

THE HIDDEN \$1.1 BILLION COST OF ELECTRICITY IN ONTARIO

In 2023, the reported [“all-in cost of electricity” for Ontario equaled \\$23.4 billion](#). Yet, as Ontario’s [Market Surveillance Panel](#) highlights, [“Government cost mitigation programs reduced the all-in cost to Ontario consumers by \\$5.8 billion.”](#) Government expenditure isn’t free, however. Someone must pay for the province’s energy system.

Ultimately, Ontarians cover the full costs of the energy system by way of two mechanisms. They pay via their electricity bills, i.e., rates, and they pay through higher taxes. (Indeed, using taxes to mitigate rates was emphasized as [“Step One”](#) in the province’s recent vision for the sector.) Currently, 75.2% of the costs of Ontario’s electricity sector comes from electricity bills, while 24.8% comes through tax-financed subsidies.

Simply saying the 25% of energy costs are paid via taxes hides much of the story, however, because a dollar paid via rates is not equivalent to a dollar collected through taxes. There are hidden costs associated with tax-financing energy investments. In fact, because of the costs associated with taxation are ignored, *Ontario under-estimates the “all-in cost of electricity” by nearly \$1.1 billion per year*. The \$5.8 billion in subsidies actually costs \$6.9 billion. The full all-in cost of electricity for Ontario is \$24.5 billion, not \$23.4 billion as reported.

EXCESS BURDEN OF TAXES: THE HIDDEN COST OF SUBSIDIES

The Government’s energy vision paper, [“Ontario’s Affordable Energy Future: The Pressing Case for More Power,”](#) is clear about the financial on-bill benefit Ontarians receive from two subsidy programs. The Comprehensive Energy Plan and Ontario Electricity Rebate combine to lower “a representative household’s” monthly electricity bill by 27.5%, from \$174.35 to \$126.44, yielding \$574.92 in annual savings. The Comprehensive Energy Plan and Ontario Electricity Rebate cost a combined [\\$4.74 billion in 2023](#). A series of other programs, mainly targeting rural and low-income households, cost another \$1.1 billion ([see Appendix 3, pgs. 51-52 for a full list of rate mitigation programs](#)). In 2023, a total of \$5.8 billion was spent to reduce electricity rates in the province.

Mitigating electricity rates requires money. Ontario taxpayers eventually pay for these programs. Moreover, when we subsidize electricity rates via taxes, we connect the relatively narrow electricity conversation with a broader public finance discussion. Therefore, the costs of taxation need to be included as a cost of the subsidy programs and, hence, electricity in Ontario.

The total costs of Ontario's rate mitigation programs can be summarized as:

Total Cost of Energy Subsidies = Direct Cost + Excess Burden of Taxation

The "Direct Cost" of energy subsidies is the \$5.8 billion used to reduce electricity rates as reported by the Government. This money could be spent on any number of priorities, or it could be returned to taxpayers via lower taxes. Allocating it to the energy sector is an explicit public policy decision.

Next, because the subsidies are paid for with taxes, there are additional hidden costs. This is represented in the second term, the "Excess Burden of Taxation." Excess burden is economic jargon. Excess burden refers to a calculation that measures the cost of raising additional revenue to finance public spending, considering the full array of economic distortions. Economic distortions occur when households and companies change working arrangements and capital allocation decisions as a direct consequence of paying taxes. Among other things, taxes encourage households to purchase goods in low-tax jurisdictions and companies to engage in complex "tax planning" strategies. Most notably, taxes distort labour supply decisions.

Understanding how taxes distort worker choices is best understood by way of an example.

Consider a high-skilled professional, such as an engineer. Say, the engineer recently completed a major engagement, a huge project requiring two continuous months of 60+ hour weeks. The engineer's client desperately wanted the project finished quickly and was willing to pay for it. The engineer, of course, banked her overtime.

Given this banked overtime, consider the standard choices offered by her employer. First, she can take all the banked overtime as extra vacation. This would enable her to enjoy time-off in lieu of the time she devoted to the project. Alternatively, the engineer can be "paid out", earning extra income for the extra hours she worked. Finally, she can choose some combination of extra pay and time off.

