Could a State-Level Carbon Tax Work in the Intermountain West?

Adele C. Morris
Brookings Mountain West
Could a State-Level Carbon Tax Work in the Intermountain West?

Adele C. Morris, Ph.D.
Fellow
Policy Director, Climate and Energy Economics Project
The Brookings Institution

Matt Kinzer
UNLV
October 8, 2013
IPCC: “Warming is unequivocal
...since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.”

“Human influence on the climate system is clear.”

Working Group I Contribution to the IPCC Fifth Assessment Report
Climate Change 2013: The Physical Science Basis
Summary for Policymakers
“Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.”

Cumulative CO2 emissions 2012-2100 in Gigatonnes of Carbon
RCP 2.6: Most stringent policies
RCP 8.5: No emissions constraints
Premises

• Greenhouse gas emissions result in damages.
• Prices don’t reflect those damages.
• A carbon tax or cap-and-trade system can internalize external costs and efficiently lower emissions.
• We now have a complex set of local, state, and federal incentives/standards/mandates/subsidies, with more pending regulations.
• Federal action to price carbon is stalled.
• EPA starting a long road of regulation...
What’s pending at the federal level?

U.S. Greenhouse Gas Emissions by Sector 2010

- Clean Air Act (EPA) regulation of new power plants
  - Proposed rule is out
- Next summer...
  - Final rule for new sources
  - Proposed rule for existing power plants
- Then final rule and state implementation plans.
States can step in...

- Reduce emissions
- Drive new technologies
- Provide leadership and examples for Federal policymakers

But...

- Could be costly
- Could distort investment across states and create leakage and competitiveness issues
What are current state climate/energy policies?

• Mandatory measures
  » Renewable/clean energy portfolio standards
  » Net metering
  » Building codes
  » Efficiency standards for energy-using goods

• Financial incentives
  » Tax rebates for “green” goods
  » Loan programs
States with Renewable Portfolio Standards (mandatory) or Goals (voluntary), January 2012

15% by 2020

18% now, 25% by 2025, and 6% of that must be solar

20% by 2013, 25% by 2016, 33% by 2020

What are Nevada’s policies?

- Renewable/clean energy portfolio standards
- International Energy Conservation Code
  - 90% compliance by 2017
- Retrofit Grants
- Nevada Energyfit
  - Loan and grant programs to help older homes and businesses improve their energy efficiency to current standards
Nevada Clean Energy Tax Expenditures

• 2.25% sales tax on renewable energy transactions
• 25 to 35% property tax abatement for LEED Certified Buildings
• 55% property tax abatement for new renewable energy providers (20 years)
<table>
<thead>
<tr>
<th>Tax Abatements</th>
<th>Total Sales Tax Expenditure (over 3 years)</th>
<th>Total Property Tax Expenditure (Over 20 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geothermal Jersey Valley</td>
<td>$1,290,825</td>
<td>$9,203,790</td>
</tr>
<tr>
<td>Solar PV Boulder City</td>
<td>$3,587,650</td>
<td>$10,552,193</td>
</tr>
<tr>
<td>Wind Spring Valley</td>
<td>$10,954,125</td>
<td>$30,477,305</td>
</tr>
<tr>
<td>Solar PV, Near Primm</td>
<td>$6,143,177</td>
<td>$10,870,445</td>
</tr>
<tr>
<td>CC Landfill Energy</td>
<td>$726,232</td>
<td>$2,682,753</td>
</tr>
<tr>
<td>Ormat McGinness Hills</td>
<td>$4,935,600</td>
<td>$0</td>
</tr>
<tr>
<td>Ormat Tuscarora</td>
<td>$789,225</td>
<td>$553,807</td>
</tr>
<tr>
<td>Crescent Dunes</td>
<td>$25,999,997</td>
<td>$93,316,458</td>
</tr>
<tr>
<td>Stillwater Solar</td>
<td>$2,809,532</td>
<td>$6,608,521</td>
</tr>
<tr>
<td>ON Line</td>
<td>$4,416,035</td>
<td>$54,026,119</td>
</tr>
<tr>
<td>Copper Mountain Solar</td>
<td>$42,206,932</td>
<td>$48,427,509</td>
</tr>
<tr>
<td>Spectrum Solar</td>
<td>$4,119,252</td>
<td>$7,619,299</td>
</tr>
<tr>
<td>Gradient Resources</td>
<td>$5,897,940</td>
<td>$19,640,885</td>
</tr>
<tr>
<td>ORNI 47 LLC</td>
<td>$2,917,062</td>
<td>$0</td>
</tr>
<tr>
<td>Mountain View Solar, LLC</td>
<td>$2,006,989</td>
<td>$5,316,242</td>
</tr>
<tr>
<td>K Road Moapa Solar*</td>
<td>$22,847,301</td>
<td>$0</td>
</tr>
<tr>
<td>Silver State Solar South*</td>
<td>$19,764,577</td>
<td>$38,493,024</td>
</tr>
<tr>
<td><strong>Total Tax Expenditure</strong></td>
<td><strong>$161,412,451</strong></td>
<td><strong>$337,788,350</strong></td>
</tr>
</tbody>
</table>
Why might states impose a carbon tax?

