

**To:** Interested Parties

**From:** Charles Komanoff & Alex Matthiessen

**Date:** February 14, 2014

**Re:** NY State Carbon Tax

---

## **Introduction and Summary**

A carbon tax imposed on carbon emissions from fuels used in New York State, at a rate equivalent to just under 20 cents per gallon of gasoline and an average of 2/3 of a cent per kilowatt-hour of electricity,<sup>1</sup> could generate sufficient revenue to reduce the statewide sales tax by a full percentage point while addressing climate change and helping fortify the state's infrastructure to withstand future "superstorms."

The tax, set at a rate of \$20 per ton of carbon dioxide imposed on all coal, oil and natural gas used in transportation, industry, electric power provision and in commercial and residential buildings would generate an estimated \$3.4 billion a year in new net state tax receipts.<sup>2</sup> These new revenues would enable New York State to reduce the state's portion of the sales tax by one hundred basis points — i.e., from 4% to 3%. This would help stimulate the state's economy in a way that especially helps middle- and low-income families, who generally spend a greater percentage of their disposable income on energy and otherwise could be disproportionately harmed by a carbon tax.

This "tax swap" would leave at least half-a-billion dollars annually to finance storm-related infrastructure programs and/or pay down households' and businesses' costs to install new electricity-generating photovoltaic systems on houses, apartments and commercial buildings. An alternative tax swap would leave the sales tax intact and use the carbon tax revenue to zero out the state Corporation Franchise Tax

## **Precedent**

The only carbon tax of note in North America is that in British Columbia, instituted on July 1, 2008 by order of the provincial government issued in February 2008. To avoid "sticker shock" from levying the full tax overnight, the order provided for four tax increments at one-year intervals. The final installment,

---

<sup>1</sup> A gallon of gasoline generates 19.6 lb of carbon dioxide per gallon burned, which means that the effective tax in cents per gallon of gas is 98% of the carbon tax rate in dollars per ton. The 2/3 cent/kWh figure is based on the 2010 statewide average CO2 emission rate (excluding imports) of 669 lb/kWh, from "New York Electricity Profile 2010," available at <http://www.eia.gov/electricity/state/NewYork/>. An update is due in March 2014.

<sup>2</sup> Our revenue figure of \$3.4 billion is obtained by multiplying New York State emissions of carbon dioxide from fossil fuel combustion — 183 million tons in 2010 — by \$20 and reducing the result by 7-8% to reflect "attrition" from the incentivizing effects of the tax. See text further below for details.

effective July 2012, brought BC's carbon tax to its current level of approximately \$25 per ton.<sup>3</sup> The BC tax is revenue-neutral; all of the revenues — currently running at \$1.1-\$1.2 billion annually — are dedicated to reducing other taxes — mainly personal and corporate income taxes.<sup>4</sup> During the period in which the carbon tax has been in effect, British Columbia has enjoyed greater economic growth and made deeper cuts in carbon emissions than the rest of Canada.<sup>5</sup>

## Implementation

A New York State carbon tax would be imposed on the carbon content of fossil fuels (coal, oil, natural gas) and would cover the following fuels:

- Fuels sold to end users in New York State who combust (burn) the fuel here or elsewhere.
- Fuels combusted to make electricity elsewhere (other states or countries) that is transmitted to New York State for use here. (A recent legal analysis by researchers at Columbia Law School concluded that taxing the carbon content of fuels burned outside New York State to generate electricity exported for end use here would likely be ruled constitutional, provided that in-state generators are subject to the identical tax rate.<sup>6</sup>)

*Imposition:* The tax will be levied at the furthest “upstream” point, i.e., where possession of the carbon-bearing fuel passes from the “producer” (coal mine; oil wellhead or tanker; gas wellhead) to the next entity in the supply chain (coal shipper or utility; oil refiner or importer; natural gas pipeline). All such transfers are already codified in contracts or bills of lading specifying the attributes of the fuel. This procedure will minimize the number of points in the economy at which the tax must be levied.

*Exemptions:* The carbon content of fossil fuels extracted in New York State and exported for combustion outside the state would *not* be taxed, so as to avoid penalizing in-state exporters of energy and to preclude possible inter-state conflicts over ownership of the tax revenues. Nor would the tax apply to the carbon content of fuels burned in New York State to make electricity that is exported out of state.

---

<sup>3</sup> The British Columbia carbon tax began at \$10 (Canadian) per metric ton and was raised in four \$5/metric ton increments. The \$25 figure in the text is per U.S. (short) ton and with Canadian dollars converted to American.

