Case for a Carbon Tax in Nevada

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Overview

Presented herein is a case for Nevada to utilize a carbon tax as a funding source. This paper is not advocating for higher taxes. Rather, it presents reasons why a carbon tax might be considered as a viable and preferred alternative source of tax revenues for the State of Nevada.

A carbon tax, simply defined, is a tax on fuels that is based upon the amount of CO_2 that will be released into the atmosphere by oxidation (burning) of that fossil fuel.

A carbon tax would be aligned with most of the principles of good tax policy (set forth below). One of the most important is to have a broad tax base so that the tax rate can be kept low. With fossil fuels being used by every sector of the economy, this principle is perhaps better met by a carbon tax than by any of the other revenue sources currently utilized by the State.

Regardless of the desire "not to pick winners and losers," inevitably tax policies impact economic decisions. The old adage of "if you tax something, you will get less of it" is generally true.

Based upon this adage and its basis the real world, some tax policies are sumptuary in nature. Examples would be taxes on alcohol and tobacco. Part of the intent of the sumptuary taxes imposed is to incent people to consume less of these substances. It would seem to be desirable to incent Nevada businesses and residents to reduce their greenhouse gas emissions, for a number of reasons:

1. It would incent the transition to energy produced from sources other than fossil fuels, such as geothermal and solar energy. Part of Nevada's economic development strategy is to encourage development of such industries.

2. It would incent energy efficiency in Nevada.

3. It would support alternative transportation related businesses, such as Tesla and Faraday.

4. It would support investment in energy storage.

5. Market forces would "allocate" the above-mentioned incentives between various alternative energy and energy efficiency choices, rather than having politicians, utility managers, and/or

Public Utility Commissioners choosing which programs to subsidize. History tells us that market forces are more efficient at allocating resources.

6. It would incent improvement in air quality, particularly in the Las Vegas and Reno regions of the state. Recent strengthening of EPA air quality standards for ground-level ozone (or smog) which is primarily produced by internal combustion engines used for transportation, will likely result in the Las Vegas and Truckee Meadows air basins being designated as non-attainment status.

7. Improvement in air quality should result in lower incidence of health problems (asthma and heart attacks, for example) stemming from air quality issues.

It should be recognized that the higher the carbon tax rate, the more quickly individuals and businesses are likely to reduce their consumption of fossil fuels, and so this source of revenue is likely to diminish over time. While that likely would be a desirable outcome, rapid economic dislocations that would result from a high taxation rate on carbon might not be desirable.

A Nevada carbon tax would convey a message to the rest of the United States and the world that Nevada is progressive in addressing climate change induced by higher levels of carbon dioxide, or CO_2, in the atmosphere.

Other fiscal considerations and limitations in Nevada

Exporting tax burden: Many states consider what proportion of taxes can be "exported" to others when developing tax policy. The desire to export taxes helps explain why states with economies substantially based on tourism often utilize sales taxes as a major component of their tax policy, states producing fossil fuels impose severance taxes, and states with significant manufacturing bases utilize income taxes. In each instance, these policies result in a significant portion of the tax burden being exported.

Since Nevada is not a producer of significant amounts of fossil fuels, and since much of our fossil fuel consumption is by visitors to the state, a carbon tax in Nevada would result in a significant portion of this tax being exported.

Rigidity of the Nevada Tax System: In 1988, the Urban Institute/Price Waterhouse (UI/PW) report was submitted to the Nevada Legislature. The report presented four broad themes.

1. There state needed to increase revenues or reduce expenditures in the 1990s to maintain the state general fund.
2. Nevada state-local fiscal arrangements need to go through a thorough Sorting Out Process.
3. The state and local tax system is unfair.
4. **The system has undesirable built-in institutional rigidities**. [emphasis added]

Since 1988, a number of other studies have been done, with the net result that none of the problems cited by the Urban Institute/Price Waterhouse report have been adequately addresses. The institutional rigidities are actually worse today that in 1988, mainly because of voter-approved tax limits. UI/PW recommended broadening the sales tax to include services. This can't be done for the portion targeted for the state general fund without a vote of the people. UI/PW made no recommendation on the personal income tax. They did say, "The option should not be foreclosed by constitutional prohibitions." Since then, this option has been foreclosed.

Controversy over how to fund government in Nevada, and the appropriate level of funding, has been continuous throughout Nevada's history, and is likely to continue into the future. Much of the current controversy results from the rigidity of the Nevada tax system, and the limitations on available revenue sources due to constitutional provisions. It would appear that the existing rigidities do not apply to a carbon tax.

Good Tax Policy: To provide perspective, it is important to consider the characteristics of good tax policy. As published by National Conference of State Legislatures[1]:

Principles of a High-Quality State Revenue System

1. A high-quality revenue system comprises elements that are complementary, including the finances of both state and local governments.

2. A high-quality revenue system produces revenue in a reliable manner. Reliability involves stability, certainty and sufficiency.