Next, think about how taxes influence the engineer's decision. As the engineer earns more money, she progresses to a higher income tax bracket and pays a higher tax rate. Hence, she nets a smaller share of income per additional hour worked. Because the engineer has the option to choose between extra vacation and more money, higher taxes means that she will take more time off. (Higher taxes lower the price of vacation because the engineer takes proportionally less home from working an additional hour.) Precisely how much, of course, depends on personal circumstances, but also on the level of taxes.

Finally, consider the overall economic implications of the engineer's decision to take even a little bit of additional time off. An engineer on vacation is an engineer not working. An engineer on vacation is an engineer not contributing to economic output. Thus, overall GDP will be lower. Further, because there are fewer engineers actively working, otherwise viable projects, projects such as the one the engineer spent two months completing, will take longer and become more expensive. Less economic output and delayed and more expensive projects are the consequence of raising public funds via taxes. It was taxes that caused the engineer to alter her work-vacation decision and that decision had direct implications for the economy.

Obviously, this is a simplistic example, but the point: Taxes have hidden costs for society. Excess burden is a statistic that measures these hidden costs. When we spend public money, we need to include the excess burden of taxation into our analysis. (Also, note the current deficits are future taxes.)

THE HIDDEN COST OF ONTARIO'S ELECTRICITY SUBSIDIES IS \$1.1 BILLION

Financing electricity subsidies with distortionary taxes requires assessing both the direct costs of the subsidy and the additional costs generated by the taxes needed to pay for those subsidies. Understanding the magnitude of the excess burden helps to assess the economic efficiency of the government's decisions. It ensures that the government considers the full economic costs of raising funds through taxes (which distort behavior) and compares this to the benefits of mitigating electricity rates. The question, then, is what is the magnitude of the hidden cost of Ontario's rate mitigation expenditures?

Mathematically, the excess burden can be approximated as (technically, I use the formula in endnote (1) in my calculation):

$$\text{Excess Burden} \approx \frac{1}{2} \cdot \epsilon \cdot T^2 \cdot \text{Tax Base}$$

Where T is the tax rate and ϵ is the elasticity of taxable income. The elasticity of taxable income serves as a "[sufficient statistic](#)" that captures the full array of tax distortions including labor supply responses, changes in work effort, tax avoidance, changes in the form of compensation, etc.

The formula shows that as tax rates increase, excess burden rises more than proportionately due to the squared term. Additionally, a high elasticity of taxable income implies that taxes lead to larger economic distortions, creating a higher excess burden. To state differently, there is a trade-off between revenue generation and economic efficiency.

To calculate the magnitude of the excess burden of Ontario's electricity subsidies, I assume that rate mitigation is exclusively financed via higher personal income taxes. [Ontario's 2024 Fall economic update shows that compensation for employees equals \\$588.3 billion](#). This value is used as the tax base. In the fiscal year 2023-4, the Government of Ontario collected approximately \$49.4 billion in personal income tax revenue. This amount represented the largest source of taxation revenue for the province. The "average" personal provincial income rate of 8.4%. I then assume that, to pay for the electricity subsidies, this increases by 1%. (See endnote 2.)

Values of the elasticity of taxable income depend on many factors. Globally, the prevailing view is that it is between 0.15 and 0.4. A November 5, 2024 report from [Parliamentary Budget Officer uses a value of 0.1 for the bottom three federal income tax brackets, 0.2 for the fourth income tax bracket and 0.38 for top bracket](#). I use a value of 0.2. (See endnote 3.)

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Combining these values, the hidden annual economic cost of Ontario's electricity subsidies is \$1.07 billion. This \$1.07 billion is an additional cost of the electricity sector over and above the direct cost associated with the subsidy. The \$1.07 billion arises because of a public policy decision to use taxes, rather than rates, to pay for some of the costs associated with the sector. Adding this hidden cost to the Market Surveillance Panel's numbers, the total all-in costs for Ontario's electricity sector equal:

$$\begin{aligned} \text{Total All-In Cost of Electricity} &= \text{Consumer Costs} + \text{Subsidies} + \text{Excess Burden} \\ \$24.5 \text{ billion} &= \$17.6 \text{ billion} + \$5.8 \text{ billion} + \$1.1 \text{ billion} \end{aligned}$$

This estimate is, naturally, an initial, lower bound approximation, not a value that would survive peer-review. Nonetheless, it offers a starting point to consider the merits of tax-financing the energy system. (As aside, the magnitude of the hidden costs of rate mitigation are likely [larger than the estimated benefits derived from the IESO's Market Renewal Program](#).)

