

### **2.C.6. Distribution of Allowances**

Allowances will be distributed as follows:

- Allowances will be issued by each Partner within its own jurisdiction, and each allowance will equal one ton of CO<sub>2</sub> equivalent (CO<sub>2</sub>-eq).
- A portion of the value of the allowance will be dedicated to energy efficiency, renewable energy, R&D, and CCS.
- The remaining portion of each jurisdiction's allowance budget will be used as that jurisdiction sees fit.
- A design for the regional auction process will be developed by the end of 2009 that will prevent market manipulation.
- A reserve or minimum price will be established for a portion of the auctioned allowances to manage the risk of inadvertently, setting the program cap higher than intended.
- Entities and facilities included under the cap will be encouraged to reduce GHG emissions before the start of the first compliance period in 2012.
- Allowances will be permitted to be banked without limitation.

- Borrowing of allowances from future compliance periods will not be allowed.
- Each compliance period will be three years.

### **2.C.7. Offsets and Allowances From Other Systems**

An offset system will be included to reduce compliance costs. To ensure that most emission reductions occur at WCI covered entities, the program will limit the use of offsets and allowances from other GHG emission trading systems to no more than 49 percent of the total emission reductions from 2012-2020.

### **2.C.8. Compliance and Enforcement**

Mandatory measurement and monitoring for GHG emissions will commence in January 2010, and reporting of 2010 emissions will begin in early 2011.<sup>13</sup> The cap-and-trade program will launch January 1, 2012, and each jurisdiction will enforce compliance. Covered entities will demonstrate compliance with the program, and to ensure transparency, certain data from the emissions reports, allowances, and offsets that are used for compliance will be made public. A regional administrative organization will be created to:

- Coordinate the regional auction of allowances.
- Track emissions and provide public information on progress towards the WCI regional goal.
- Monitor and report on market activity, including any potential market manipulation.
- Serve as a forum for WCI Partner jurisdictions to update one another on program progress .
- Coordinate review and adoption of protocols for offsets.

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<sup>13</sup> The entities and facilities subject to reporting are those with annual emissions above 10,000 tons CO<sub>2</sub>-eq, and third party verification of reported emissions will be required.

- Coordinate review and adoption of updated reporting protocols.
- Coordinate review and issuing of offset credit.
- Suggest criteria and means to accredit service providers to deliver validation and verification services.

## 2.D. Major Assumptions

The WCI analysis assumed that:

- No new nuclear power or hydropower generation capacity will be built prior to 2020. Thus, the analysis does not include any increase in these power sources.
- No CCS for electric power generation will be built prior to 2020. Thus, the analysis does not include the benefits of CCS.
- No new coal-fired power plants are to be built in the WECC states and provinces through 2020 beyond those already planned.
- Plug-in hybrid electric vehicles will not be produced in any significant quantity prior to 2020. Thus, the analysis does not include an increase in PEHVs as a result of the cap-and-trade program.
- For the U.S., the requirements of the Energy Independence and Security Act (EISA) are part of the Reference Case against which the cap-and-trade program is evaluated.
- For the Canadian provinces, lighting, equipment, and appliance standards as listed by the Canadian Standards Association as well as the federal "ecoENERGY" Renewable Fuels Strategy are included in the Reference Case.

Finally, the analysis did not examine the potential macroeconomic impacts of the costs and savings estimated.<sup>14</sup>

## 2.E. WCI Scenarios

Three scenarios were examined. The first scenario is the Reference Case which reflects expectations in the absence of the WCI policies to reduce GHG emissions. The second group is the Cap-and-Trade Policy Cases. These cases examine the primary alternatives for the cap-and-trade program, including whether to allow the use of offsets and whether to have a narrow or broad scope. The narrow scope includes stationary sources and the electric sector. The broad scope also includes transportation fuels and residential/commercial fuels. The cases presented are: i) Broad scope without offsets; ii) Broad scope with offsets; and iii) Narrow scope with offsets. For all three Cap-and-Trade Policy Cases, complementary policies are included along with the car standards, programs to reduce vehicle miles traveled, and energy efficiency programs.

The third group of cases are the Sensitivity Cases, the purpose of which are to assess the impacts of various assumptions and inputs on the model results. These assumptions can affect both the Reference Case and the Policy Cases. The analysis focused on three sensitivities that were identified as most important by WCI partner jurisdictions and stakeholders:

- **High Energy Prices and High Generation Costs:** This includes both higher energy prices and higher power generation costs, and was performed for both the Reference Case and the Policy Case with the broad scope and offsets.
- **Low Energy Prices:** This sensitivity uses energy prices that are lower than those used in the Reference Case, and was performed for both the Reference Case and the Policy Case with the broad scope and offsets.
- **High Natural Gas Prices:** This sensitivity was designed to examine the impact of higher natural gas prices that may be induced by policies that are undertaken to reduce GHG

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<sup>14</sup> The WCI Partner jurisdictions are planning to continue the analysis so that macroeconomic impacts, such as income, employment, and output, can be assessed.

emissions and was applied to the Policy Case with broad scope and offsets.<sup>15</sup>

## 2.F. Findings

Table 2-1 summarizes the results of the WCI analyses:

- The GHG emissions are reported for the eight WCI partner jurisdictions<sup>16</sup> included in the analysis.
- Fuel expenditures and total costs (savings) are relative to the appropriate reference case.
- The potential value of allowances is shown assuming that the full allowance value is passed through to consumers.
- Total costs (savings) include fuel expenditures and annualized investment costs.