3. A high-quality revenue system relies on a balanced variety of revenue sources.

4. A high-quality revenue system treats individuals equitably. Minimum requirements of an equitable system are that it imposes similar tax burdens on people in similar circumstances, that it minimizes regressivity, and that it minimizes taxes on low-income individuals.

5. A high-quality revenue system facilitates taxpayer compliance. It is easy to understand and minimizes compliance costs.

6. A high-quality revenue system promotes fair, efficient and effective administration. It is as simple as possible to administer, raises revenue efficiently, is administered professionally, and is applied uniformly.

[1] National Conference of State Legislatures. "Principles of a High-Quality Revenue System." National Conference of State Legislatures. Fourth Edition 2001, Updated 2007, 2007.

7. A high-quality revenue system is responsive to interstate and international economic competition.

8. A high-quality revenue system minimizes its involvement in spending decisions and makes any such involvement explicit.

9. A high-quality revenue system is accountable to taxpayers.

A carbon tax would measure up well against all of these considerations with the exception of regressivity. Like sales tax, the burden is likely to be higher, in terms of percentage of income, on people with lower incomes. To compound this, individuals with higher levels of income and/or wealth would be able to make investments to reduce their consumption of fossil fuels more easily and quickly than individuals with lower incomes and/or wealth. Just as the exclusions for groceries and medicine from sales tax address some of the regressivity of that revenue source, there could be measures to mitigate the carbon tax burden on lower income individuals. Greater investment in mass transit, zero-down on-bill financing for investments in energy efficiency and renewable energy, and other measures could help level the playing field.

Prices for fossil fuels have come down dramatically in recent years, and with the ability to bring shale oil "on line" relatively quickly in the United States, prices are likely to stay relatively low into the foreseeable future. Further, as electric cars become more common place, and hopefully are primarily charged using renewable energy, demand for fossil fuels is likely to decline in the U.S., further suppressing prices of fossil fuels. In this environment, a small carbon tax is likely to be perceived less negatively than a tax that is imposed within a background of rising costs.

How a Nevada Carbon Tax Could Work

Many people have heard of the concept of a carbon tax, but they don't know how it would work and how it would affect them individually or impact their business. The calculations are relatively simple, as demonstrated below.

A carbon tax could be imposed on fuels at the wholesale level (importation or production). The vast majority of fossil fuels consumed in Nevada are imported, along with the severance taxes imposed by the jurisdictions in which these fossil fuels are produced. The Nevada tax could be based on the amount of greenhouse gases (carbon dioxide or CO_2 in particular) emitted when these fuels are burned. The U.S. Energy Information Administration (EIA) provides the following estimates for amounts of CO_2 emitted by burning various fossil fuels:[2]

[2] http://www.eia.gov/environment/emissions/co2_vol_mass.cfm

Table 1: CO2 Emission Coefficients by Fuel

Carbon Dioxide Emissions Coefficients by Fuel

Carbon Dioxide (CO2) Factors:	Pounds CO2 Per Unit of Volume or Mass		Kilograms CO2 Per Unit of Volume or Mass		Pounds CO2 Per Million Btu	Kilograms CO2 Per Million Btu
For homes and businesses						
Propane	12.7	gallon	5.8	gallon	139.0	63.1
Butane	14.8	gallon	6.7	gallon	143.2	65.0
Butane/Propane Mix	13.7	gallon	6.2	gallon	141.1	64.0
Home Heating and Diesel Fuel	22.4	gallon	10.2	gallon	161.3	73.2
Kerosene	21.5	gallon	9.8	gallon	159.4	72.3
Coal (All types)	4,631.5	short ton	2,100.8	short ton	210.2	95.3
Natural Gas	119.9	thousand cubic feet	54.4	thousand cubic feet	117.0	53.1
Gasoline	19.6	gallon	8.9	gallon	157.2	71.3
Residual Htg. Fuel (Businesses only)	26	gallon	11.8	gallon	173.7	78.8
Other transportation fuels						
Jet Fuel	21.1	gallon	9.6	gallon	156.3	70.9
Aviation Gas	18.4	gallon	8.3	gallon	152.6	69.2
Industrial fuels and others not listed above						
Flared natural gas	128.4	1,000 ft.^{3}	58.2	1,000 ft.^{3}	120.6	54.7
Petroleum coke	32.4	gallon	14.7	gallon	225.1	102.1
Other petroleum & miscellaneous	22.1	gallon	10.0	gallon	160.1	72.6
Nonfuel uses						
Asphalt and Road Oil	26.3	gallon	11.9	gallon	166.7	75.6
Lubricants	23.6	gallon	10.7	gallon	163.6	74.2
Petrochemical Feedstocks	24.7	gallon	11.2	gallon	156.6	71.0
Special Naphthas (solvents)	20.1	gallon	9.1	gallon	160.5	72.8
Waxes	21.1	gallon	9.6	gallon	160.1	72.6
Coals by type						
Anthractie	5,685.0	short ton	2,578.7	short ton	228.6	103.7
Bituminous	4,931.3	short ton	2,236.8	short ton	205.7	93.3
Subbituminous	3,715.9	short ton	1,685.5	short ton	214.3	97.2
Lignite	2,791.6	short ton	1,266.2	short ton	215.4	97.7
Coke	6,239.7	short ton	2,830.3	short ton	251.6	114.1