<sup>4</sup> See Sustainable Prosperity, “British Columbia’s Carbon Tax Shift: The First Four Years,” 2012, available at <http://www.sustainableprosperity.ca/dl872&display>. The revenue figure in the text is from that report’s footnote 5 at page 5 and is drawn from data from the BC Ministry of Finance. The report states that some revenues have been applied to “targeted tax reductions for vulnerable households and communities” and that “to date the government has returned \$318 million more in income tax cuts than it has collected in carbon tax.”

<sup>5</sup> *Ibid.*, pp 7-13. Note, however, that the British Columbia carbon tax effectively excludes electricity, since virtually all electricity generation in the province is from hydro-electricity. The same is true of Quebec’s carbon tax, which is set at a far lower level than British Columbia’s.

<sup>6</sup> The Columbia Law School paper is available at <http://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Students/Legal%20Issues%20in%20Regulating%20Imports%20OCT2012.pdf>. See Executive Summary. While the paper addresses the Regional Greenhouse Gas Initiative, or RGGI, its conclusions on interstate electricity imports should apply equally to a NY State carbon tax.

Electricity generated from non-carbon-based fuels (nuclear power, hydro-electricity, wind farms) would also be exempt, due to its zero carbon content.

Fuel extractors and importers would be free to pass on their carbon tax costs to the next step(s) in the supply chain — largely wholesalers, refiners and electricity distributors. They in turn would do the same with their customers, as much as the market will bear. As a result, the carbon tax will reduce use of fossil fuels and, hence, emissions of carbon dioxide, in two ways: on the *supply* side, particularly in the electricity sector, as cost-minimizing distribution companies shift their electricity purchases to lower-carbon (and thus lower-taxed) sources; and on the *demand* side, as consumers begin shifting their purchases away from higher-carbon and thus higher priced carbon-related goods and services. In fairly short order, the carbon tax will begin to reduce vehicle miles driven (VMT), incentivize the purchase of fuel-efficient cars, energy-efficient appliances, and renewable energy, and dis-incentivize suburban sprawl.

### Quantification

The table shows carbon dioxide emissions from fossil fuel combustion in New York State for 2011, the most recent year for which comprehensive data are available:<sup>7</sup>

**Table 1: Emissions of Carbon Dioxide from Energy Consumption in NY State, 2011, tons (millions)**

Commercial	26.7	15%
Industrial	11.7	6%
Residential	34.1	19%
Transportation	73.8	40%
Electric Power	37.0	20%
<b>Total</b>	<b>183.4</b>	<b>100%</b>

Source: U.S. EPA spreadsheet, “State CO2 Emissions from Fossil Fuel Combustion, 1990-2011,” available via [http://epa.gov/statelocalclimate/resources/state\\_energyco2inv.html](http://epa.gov/statelocalclimate/resources/state_energyco2inv.html). Figures in metric tons have been converted here to tons. “Transportation” includes motor vehicles, aircraft, construction vehicles, recreational vehicles and diesel trains but presumably excludes subways and electrified trains, which would be included under “Electric Power.” Similarly, “Commercial,” “Industrial” and “Residential” exclude electricity, which is included under “Electric Power.” That figure appears to exclude carbon emissions from imported electricity.

From the table, one can see that the transportation sector is the biggest consumer of fossil fuel energy. In this regard, New York State differs from most of the rest of the country, for which electricity, much of it generated by coal, is the primary source of carbon emissions.

### Geographic and Income Incidence

A carbon tax has its highest incidence on households that drive long distances in inefficient vehicles, that fly frequently, that maintain large and/or multiple residences, and whose electricity is generated

<sup>7</sup> A related document, “Inventory and Forecast of New York State’s Greenhouse Gas Emissions,” available at [http://www.dec.ny.gov/docs/administration\\_pdf/irchap3.pdf](http://www.dec.ny.gov/docs/administration_pdf/irchap3.pdf), appears to show 6-7% higher CO2 emissions in its Table 3-1 (2008 New York State Greenhouse Gas Inventory), without electricity imports, than does the source in the table for the same year.

primarily from fossil fuels, particularly coal. *Relatively few households satisfy all of these criteria, and few of those are low- or middle-income.* Upstate residents, for example, drive much more than residents of New York City, on average, but they tend to fly less, do not generally own second homes, and draw more heavily on zero-carbon hydro-power supplied by the NY Power Authority.

The next table illustrates the tendency for upstate communities to be less exposed than downstate to the carbon tax as it applies to electricity. The utilities with the highest per-kilowatt-hour CO2 footprint — Consolidated Edison, LIPA (now PSEG Long Island) and Orange & Rockland — serve New York City, Long Island and the Lower Hudson Valley, respectively. National Grid and NYSEG, which serve a large majority of upstate counties, are at least a third less carbon-intensive. Moreover, municipal utilities that serve a patchwork of upstate cities and villages, particularly in the state’s northern tier, are largely or entirely supplied by hydro-electric generators owned and operated by the NY Power Authority; these utilities have small or even zero carbon footprints and thus their customers’ use of electricity would be largely exempt from the carbon tax.

