Agenda

• Efforts to Expand Use of Social Cost of Carbon Estimates to Project-Specific Environmental Review

• New Changes in the Health Risk Assessment Policy: How Will They Impact Permitting

• Latest Development in Fracking Regulations
Efforts to Expand Use of Social Cost of Carbon Estimates to Project-Specific Environmental Review

Presented by Stacey VanBelleghem
Social Cost of Carbon Estimates

**Background**

- What are the Social Cost of Carbon (SCC) estimates?
- What purpose do they serve?
- Responsive to Executive Order 12866
Interagency Working Group on Social Cost of Carbon
“History” of SCC Estimates

• **2008:** Center for Biological Diversity v. National Highway Traffic Safety Administration, 538 F.3d 1172 (9th Cir. 2008)

• **2009:** Interagency Working Group formed and interim estimates developed

• **2010:** SCC estimates developed

• **2013:** SCC estimates updated
How Estimates Developed

- Integrated Assessment Models

- Global versus Domestic

- Novel Discount Rates: 2.5, 3 and 5 percent

- **Four values**: average of SCC at three discount rates and SCC value for the 95th percentile at 3 percent discount rate
# 2010 SCC Estimates

## Social Cost of CO$_2$, 2010 – 2050 (in 2007 dollars)

<table>
<thead>
<tr>
<th>Discount Rate</th>
<th>5%</th>
<th>3%</th>
<th>2.5%</th>
<th>3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Avg</td>
<td>Avg</td>
<td>Avg</td>
<td>95th</td>
</tr>
<tr>
<td>2010</td>
<td>4.7</td>
<td>21.4</td>
<td>35.1</td>
<td>64.9</td>
</tr>
<tr>
<td>2015</td>
<td>5.7</td>
<td>23.8</td>
<td>38.4</td>
<td>72.8</td>
</tr>
<tr>
<td>2020</td>
<td>6.8</td>
<td>26.3</td>
<td>41.7</td>
<td>80.7</td>
</tr>
<tr>
<td>2025</td>
<td>8.2</td>
<td>29.6</td>
<td>45.9</td>
<td>90.4</td>
</tr>
<tr>
<td>2030</td>
<td>9.7</td>
<td>32.8</td>
<td>50.0</td>
<td>100.0</td>
</tr>
<tr>
<td>2035</td>
<td>11.2</td>
<td>36.0</td>
<td>54.2</td>
<td>109.7</td>
</tr>
<tr>
<td>2040</td>
<td>12.7</td>
<td>39.2</td>
<td>58.4</td>
<td>119.3</td>
</tr>
<tr>
<td>2045</td>
<td>14.2</td>
<td>42.1</td>
<td>61.7</td>
<td>127.8</td>
</tr>
<tr>
<td>2050</td>
<td>15.7</td>
<td>44.9</td>
<td>65.0</td>
<td>136.2</td>
</tr>
</tbody>
</table>
## November 2013 Updates

### Revised Social Cost of CO₂, 2010 – 2050 (in 2007 dollars per metric ton of CO₂)

<table>
<thead>
<tr>
<th>Discount Rate Year</th>
<th>5.0% Avg</th>
<th>3.0% Avg</th>
<th>2.5% Avg</th>
<th>3.0% 95th</th>
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<tbody>
<tr>
<td>2010</td>
<td>11</td>
<td>32</td>
<td>51</td>
<td>89</td>
</tr>
<tr>
<td>2015</td>
<td>11</td>
<td>37</td>
<td>57</td>
<td>109</td>
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<td>2020</td>
<td>12</td>
<td>43</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>2025</td>
<td>14</td>
<td>47</td>
<td>69</td>
<td>143</td>
</tr>
<tr>
<td>2030</td>
<td>16</td>
<td>52</td>
<td>75</td>
<td>159</td>
</tr>
<tr>
<td>2035</td>
<td>19</td>
<td>56</td>
<td>80</td>
<td>175</td>
</tr>
<tr>
<td>2040</td>
<td>21</td>
<td>61</td>
<td>86</td>
<td>191</td>
</tr>
<tr>
<td>2045</td>
<td>24</td>
<td>66</td>
<td>92</td>
<td>206</td>
</tr>
<tr>
<td>2050</td>
<td>26</td>
<td>71</td>
<td>97</td>
<td>220</td>
</tr>
</tbody>
</table>
Agency Uses of SCC Estimates