ARE THE SUBSIDIES BAD FOR ONTARIANS?

Using taxes to pay for electricity has large hidden costs. Yet, appreciating the magnitude of the excess burden tells us little about whether the subsidies are a net positive for Ontarians. On this, I have two points.

First, Canadians are funny. They often have a stronger response to salient costs, those that are directly in their face, compared with those that are shrouded and surreptitiously hidden from view. This is true even when seemingly beneficial changes make them worse off. The objective of energy policy should be to maximize overall benefits for the province's residents, given the need to pay for the sector. [As became evident in 2017, elected officials sometimes found themselves in untenable positions](#). Ontarians were outraged by their electricity bills. This outrage drowned out all other conversations in the sector (and in many other policy domains such as healthcare and education). Getting trapped in battles over electricity bills can distract from sector-wide planning, often creating even larger long-term inefficiencies (notwithstanding the political expediency of shifting burdens to future taxpayers). Subsidies may be warranted as a tool to quiet the noise and buy time. In this case, however, they should be temporary and scaled back over time.

Second, subsidies mix energy with social policy. Efficiency requires prices to be as near marginal cost as possible. Social policy frequently seeks equitable and fair outcomes for all citizens. These two goals are not always compatible. In Ontario, [the highest-earning 10% of Ontarians pay 59.4% of all provincial taxes](#). Thus, the Comprehensive Energy Plan and Ontario Electricity Rebate effectively redistribute money from relatively well-off Ontarians to those with lower incomes. This is a consequence of the progressive nature of Ontario's tax system, where higher income levels are subject to higher tax rates. Energy analysts frequently ignore the trade-off between equity and efficiency. Yet, equity is first-order for many. Subsidies, even after acknowledging the hidden costs of taxation, are often reasonable because we want to live in a fair and equitable society.

As the Government proceeds with its energy vision, decisions will be made on how we're going to pay for new infrastructure. Likely, we will use a mix of rates and taxes. When weighing the balance between these, it is imperative that we include the full costs of each mechanism. This means that when we do use taxes to pay for the system, cost calculations account for the excess burden of taxation. Excess burdens represent a real economic cost, an often hidden cost, to the Ontario economy.

END NOTES

1. Technically, my calculations use a slightly different formula. I approximate incremental excess burden as the difference between the social welfare lost and additional revenue collected on the tax increase via ([Dahlby, 2008](#)): $EB \approx \frac{1}{2} \left(\frac{(2 * \tau_1 * \tau_2 + \tau_2^2) * \epsilon * TB}{1 - \tau_1} \right)$ where τ_1 and τ_2 are the initial and new tax rates, ϵ is the elasticity of taxable income and TB is the wage labour tax base.
2. By only considering “average” provincial tax rates, i.e., excluding total federal plus provincial marginal tax rates, brackets, exemptions, etc., I am dramatically underestimating the hidden cost of taxes in this scenario. Also, the 1% strictly equals 0.99%, which comes from dividing the \$5.8B subsidy by the \$588B labour income tax base.
3. Several important details that are swept away in this analysis. First, if taxes are increased on high income earners (i.e., the upper tax bracket), then the elasticities of taxable income are much larger. [Milligan and Smart \(2015\)](#) estimate a value of 0.68 for high earning Canadians, as an example. Second, myriad taxes could be used to finance the subsidies (e.g., corporate income taxes or HST). Different tax bases have different elasticities. Finally, especially for the Conservation Energy Plan, financial engineering might be able to reduce sector costs with minimal fiscal implications. These, however, are one-time gains from contract restructuring. All these factors are ignored in the \$1.07B estimate.

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