**Table 2: Emissions of Carbon Dioxide per kWh from Electricity, for Selected NY State Utilities, 2011**

Utility	CO2/kWh, % of Statewide Average	Fossil Fuel % of Mix
NY State Power Authority	5%	3%
City of Massena	4%	22%
City of Jamestown	17%	7%
NY State Electric & Gas	76%	37%
National Grid	78%	38%
Long Island Power Authority	102%	49%
Orange & Rockland	116%	57%
Consolidated Edison	132%	66%

Source: NYS Dept. of Public Service, “Environmental Disclosure Labels by LSE [Load Serving Entity] for period Jan. 1, 2011 – Dec. 31, 2011,” available for each of the state’s many utilities via <http://www3.dps.ny.gov/e/energylabel.nsf/>. The DPS map of utility service territories is available at <http://wny-ambit.com/wp-content/uploads/2011/02/NY-Utility-Map-300x232.png>.

There are doubtless exceptions, and of course the carbon tax will manifest not only in electricity but also at the gas pump, in heating bills, and indirectly in purchases of energy-intensive products. Nevertheless, the prevalence of lower carbon-electric footprints upstate should serve to distribute the per capita burden of a carbon tax more evenly among the state’s 62 counties than might have been expected.

It is also true that while more affluent households will pay more in carbon taxes than less-affluent ones, the latter’s carbon tax payments will tend to be higher as a percentage of their total household expenditures. It may be advisable to dedicate a fraction of the carbon tax revenues to mitigate the impact of the tax on low-income families who would be particularly disadvantaged.

### **Use of Revenue to Reduce Existing New York State Taxes**

The most obvious tax to “swap” (reduce) with carbon tax revenues is the NY State sales tax. The state’s 4% sales tax (exclusive of the additional sales tax collected by municipalities and counties, at rates

ranging between 3% and 4.875%), generated \$9.9 billion in FY2010.<sup>8</sup> This suggests a collection rate of around \$2.5 billion per percentage point of state sales tax, though the rate has probably risen with increased economic activity since FY2010.<sup>9</sup> Still, the estimated \$3.4 billion a year revenue from a \$20/ton carbon tax should be more than sufficient to enable New York State to reduce its statewide sales tax rate by one percentage point, from 4% to 3%.

An alternative allocation of the carbon tax revenues would allow New York State to cease its current collection of \$2.5 billion or more a year in the 9A Corporation Franchise Tax.<sup>10</sup> These taxpayers are either “S” Corporations, which are subject to a fixed dollar minimum tax ranging from \$25 to \$4,500, depending on their state-sourced gross income; or standard “C” Corporations, which are taxed on whichever of four alternative tax bases yields the highest tax.<sup>11</sup> The estimated \$3.4 billion per year revenue from a \$20/ton carbon tax should be far more than sufficient to allow the 9A Corporation Franchise Tax to be eliminated.

Either approach has advantages. The Corporation Franchise Tax is onerous to businesses from both a financial and administrative standpoint; eliminating it would lift a paperwork burden while signaling that New York State is indeed “open for business.” The sales tax, for its part, is strongly regressive; reducing it while implementing a carbon tax would tend to leave lower-income households whole and thus obviate much of the need to dedicate carbon tax revenues to mitigating impacts on working families and the poor. In either case, revenues “left over” after eliminating the Corporation Franchise Tax or reducing the sales tax could be used to pay for new and/or fortified storm-mitigating infrastructure, or, perhaps, to “sweeten” and strengthen existing programs to subsidize early adopters of photovoltaic electric systems on residential and commercial buildings.

---

<sup>8</sup> Marilyn Rubin, "A Guide to New York State Taxes: History, Issues and Concerns," Feb. 2011, A Report For The Peter J. Solomon Family Foundation, available at <http://pjsc.magikcms.com/Tax%20guides/StateGuideWeb.pdf>. See p. 2-1 (28 of 102). The \$9.9 billion figure is \$10.5 billion, which we have netted by \$0.6 billion in revenues raised by the 0.375% sales tax surcharge in the 12-county Metropolitan Commuter Transportation District (MCTD) which helps fund the Metropolitan Transportation Authority.