- Energy Conservation Program
- Vehicle GHG Emission Standards/Fuel Efficiency Standards
- EPA Clean Air Act rules for stationary sources
- EPA Clean Water Act effluent limitations (Steam Electric Power)
Movement To Expand Use of SCC to Project and Facility Planning

- April 22, 2013 EPA comments on Keystone XL draft supplemental environmental impact statement
- 2014 Minnesota Public Utility Commission proceeding
- October 8, 2014 letter to Secretaries Jewell and Vilsack
- Public comments on individual projects—(*i.e.* federal coal leasing, energy, and infrastructure projects)
High Country Case


  • invalidated final environmental impacts statement evaluating Forest Service and Bureau of Land Management coal lease modifications for failure to disclose cost of GHG emissions

  • faulted agencies for ignoring SCC estimates

  • agencies must have “justifiable reasons for not using (or assigning minimal weight to)” the SCC estimates
What to Watch

• Advocacy to adjust SCC estimates
  • discount rate
  • global versus domestic measurement
  • wildfire damage in SCC estimates

• Whether and to what extent agencies expand the use of SCC estimates outside of the cost-benefit evaluation for regulatory impact analysis

• Whether other courts or the Council on Environmental Quality weigh in on the use of SCC estimates in NEPA project-level review
New Changes in the Health Risk Assessment Policy: How Will They Impact Permitting

Presented by Marc Campopiano
OEHHA Updates HRA Guidance

- OEHHA approved Health Risk Assessment (HRA) Guidance in 2003
- Scientific Review Panel (SRP) and OEHHA approved technical support documents
  - 2008 - Noncancerous Reference Exposure Levels
  - 2009 - Cancer Potency Factors (age specific factors)
  - 2012 - Exposure Assessment (breathing rates and exposure duration)
- OEHHA revising HRA guidance to incorporate technical support document
- Nov. 12, 2014 Scientific Review Panel consideration
Broad State Effort Focused on DPM

>80% reduction in statewide ambient cancer risk from diesel PM

Source: CALIFORNIA’S AIR TOXICS PROGRAM: IMPROVEMENTS TO ASSESS HEALTH RISK, Update to the Air Resources Board July 24, 2014
Overview of Changes

- Cancer Risk =
  - Cancer Potency Factor $\times$
  - Age - Sensitivity Factor $\times$
  - Time at Home $\times$
  - Inhalation Dose (concentration $\times$ daily breathing rate) $\times$
  - Exposure Duration

- All components in red are affected by updates in the 2014 OEHHA Guidelines
### Age Groups

<table>
<thead>
<tr>
<th>Current Age Groups</th>
<th>Current (Bins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70yr (Resident), 9yr (Children), &amp; 40yr (Worker)</td>
<td></td>
</tr>
<tr>
<td>New OEHHA Guidance</td>
<td>Trimester</td>
</tr>
<tr>
<td>Current</td>
<td>0&lt;2</td>
</tr>
<tr>
<td>2&lt;9</td>
<td>2&lt;16</td>
</tr>
<tr>
<td>16&lt;30</td>
<td>16-70</td>
</tr>
</tbody>
</table>

Source: SJVAPCD, Draft Staff Report, Proposed Update to District’s Risk Management Policy to Address OEHHA’s Revised Risk Assessment Guidance Document, September 23, 2014
### Age Sensitivity Factors

<table>
<thead>
<tr>
<th>Current Adjustment</th>
<th>Age Group</th>
<th>Age Sensitivity Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-70 yr</td>
<td>3rd Trimester</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>0&lt;2 years</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2&lt;9 years</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2&lt;16 years</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16&lt;30 years</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16-70 years</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: SJVAPCD, Draft Staff Report, Proposed Update to District’s Risk Management Policy to Address OEHHA’s Revised Risk Assessment Guidance Document, September 23, 2014
Breathing Rates