- Reduce emissions cost effectively
- Obviate more costly ways to reduce emissions
- Raise revenue
  - Lower deficits/debt
  - Reduce other taxes: “tax shift” or “tax swap”
- Comply with EPA rules?
Some carbon tax design challenges

• Set the tax base
• Set the tax rate and trajectory
• Decide on the use of the revenue
• Manage distributional outcomes
• Avoid competitiveness problems/emissions leakage
• Coordinate across borders
• Decide what to do with other energy/environment/tax policies
Which states are talking about a carbon tax?

- **Washington**
  - Proposal by carbonwa.org: $30/ton
    - revenue neutral, rising at 5% per year,
    - on all fossil carbon and carbon implicit in imported electricity
    - Aiming for Nov. 2014 ballot
    - [http://www.carbonwa.org/2013.4.8-RevNeutral.pdf](http://www.carbonwa.org/2013.4.8-RevNeutral.pdf)

- **Oregon**
  - Passed bill to do a feasibility study

- **Massachusetts**: Bill for $5/ton tax, mostly a swap
One Model: British Columbia

- Ramped up to $30/ton CO$_2$ -- Revenue neutral

- According to one study (Elgie & McClay “BC’S CARBON TAX SHIFT AFTER FIVE YEARS: RESULTS: An Environmental (and Economic) Success Story”)
  - Since July 1, 2008, BC’s fuel consumption has fallen by 17.4% per capita (and fallen by 18.8% relative to the rest of Canada).
  - These reductions have occurred across all the fuel types covered by the tax
  - BC’s GDP kept pace with the rest of Canada’s over that time
  - The tax shift has enabled BC to have Canada’s lowest income tax rates (as of 2012).
  - Cuts to income and other taxes have exceeded carbon tax revenues by $500 million from 2008-12.
Excise tax on carbon shifts relative prices of different fuels.
Which states need revenue?

Source: Washington Post
At least 4 western states have tough budget situations...

<table>
<thead>
<tr>
<th>STATE</th>
<th>Shortfall as Pct. of Budget</th>
<th>Total Shortfall (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>45%</td>
<td>$15,000</td>
</tr>
<tr>
<td>Nevada</td>
<td>45%</td>
<td>$1,523</td>
</tr>
<tr>
<td>New Jersey</td>
<td>37%</td>
<td>$10,472</td>
</tr>
<tr>
<td>Texas</td>
<td>31%</td>
<td>$13,400</td>
</tr>
<tr>
<td>California</td>
<td>29%</td>
<td>$25,400</td>
</tr>
<tr>
<td>Minnesota</td>
<td>25%</td>
<td>$3,900</td>
</tr>
<tr>
<td>Oregon</td>
<td>25%</td>
<td>$1,750</td>
</tr>
<tr>
<td>Louisiana</td>
<td>22%</td>
<td>$1,700</td>
</tr>
<tr>
<td>Connecticut</td>
<td>21%</td>
<td>$3,673</td>
</tr>
<tr>
<td>North Carolina</td>
<td>20%</td>
<td>$3,800</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>18%</td>
<td>$4,500</td>
</tr>
<tr>
<td>Washington</td>
<td>18%</td>
<td>$2,850</td>
</tr>
</tbody>
</table>
Nevada GHG Emissions: What could be taxed?
(past and projected, million ton CO2 equivalent)

$10/ton tax ≈$400 million

Nevada Dept. of Environmental Protection
Nevada Revenue Sources

Primary Government Sources of Revenue

FY 2012 Revenues by Source

<table>
<thead>
<tr>
<th>Revenues by Source</th>
<th>2011 Revenue</th>
<th>2012 Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Grants</td>
<td>$4,302,041</td>
<td>$3,954,105</td>
</tr>
<tr>
<td>Sales and Use Taxes</td>
<td>931,911</td>
<td>967,373</td>
</tr>
<tr>
<td>Gaming Taxes</td>
<td>850,021</td>
<td>884,928</td>
</tr>
<tr>
<td>Other Taxes</td>
<td>2,177,341</td>
<td>2,264,736</td>
</tr>
<tr>
<td>Charges for Services</td>
<td>967,637</td>
<td>888,479</td>
</tr>
<tr>
<td>Other</td>
<td>401,438</td>
<td>403,803</td>
</tr>
<tr>
<td>Total Revenues</td>
<td>$9,630,389</td>
<td>$9,363,424</td>
</tr>
</tbody>
</table>

Notes

Operating Grants – Primarily federal grants for various state programs.
Other Taxes – Includes modified business tax, insurance premium, motor and special fuel tax, property and transfer tax.
Charges for Services – Includes inspections, licensing, permits.

