



Institute *for*  
**Policy Integrity**

NEW YORK UNIVERSITY SCHOOL OF LAW

October 27, 2017

California Air Resources Board  
VIA ELECTRONIC SUBMISSION

**Subject: Comments on the October 12 California Air Resources Board Cap-and-Trade Regulation Workshop**

The Institute for Policy Integrity at New York University School of Law (Policy Integrity)<sup>1</sup> respectfully submits the following comments to the California Air Resources Board (ARB) on its October 12 workshop regarding development of the regulations to implement the cap-and-trade provisions in Assembly Bill 398 (AB 398). Policy Integrity is a nonpartisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

On July 25, 2017, Governor Jerry Brown signed into law AB 398, which amended the California Global Warming Solutions Act of 2006 (AB 32). AB 398 specifically extends and provides for some modifications to the design of California's AB 32 cap-and-trade program. In passing AB 398, California has taken an important step to extend its well-regarded cap-and-trade program past 2020 to the year 2030. There are, however, still some details of AB 398's implementation that will be worked out through the regulatory process and can affect the success of the program. Following a workshop on October 12, 2017, ARB opened an informal comment period on several of these issues in the cap-and-trade program extension under AB 398.

When developing regulations under AB 398, in order to account for the externalities associated with greenhouse gas emissions, while also promoting overall societal well-being, ARB should:

- Set the price ceiling for permits at least as high as the social cost of carbon; and
- Preferentially allocate unsold allowances to the price containment reserve with the highest price.

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<sup>1</sup> No part of this document purports to present New York University School of Law's views, if any.

We briefly elaborate on each of these points below. Policy Integrity looks forward to remaining engaged and continuing these discussions in more detail throughout the AB 398 regulation development process.

## **ARB Should Set the Price Ceiling for Permits at Least as High as the Social Cost of Carbon**

At the October 12 hearing, ARB requested feedback on considerations for setting the price ceiling.<sup>2</sup> According to AB 398, ARB must consider “overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health” in designing regulations under AB 398.<sup>3</sup> Additionally, in setting the price ceiling for emissions trading, ARB must take into account the “full social cost associated with emitting a metric ton of greenhouse gases.”<sup>4</sup> In implementing these requirements, ARB should set the price ceiling at least as high as the Interagency Working Group’s estimate of the social cost of carbon (SC-CO<sub>2</sub>) to ensure the full value of external damage caused by greenhouse gas emissions is internalized.

The Interagency Working Group on the Social Cost of Greenhouse Gases’ (IWG) SC-CO<sub>2</sub> “central” estimate<sup>5</sup> of approximately \$50 per ton of CO<sub>2</sub><sup>6</sup> is the best currently available estimate for the external cost of carbon dioxide emitted in the year 2020. Of course, there is uncertainty over the science and economics of climate change. This uncertainty is due to the complexity of the climate system, the difficulty of placing a monetary value on environmental services, the long time horizon over which climate change occurs, and the unprecedented amount of carbon emissions that have entered the atmosphere since the industrial revolution. As science and economics improve and progress, this uncertainty will decline, but uncertainty can never be fully eliminated from future predictions. The fact that there is uncertainty does not mean that there is no social cost of carbon dioxide emissions. If anything, this uncertainty implies that we should take stronger action.<sup>7</sup> While the IWG was disbanded and its guidance was withdrawn by Executive Order 13,783, the IWG still used the best data, the best models, and the best methodologies that are currently available.

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<sup>2</sup> Cal. Air Resources Board, Cap-and-Trade Regulation Workshop, at slide 15 (Oct. 12, 2017).

<sup>3</sup> Cal. Health & Safety Code §38562 (1)(6).

<sup>4</sup> Cal. Health & Safety Code §38562 (c)(2).

<sup>5</sup> For more on the Interagency Working Group on the Social Cost of Greenhouse Gases, its SC-CO<sub>2</sub> estimates, and the SC-CO<sub>2</sub>’s applications in state policy, see ILIANA PAUL ET AL., INSTITUTE FOR POLICY INTEGRITY, THE SOCIAL COSTS OF GREENHOUSE GASES AND STATE POLICY 9-12 (2017), available at [http://policyintegrity.org/files/publications/SCC\\_State\\_Guidance.pdf](http://policyintegrity.org/files/publications/SCC_State_Guidance.pdf).