Source: U.S. Energy Information Administration estimates.
http://www.eia.gov/oiaf/1605/coefficients.html
Note: To convert to carbon equivalents multiply by 12/44.
Coefficients can vary slightly, depending upon estimation method.
Detailed factors from the Voluntary
Reporting Program (discontinued)
Annual factors from the EIA Greenhouse Gas Inventory (discontinued)

Fossil-fuel-fired generation of electricity would include a CO_2 component. EIA has calculated how the CO_2 emission translates into pounds of CO_2 per kilowatt hour (kWh) of electricity, as set forth below.[3] The column showing kilograms of CO_2 per kWh has been added to the EIA table.

Table 2: CO2 from Fossil-Fuel Generation of Electricity

Fuel	Lbs of CO_2 per Million Btu	Heat Rate (Btu per kWh)	Lbs CO_2 per kWh	Kg CO_2 per kWh
				0.453592
Coal				
Bituminous	205.3	10,107	2.08	0.94347136
Sub-bituminous	212.7	10,107	2.16	0.97975872
Lignite	215.4	10,107	2.18	0.98883056
Natural gas	117.08	10,416	1.22	0.55338224
Distillate Oil (No. 2)	161.386	10,416	1.68	0.76203456
Residual Oil (No. 6)	173.906	10,416	1.81	0.82100152
Last updated: April 17, 2014				

To obtain perspective on historical and "current" CO_2 emissions in Nevada, we can look at the following table from EPA.[4]

Table 3: CO_2 Emissions from Fossil Fuel Combustion - Million Metric Tons CO_2 ($MMTCO_2$)*

	Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Nevada		**45.12**	**44.37**	**41.29**	**43.40**	**47.58**	**49.72**	**41.54**	**41.83**	**41.05**	**39.58**	**37.54**	**33.85**	**34.61**
	Commercial	1.63	1.44	1.47	1.48	1.66	1.76	1.84	1.75	1.79	1.78	1.82	1.87	1.76
	Industrial	2.47	2.44	2.19	2.01	2.53	2.80	2.89	2.85	2.75	2.66	2.66	1.74	2.06
	Residential	1.83	1.97	1.99	1.97	2.16	2.22	2.28	2.28	2.32	2.33	2.36	2.39	2.17
	Transportation	14.52	14.52	14.76	15.13	16.12	16.84	18.01	18.30	16.36	14.81	14.00	13.39	14.04
	Electric Power	24.67	23.99	20.88	22.81	25.12	26.11	16.52	16.65	17.83	18.00	16.70	14.45	14.58

If the desire was for Nevada to generate $300 million annual tax revenues in the near term, then a tax of $10 per metric ton should accomplish that objective. Determining the cost of such a tax to consumers is relatively easy.

For example, for gasoline:

8.9 kg CO_2/gallon x $10/1,000 kg = $0.089 per gallon of gasoline

For diesel fuel:

10.2 kg CO_2/gallon x $10/1,000 kg = $0.102 per gallon of diesel

[3] http://www.eia.gov/tools/faqs/faq.cfm?id=74&t=11

[4] http://epa.gov/statelocalclimate/resources/state_energyco2inv.html

For natural gas:

53.1 kg CO_2/therm x \$10/1,000 kg = \$0.531 per therm

For electricity generated using natural gas:

0.55338224 kg CO_2/kWh x \$10/1,000 kg = \$0.0055 per kWh of electricity

For electricity generated using bituminous coal:

0.94347136 kg CO_2/kWh x \$10/1,000 kg = \$0.0094 per kWh of electricity

It should be recognized that NV Energy, Nevada's largest Investor Owned Utility, provides electricity from a variety of sources, including renewable energy, and is in the process of reducing the coal-generated portion of its portfolio, so the impact on rates would most likely be a blended rate calculated using a weighted-average approach.

If elected officials determined that a carbon tax made sense, they would also need to determine what level of revenues they wished to raise using this revenue source, and the expected time period that this tax might be in effect. It could be a "stop-gap" revenue source while all other revenue sources were considered (minimum of a 5-year process), or could be a longer term source of revenue. It could be designed to meet the projected revenue shortfall for the next biennium, or could "replace" the Modified Business Tax, thereby substituting a tax on one production input, energy from fossil fuels (which includes the appurtenant emission of carbon dioxide and other pollutants), for another production input, labor.

In summary, a carbon tax in Nevada would seem to align good fiscal policy with good environmental policy, good energy policy and good economic development policy.

Disclaimer: This paper represents the opinions of Richard Bartholet. They are not opinions of the University of Nevada, Reno, the College of Business, the Nevada Small Business Development Center, the Business Environmental Program, or the Center for Regional Studies.