Overall, the WCI study concluded that the jurisdictions can meet the regional goal of reducing emissions 15 percent below 2005 levels by 2020 with a small overall savings, due to reduced energy expenditures exceeding the direct costs of GHG emission reductions. The savings are focused primarily in the residential and commercial sectors, where energy efficiency programs and vehicle standards are expected to have the most significant impacts. Energy-intensive industrial sectors are estimated to have small net costs (less than 0.5 percent of output). When offsets are included in the analysis, allowance prices are estimated to increase from \$6/metric ton in 2015 to about \$24/metric ton in 2020. If offsets are not included, or if they cost substantially more than \$20/metric ton, then the allowance price is estimated to be higher.

The study found that energy efficiency programs, vehicle emissions standards, and programs to reduce vehicle miles traveled (VMT) are important for achieving emission reductions. Overall savings were realized from these policies, and resources from the cap-and-trade program (from the auctioning of emission allowances) can fund these programs. The analysis also determined that the ability to bank allowances is critical for reducing compliance costs. In all

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<sup>15</sup> The results of this Policy Case are compared to the Reference Case with the standard natural gas price assumptions because the presumption is that policies are causing natural gas price increases.

<sup>16</sup> These include WA, OR, CA, AZ, NM, UT and MT and British Columbia.

cases examined, emission allowances were estimated to be banked in early years when allowance prices were below \$10/ton, and used when allowance prices rose in later years. The study also found that offsets provide an effective mechanism for limiting compliance costs. Offsets were assumed to be available at \$20/metric ton and, as allowance prices rose, offsets were estimated to be used in combination with allowance banking to reduce compliance costs.

The analysis examined the sensitivity of the results to various assumptions, and indicated a net savings whether future energy prices are higher or lower than in the Reference Case. It also indicated a net savings with higher electricity power generation costs.<sup>17</sup> If the program causes a substantial increase in natural gas prices, then the overall impact is estimated to be a small net cost to the economy; however, the program is not expected to lead to increases in natural gas prices, according to the WCI study.

The report contends that these modeling results are generally consistent with the findings of prior modeling studies of U.S. and Canadian programs. Offsets and allowance banking provide compliance flexibility that reduces allowance prices. The analysis suggests that offsets are particularly important during the years approaching 2020, but may play a minor role in the early years of the program when allowance prices are expected to be less than \$10/metric ton.<sup>18</sup> The study emphasizes the need to consider strategies for mitigating economic impacts on industries facing competition from facilities that are not included in climate policies.

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<sup>17</sup> If the program scope were narrowed to exclude transportation fuels and residential and commercial fuels, the overall impacts would be similar, but allowance prices would be higher because the program is focused on a smaller group of sources.

<sup>18</sup> The overall net savings estimated are consistent with studies that assume that complementary policies, such as energy efficiency programs and vehicle standards, can result in economic savings. While the overall costs and savings from emission reductions and reduced fuel expenditures are small, “potential impacts on specific energy-intensive industrial sectors warrant additional examination.”

**Table 2-1** Summary Results for 2020 in the Eight Jurisdictions

| Case                             | GHG Emissions (MMTCO <sub>2</sub> -eq) | Offsets Used (MMTCO <sub>2</sub> -eq) | Allowance Price (2007\$) (\$M/yr.) | Change in Fuel Expenditures (\$M/yr.) | Potential Allowance Value (\$M/yr.) | Total Costs (Savings) (\$M/yr.) |
|----------------------------------|--|---------------------------------------|------------------------------------|---------------------------------------|-------------------------------------|---------------------------------|
| Reference Case                   | 992.8                                  | --                                    | --                                 | --                                    | --                                  | --                              |
| <b>Cap-and-trade policy case</b> |  |                                       |                                    |                                       |                                     |                                 |
| Broad scope, no offsets          | 859.2                                  | --                                    | \$63                               | (\$32,296)                            | \$39,516                            | (\$23,525)                      |
| Broad scope, with offsets        | 877.9                                  | 31.8                                  | \$24                               | (\$31,012)                            | \$15,150                            | (\$22,080)                      |
| Narrow scope, with offsets       | 847.8                                  | 18.2                                  | \$71                               | (\$22,794)                            | \$16,092                            | (\$11,422)                      |
| <b>Sensitivity cases</b>         |  |                                       |                                    |                                       |                                     |                                 |
| High price                       | 833.3                                  | 12.7                                  | \$18                               | (\$42,736)                            | \$10,521                            | (\$30,514)                      |
| Low Price                        | 857.0                                  | 34.1                                  | \$56                               | (\$22,598)                            | \$35,642                            | (\$16,245)                      |
| High natural gas price           | 865.4                                  | 26.6                                  | \$20                               | (\$6,525)                             | \$12,434                            | \$7,880                         |

Fuel Expenditures and total costs (savings) are changes from reference case values.

Potential allowance value calculated as emissions times allowance price.

Total costs (savings) do not include costs of VMT reduction programs, energy efficiency programs, or potential allowance value.

Source: Western Climate Initiative and Management Information Services, Inc., 2008.