<sup>6</sup> For emissions in the year 2020, in 2017 dollars. INTERAGENCY WORKING GRP. ON SOC. COST OF GREENHOUSE GASES, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866, at 4 tbl.2 (2016) [hereinafter 2016 TSD] available at [https://www.obamawhitehouse.gov/sites/default/files/omb/inforeg/scc\\_tsd\\_final\\_clean\\_8\\_26\\_16.pdf](https://www.obamawhitehouse.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf). Inflated to 2017 dollars with the Bureau of Labor Statistics Inflation Calculator, available at <https://data.bls.gov/cgi-bin/cpicalc.pl>.

<sup>7</sup> William D. Nordhaus, *Projections and Uncertainties about Climate Change in an Era of Minimal Climate Policies*. National Bureau of Economic Research (2016), available at <http://www.nber.org/papers/w22933.pdf>.

As of late October 2017, California’s cap-and-trade carbon emission prices<sup>8</sup> are lower than the Interagency Working Group’s estimate of the SC-CO<sub>2</sub>,<sup>9</sup> which is the best available consensus estimate of the marginal external damage of carbon emissions.<sup>10</sup> Setting the price ceiling at a lower level than the SC-CO<sub>2</sub> would fail to fully internalize the external costs of greenhouse gases, and would therefore fail to comply with AB 398.<sup>11</sup> Furthermore, ARB has listed sufficiently incentivizing the adoption and development of low greenhouse gas production techniques and technologies as one of its goals in setting the price ceiling.<sup>12</sup> Setting a price ceiling below the IWG SC-CO<sub>2</sub> would fail to provide incentives commensurate to the harm avoided through greenhouse gas emission reduction.

Similar considerations should govern the two intermediate price containment points.<sup>13</sup> If these prices are set too low, then market participants will not receive a sufficient incentive to internalize the greenhouse gas externality. On the other hand, if the price containment points are set too high, this could result in market volatility. However, the IWG’s SC-CO<sub>2</sub> estimate is likely a lower bound on the true social cost of carbon emissions, due to omitted impacts, the undervaluation of extreme events and tipping points, as well as other factors.<sup>14</sup> Additionally, because the goal of AB 398 is to address the harms of climate change, it is important to make sure that these costs of climate change will be internalized. Therefore, ARB should set both price containment points above the SC-CO<sub>2</sub>, as well. Because AB 398 specifies that the price containment points should be set “at levels below the price ceiling,”<sup>15</sup> the system would need to be set up to allow all three price points to be

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<sup>8</sup> Climate Policy Initiative, California Carbon Dashboard, *available at* <http://calcarbondash.org/>

<sup>9</sup> See 2016 TSD, *supra* note 6.

<sup>10</sup> Richard L. Revesz et al., *Best Cost Estimate of Greenhouse Gases*, 357 SCIENCE 6352 (2017).

<sup>11</sup> Cal. Health & Safety Code §38562 (1)(6).

<sup>12</sup> Cal. Air Resources Board, Cap-and-Trade Regulation Workshop, at slide 16 (Oct. 12, 2017).

<sup>13</sup> Cal. Health & Safety Code §38562 (c)(2)(A)(ii)(II)(B) (ARB shall “Establish two price containment points at levels below the price ceiling. The state board shall offer to covered entities nontradable allowances for sale at these price containment points.”).