Includes Modified Business Tax, a payroll tax about $370 million/year
My federal carbon tax proposal:

• Start at $16/ton of CO$_2$
  » Imposed upstream at chokepoint of fossil fuel distribution
  » Include other GHG emissions as feasible

• Increase at 4% over inflation each year

• Reduce other clean energy spending.

• Suspend Clean Air Act rules over existing stationary sources
My Proposal: Use of Federal Revenue

- 15% targeted to poor
  - Shore up social safety net programs
  - Electronic benefit transfers
- Lower marginal statutory corporate income tax rate from 35% to 28%
- Reduce the deficit.
- No other earmarks.
## Carbon Price Benchmarks

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Price per ton of CO₂-equivalent (2012 US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My proposal’s starting tax rate</td>
<td>16.00</td>
</tr>
<tr>
<td>U.S. 2015 Social Cost of Carbon, 5% discount rate ($2011)</td>
<td>12.00</td>
</tr>
<tr>
<td>U.S. 2015 Social Cost of Carbon, 3% discount rate ($2011)</td>
<td>40.00</td>
</tr>
<tr>
<td>December 2012 trading price of allowances in the EU Emissions Trading System</td>
<td>8.77</td>
</tr>
<tr>
<td>Carbon tax in British Columbia, Canada</td>
<td>29.40</td>
</tr>
<tr>
<td>Carbon tax in Australia</td>
<td>24.21</td>
</tr>
<tr>
<td>Carbon tax in Sweden</td>
<td>156.00</td>
</tr>
<tr>
<td>EPA projection for CO₂ allowance trading price under H.R. 2454 in 2015, Scenario 3</td>
<td>14.95</td>
</tr>
<tr>
<td>Settlement price of California’s GHG cap-and-trade allowances, advance auction of 2015 vintage</td>
<td>10.00</td>
</tr>
<tr>
<td>Regional GHG initiative, Auction 18 clearing price for CO₂ allowances, December 5, 2012</td>
<td>1.93</td>
</tr>
</tbody>
</table>
Why corporate income tax rates?

Distribution of Top Statutory Corporate Tax Rates in the OECD

Hassett and Mathur, February 2011
## Total Budget Effects (Undiscounted)

<table>
<thead>
<tr>
<th></th>
<th>Over 10 years</th>
<th>Over 20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td>$1.1 trillion</td>
<td>$2.7 trillion</td>
</tr>
<tr>
<td><strong>15% Set-aside for low-income individuals</strong></td>
<td>($161 billion)</td>
<td>($405 billion)</td>
</tr>
<tr>
<td><strong>Lower marginal statutory corporate tax rate from 35% to 28%</strong></td>
<td>($800 billion)</td>
<td>($1.6 trillion)</td>
</tr>
<tr>
<td><strong>Savings from reduction in clean energy spending</strong></td>
<td>$60 billion</td>
<td>$120 billion</td>
</tr>
<tr>
<td><strong>Net deficit reduction</strong></td>
<td>$199 billion</td>
<td>$815 billion</td>
</tr>
</tbody>
</table>

Also: Environmental and regulatory benefits.
So if there’s not a federal carbon price...

- States can coordinate
- Develop model legislation
- Handle revenue as they each see fit
What if the federal govt taxes carbon later?

- States can rescind carbon tax, but then lose revenue
- States can seek fed revenue from their state
- Ask for exemption
- Layer taxes
What if the EPA regulates?

• Depends on what EPA does
• States may be able to write a carbon tax into their state implementation plans
• States can layer a carbon tax onto emissions standards
• States can rescind carbon tax, but then lose revenue
Conclusion

• Carbon tax could work at state level

• Provides two good fiscal options:
  » Reduce capital taxes and raise output
  » Reduce deficits with relatively little lost output

• Would significantly reduce CO₂ emissions and obviate less efficient regulation and spending

• Coordinate with other states to limit leakage

• Possibly supplant EPA emissions standards