<table>
<thead>
<tr>
<th>Trimester</th>
<th>0&lt;2</th>
<th>2&lt;9</th>
<th>2&lt;16</th>
<th>16&lt;30</th>
<th>16-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult 95th</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td>393</td>
</tr>
<tr>
<td>Adult 80th</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td>302</td>
</tr>
<tr>
<td>Children</td>
<td>NA</td>
<td>581</td>
<td></td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

### Proposed New OEHHA

<table>
<thead>
<tr>
<th>Adult</th>
<th>Mean</th>
<th>225</th>
<th>658</th>
<th>535</th>
<th>452</th>
<th>210</th>
<th>185</th>
</tr>
</thead>
<tbody>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt;</td>
<td>361</td>
<td>1090</td>
<td>861</td>
<td>745</td>
<td>335</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt; / 80&lt;sup&gt;th&lt;/sup&gt;</td>
<td>273</td>
<td>758</td>
<td>631</td>
<td>572</td>
<td>261</td>
<td>233</td>
<td></td>
</tr>
<tr>
<td>Worker / Children</td>
<td>Mean</td>
<td>170</td>
<td>890</td>
<td>470</td>
<td>380</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>95&lt;sup&gt;th&lt;/sup&gt;</td>
<td>240</td>
<td>1200</td>
<td>640</td>
<td>520</td>
<td>240</td>
<td>230</td>
<td></td>
</tr>
</tbody>
</table>

Source: SJVAPCD, Draft Staff Report, Proposed Update to District’s Risk Management Policy to Address OEHHA’s Revised Risk Assessment Guidance Document, September 23, 2014
Magnitude of Changes

Source: CALIFORNIA’S AIR TOXICS PROGRAM: IMPROVEMENTS TO ASSESS HEALTH RISK, Update to the Air Resources Board July 24, 2014
Changes = Higher HRA Impact

Examples of Increased Risk at 3X’s

<table>
<thead>
<tr>
<th>Example</th>
<th>Cancer Risk from Current Guidelines (per million)</th>
<th>Approximate Risk from New Guidelines (per million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATES IV</td>
<td>422</td>
<td>1,266</td>
</tr>
<tr>
<td>San Bernardino Rail Yard – Max residential (2008)</td>
<td>2,500</td>
<td>7,500</td>
</tr>
<tr>
<td>Gas Station (Costco) – Max residential</td>
<td>15</td>
<td>45</td>
</tr>
</tbody>
</table>

Cancer Burden impacts may be larger (5-10x) than maximum cancer risk impacts
- 1 per million contour limit could extend 2-3x farther

Source: SCAQMD, Staff Presentation, Potential Impacts of New OEHHA Risk Guidelines on SCAQMD Programs, Special Meeting of the SCAQMD Governing Board: May 15 and 16, 2014, Agenda No. 8b.ar
Air District Responses

- According to SCAQMD staff:
  - All risk-based programs will be affected
    - New and modified permits (R1401 and 1401.1)
    - Existing facilities (R1402 and some source-specific rules)
    - New projects (CEQA)
  - SJVAPCD staff reached similar conclusion
    - SJVAPCD held workshop on October 9 to consider whether to raise its CEQA significance thresholds to account for the higher HRA results.

What’s Next?

• Scientific Review Panel (SRP) reviewed OEHHA Guidance Manual at November 12, 2014 meeting

• Final version expected to be released in early 2015 (January) along with an updated version of HARP.

• CARB develop a risk management policy statewide or, alternatively, leave it to the regional air agencies to administer policy decisions.