<sup>14</sup> Peter Howard & Derek Sylvan, *The Economic Climate: Establishing Expert Consensus on the Economics of Climate Change* (Inst. Policy Integrity Working Paper 2015/1); R. Pindyck, *The Social Cost of Carbon Revisited* (Nat’l Bureau of Econ. Res. No. w22807, 2016) (\$80-\$100 is the trimmed range of estimates at a 4% discount rate; without trimming of outlier responses, the estimate is \$200). The underestimation results from a variety of factors, including omitted and outdated climate impacts (including ignoring impacts to economic growth and tipping points), simplified utility functions (including ignoring relative prices), and applying constant instead of a declining discount rate. See Richard L. Revesz et al., *Global Warming: Improve Economic Models of Climate Change*, 508 NATURE 173 (2014) and J.C. Van Den Bergh & W.J. Botzen, *A Lower Bound to the Social Cost of CO<sub>2</sub> Emissions*, 4 NATURE CLIMATE CHANGE 253 (2014) (proposing \$125 per metric ton of carbon dioxide in 1995 dollars, or about \$200 in today’s dollars, as the lower bound estimate). See also F.C. Moore & D.B. Diaz, *Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy*, 5 NATURE CLIMATE CHANGE 127 (2015) (concluding the SCC may be six times higher after accounting for potential growth impacts of climate change). Accounting for both potential impacts of climate change on economic growth and other omitted impacts, S. Dietz and N. Stern find a two- to seven-fold increase in the SCC. *Endogenous growth, convexity of damage and climate risk: how Nordhaus’ framework supports deep cuts in carbon emissions*, 125 THE ECONOMIC JOURNAL 574 (2015).

<sup>15</sup> Cal. Health & Safety Code §38562 (c)(2)(A)(ii)(II)(B), *supra* note 13.

above the SC-CO<sub>2</sub> in order to account for “the full social cost associated with emitting a metric ton of greenhouse gases,” as required by the statute.<sup>16</sup>

### **ARB should preferentially allocate unsold allowances to the price containment reserve with the highest price**

ARB requested feedback on how to allocate allowances that have been unsold for 24 months.<sup>17</sup> AB 398 requires ARB to transfer these unsold allowances to the allowance price containment reserve.<sup>18</sup> Furthermore, there are additional allowances for which the statute does not designate a sale price.<sup>19</sup> Under these circumstances, in order to ensure that it will internalize the cost of greenhouse gas emissions, ARB should sell these additional allowances at the price ceiling, rather than one of the lower price containment points.

As discussed above, letting too many allowances to be purchased at a price below the SC-CO<sub>2</sub> will not fully incentivize market participants to internalize the cost of greenhouse gas emissions. If all price containment reserve trigger prices are set above the SC-CO<sub>2</sub>, then participants will be appropriately incentivized to internalize climate damages. If all three prices are above the SC-CO<sub>2</sub>, ARB should assess its relative priority of ensuring market and price stability versus reducing GHG emissions, noting that research has shown that stability can be achieved with relatively minimal cost containment allowances.<sup>20</sup>

If any of the price containment trigger points are set below the SC-CO<sub>2</sub>, then to the extent possible, ARB should transfer unsold allowances to the reserve that sells at the price ceiling. Such a system would ensure that ARB meets its requirements to account for the full social cost of emissions of greenhouse gases. Moreover, research suggests that a relatively small number of cost containment allowances is sufficient to balance the goals of reduced price volatility and achievement of environmental goals.<sup>21</sup> This research suggests that priority should be given to internalizing climate change externalities when setting cost containment reserve sizes and trigger prices for greenhouse gas cap and trade programs.

### **Conclusion**

California continues to be a leader in developing thoughtful and ambitious climate policy with its passage of AB 398. In order to ensure that program as implemented fully internalizes the costs of greenhouse gas emissions, ARB should set the price ceiling and

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<sup>16</sup> Cal. Health & Safety Code §38562 (c)(2)(A)(i)(III).

<sup>17</sup> Cal. Air Resources Board, Cap-and-Trade Regulation Workshop, at slide 20 (Oct. 12, 2017).

<sup>18</sup> Cal. Health & Safety Code §38562 (c)(2)(C).

<sup>19</sup> Cal. Health & Safety Code §38562 (c)(2)(A)(ii)(II)(B), *supra* note 13 (“The state board shall offer to covered entities nontradable allowances for sale at these price containment points. The price containment points shall be established using two-thirds, divided equally, of the allowances in the allowance price containment reserve as of December 31, 2017.”).

<sup>20</sup> Harrison Fell et al., *Soft and hard price collars in a cap-and-trade system: A comparative analysis*, 64 J. ENVIRO. ECON. MGMT. 183–198 (2012).

<sup>21</sup> *Id.*

price containment points for permits at least as high as the IWG's SC-CO<sub>2</sub> and preferentially allocate unsold allowances to the price containment reserve with the highest price.

Respectfully submitted,

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