<sup>9</sup> According to a Web-based database maintained by Governing magazine, and available at <http://www.governing.com/gov-data/state-tax-revenue-data.html>, New York State sales tax collections were \$10.57 billion in FY2010, \$11.58 billion in FY2011, and \$11.90 billion in FY2012. Netting the \$0.6 billion raised by the 0.375% sales tax surcharge in the 12-county Metropolitan Commuter Transportation District (MCTD) in 2010, estimated state sales tax revenue for FY2012 was approximately \$11.3 billion. Note that the proposed FY2014 budget projects \$11.74 billion in “Sales and Use Tax” revenues; see NY State FY2014 Executive Budget Financial Plan, Updated for Governor’s Amendments and Forecast Revisions,” p. 140 (148/414), available at <http://publications.budget.ny.gov/pubs/executive/eBudget1314/financialPlan/FinPlanUpdated.pdf>

<sup>10</sup> Marilyn Rubin, *op. cit.*, p. 8-1 (59 of 102). The \$2.5 billion figure in text is for FY2010. Note that the discussion of the corporate franchise tax in the text is taken directly from that report, at pp. 8-1 and 8-2. For the last 9 months of 2012, the 9A Corporation Franchise Tax generated \$2.059 billion in revenue, suggesting annual revenues of \$2.745 billion. See State of New York, Comptroller’s Monthly Report On State Funds Cash Basis of Accounting, Dec. 2012, available at <http://www.osc.state.ny.us/finance/finreports/cash/monthly/december12.pdf>, Exhibit E. Note that the FY2014 updated budget, referenced in preceding footnote, reports that the Corporate Franchise Tax raised \$2.724 billion in FY2012 and was projected to raise \$2.570 billion in FY2013. See p. 58 (66/414).

<sup>11</sup> Those bases are Entire Net Income (ENI), Alternative Minimum Tax (AMT), Capital, and a fixed dollar minimum based on the taxpayer’s NY State-source gross income. See Rubin, *op. cit.*, p. 8-2.

## Interaction with RGGI

The tax would obviate the need for and the value of New York State's participation in the Regional Greenhouse Gas Initiative (RGGI). Since December 2009, the permit price in RGGI's quarterly auctions of permits has failed to rise above \$3.21 per ton of carbon dioxide and has averaged only around \$2.00.<sup>12</sup> Thus, at the proposed \$20/ton tax rate, a New York State carbon tax would raise considerably more revenue than is being generated via New York's participation in RGGI. Moreover, RGGI pertains only to electricity generation, which accounts for only a fifth of NY State carbon emissions (see Table 1). This would make it possible for the state to phase out RGGI while using carbon tax revenues to finance the program's energy-efficiency initiatives.<sup>13</sup>

## Impact on Emissions

A carbon tax spreadsheet model developed by one of us (Komanoff) suggests that a *national* \$20/ton carbon tax would lead to a 7-8% reduction in future (2020) carbon dioxide emissions, relative to "business as usual" projections.<sup>14</sup> The prospective impact of a NY State carbon tax would likely be less, owing to the state's already low carbon footprint (which in turn is due to our smaller residences, lower use of motor vehicles, and smaller reliance on coal than the nation as a whole). Pending development of a state-specific carbon tax model, it is probably prudent to posit a lesser emissions impact, say a 6% reduction (rather than 7-8%) in statewide 2020 carbon emissions, relative to standard projections.

While a 6% reduction is more than an order of magnitude less than what most authorities believe is the appropriate nationwide emissions-reduction target for 2050, it would nonetheless constitute a solid and even singular achievement for New York State acting on its own in the near time frame. The auxiliary benefits would be substantial as well: reduced air pollution, lesser extraction of fossil fuels, diminished traffic congestion, and support for the ongoing shift toward urban density and town centers that is both a hallmark and a source of economic strength for New York State — not to mention the pride and precedential effect of being the first state in the nation to adopt a carbon tax and putting a transparent and predictable price on climate-altering carbon pollution.

---

<sup>12</sup> See table, "Allowances Offered & Sold (by Auction)," [http://www.rggi.org/market/co2\\_auctions/results](http://www.rggi.org/market/co2_auctions/results).

<sup>13</sup> It may also be advisable to scrutinize RGGI-related initiatives to determine which if any would be made redundant by the incentives favoring energy efficiency that the carbon tax would provide. Note that the marked slump in permit prices recently provoked RGGI to propose a 45% cut in emission allowances for 2014. (See <http://www.nytimes.com/2013/02/08/business/energy-environment/states-group-calls-for-45-cut-in-amount-of-carbon-emissions-allowed.html>.) This move would be rendered moot by the carbon tax.

<sup>14</sup> The spreadsheet model is available at [http://www.komanoff.net/fossil/CTC\\_Carbon\\_Tax\\_Model.xls](http://www.komanoff.net/fossil/CTC_Carbon_Tax_Model.xls).