• Air Districts will have to adopt policy for using the new guidance

• **Significant Uncertainty for Businesses**
Latest Developments in Fracking (or Fracing) Regulations

Presented by Alicia Handy
Overview

- **Federal Regulatory Updates**
  - Environmental Protection Agency ("EPA")
  - Department of the Interior ("DOI")

- **State Regulatory Updates**
  - State Regulatory Developments
  - Power of Local Governments
  - Induced Seismicity
  - Water Availability

- **Litigation and Enforcement**
Federal Regulatory Updates - EPA

- New Source Performance Standards (NSPSs)
  - Quad O - “Green Completions” and Storage Tanks

- Ozone National Ambient Air Quality Standards (NAAQs)
  - August 2014: EPA staff recommends 60-70 ppb standard
  - More areas may be designated as “non-attainment”
  - Will increase permitting timing, cost and complexity
  - May require offset/credit programs for precursors
Federal Regulatory Updates - EPA

- Greenhouse Gas Emissions
  - Greenhouse Reporting Rule
    - Proposed expansion
  - Climate Action Plan
  - US-China Climate Deal

- Regulatory Developments to Watch
  - TSCA and TRI Reporting Rulemakings
  - Hydraulic fracturing wastewater discharge standards
    - Proposed rule expected to be released – 2014
  - Hydraulic fracturing study
    - Final draft for peer review and public comment – 2015
Federal Regulatory Updates - DOI

- Hydraulic Fracturing
  - May 2013: Revised proposed rule released
  - August 2014: Rule sent to OMB for review
  - Winter 2014 or 2015: Final rule
  - Main Features:
    - Public disclosure of chemicals
    - Confirmation that wells meet applicable construction standards
    - Development of plans to manage flowback water
    - Integration with existing state and tribal standards

- Onshore Order No. 9 – Waste Prevention
  - December 2014: Notice of Proposed Rulemaking
• California SB4 - Department of Oil, Gas & Geothermal Resources (DOGGR) to adopt regulations regarding well-stimulation permits, public disclosure, neighbor notification, and water well testing
  • Interim regulations effective January 1, 2014
  • DOGGR must finalize regulations by January 1, 2015
  • Final regulations to be effective July 1, 2015
    • Draft regulations published November 15, 2013
    • First public comment period ended January 14, 2014
    • Second public comment period ended July 28, 2014
  • July 1, 2015: Final Environmental Impact Report certification
- Illinois Hydraulic Fracturing Regulatory Act (June 17, 2013)
  - Presumption of liability for water contamination
  - Prohibits open-air ponds for wastewater storage
  - Contains wastewater management, water monitoring, disclosure and public participation, setback, and well construction standards/requirements
- Draft regulations released November 15, 2013
  - Presumption of liability applies within 1,500 feet of operations
  - Revised draft released August 29, 2014
    - Strengthened public disclosure rules
    - Stronger penalties for violations
    - Covers waterless fracturing operations
    - Cannot store flowback in open pits for more than 7 days
  - Approved by Administrative Rules Committee
    - Closed door consideration of rules – what will the rules look like?
    - File with Secretary of State – November 15, 2014 (exp.)
• **Moratoriums/Bans**
  - New York: municipalities can use zoning laws to limit drilling
  - Pennsylvania: municipalities can use zoning laws to limit drilling
  - Colorado: state law preempts local/municipal laws
  - California: local moratoriums/bans being considered
  - Ohio: local moratoriums/bans being considered
  - Texas: local moratoriums/bans being considered
• Concern especially for disposal well owners/operators
• Regulatory Activity
  • Disposal Wells Shut-In:
    • Arkansas
    • Ohio
  • Regulations:
    • Colorado (not limited to disposal wells)
    • Ohio
    • Texas
  • Proposals:
    • California (well-stimulation activities)
    • Kansas
    • Oklahoma
- **EPA Oil & Gas Enforcement Priority**
  - Established every three years
  - Energy extraction listed as priority for FY 2014-2016
  - Increased inspection and enforcement activity

- **Settlements**
  - **Clean Water Act ($83,000 - $3.2 million + injunctive relief)**
    - Chesapeake Energy
    - Trans Energy
    - Gasco Energy
    - XTO Energy
    - Fluid Recovery Services
  - **Clean Air Act and EPCRA ($84,506 - $207,150 + injunctive relief)**
    - Atlas Resources
    - Elm Ridge Exploration
Questions?
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