BRIEFING NOTE
November (No. 2025/04)

With support from the
African Climate Foundation

Improving the effectiveness of South Africa's carbon tax in the electricity sector

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KEY MESSAGES

- The current Phase 2 carbon tax design does not increase the mitigation incentive in the all-important electricity sector.
- National Treasury has options available to improve on this design.
- In the shorter-term, it can utilise the transitional mechanisms associated with the South African Wholesale Electricity Market to achieve mitigation in dispatch.
- In the longer-term, by using electricity sector carbon tax revenues to mitigate increases in electricity costs, Treasury can achieve both mitigation and price neutrality outcomes.

1 INTRODUCTION

This paper follows Meridian's first Briefing Note, which assessed the implications of the Phase Two design of South Africa's carbon tax for the electricity sector[1]. National Treasury's 2024 Discussion Paper identifies three core objectives for Phase Two: price neutrality, revenue neutrality and behaviour change (mitigation). The first Briefing Note found that, although the design achieves price and revenue neutrality, it does not encourage further mitigation beyond that of the Environmental Levy that has existed since 2009. Consequently, the electricity sector currently lacks an effective mechanism to reduce emissions in line with South Africa's 2030 and 2035 NDC targets, as well as its 2050 net zero target. While Sectoral Emission Targets (SETs) and company-level carbon budgets could play this role, both remain at the draft stage and face considerable implementation and enforcement challenges.

This second Briefing Note builds on the first, as well as Meridian's Comments on the Draft Taxation Laws Amendment Bill (TLAB) 2025. It takes a forward-looking approach, exploring alternative design options to enhance the tax's effectiveness in driving mitigation amid the sector's shift from a centralised monopoly to a market-based structure, and highlights implications for price neutrality.

To aid clarity in the analysis, the Briefing Note defines two critical terms, which are included in the Glossary below for easy reference:

Calculated Carbon Tax (CCT): tCO_2e emissions multiplied by the carbon tax headline rate less all applicable allowances (i.e. the carbon tax payable across the majority of sectors).

Environmental Levy Equivalent (ELE): A carbon tax equal to what a taxpayer would have paid had the Environmental Levy remained in place. The ELE is used to maintain price neutrality in Phase Two of the tax – replacing the Environmental Levy with a carbon tax up to the same level.

[1] *Readers are encouraged to review Meridian's first Briefing Note on the carbon tax before engaging with this paper, as it provides important detail and context for the analysis presented here.*

GLOSSARY

Calculated carbon tax (CCT): tCO2e emissions multiplied by the carbon tax headline rate less all applicable allowances.

Central Purchasing Agency (CPA): Counterparty to the vesting contracts with individual Eskom generators as well as Eskom Distribution.

Electricity price neutrality: A commitment that the carbon tax will not raise overall electricity prices for consumers.

Environmental Levy: A levy on non-renewable power generation imposed from 2009 – end 2025

Environmental Levy Equivalent (ELE): A carbon tax amount equal to what a taxpayer would have paid had the Environmental Levy still been in force.

Merit order: A ranking of power generation units from lowest to highest marginal cost, used to determine the order in which they are dispatched by the System Operator.

RE Premium offset: An offset credit that enables carbon tax–liable electricity suppliers that purchase renewable energy to reduce their calculated carbon tax.

South African Wholesale Electricity Market (SAWEM): The central platform established to facilitate the trade of electricity products and services as the country transitions to a competitive electricity market.

System Operator: The entity responsible for real-time dispatch to ensure continuous balance of supply and demand based on the prescribed merit order.

Vesting contracts: Transition arrangements between the CPA and individual Eskom generators or licensed distributors that govern their participation in the SAWEM.

2 INCENTIVISING MITIGATION IN THE POWER SECTOR

There are three primary impact points through which mitigation can be achieved in South Africa's power sector under a carbon tax: (1) the taxpayer, (2) the System Operator, and (3) the consumer. These mitigation impact points are shown in Figure 1 in relation to the key entities involved in the carbon tax payment chain under the future South African Wholesale Market (SAWEM) structure. Consistent with our previous analysis, this Briefing Note focuses on Eskom – the owner of the vast majority of greenhouse gas-emitting power generators through its extensive coal fleet.

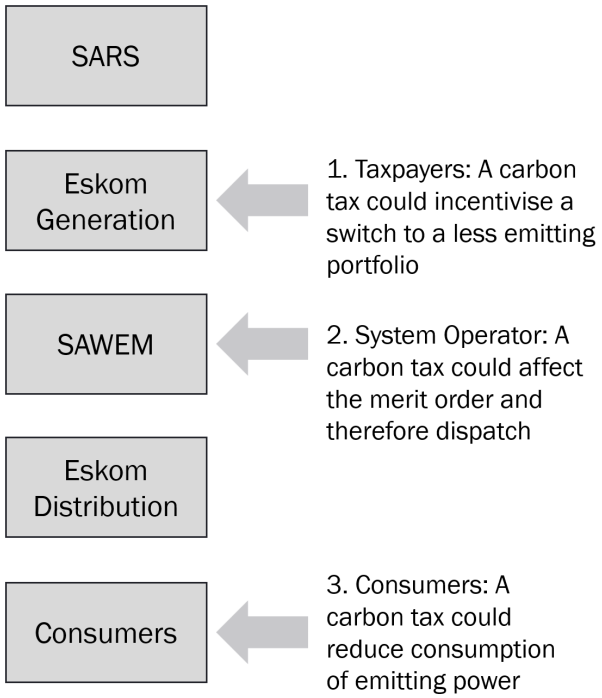

Figure 1: Mitigation impact points under South Africa's carbon tax

Each of these impact points is discussed in more detail below.

2.1 TAXPAYER IMPACT POINT

The taxpayer refers to the company controlling the emitting assets and is therefore liable for any carbon tax payments to the South African Revenue Service (SARS). In a competitive market, a carbon tax creates a direct financial incentive for these companies to reduce their emissions. This can be achieved through

measures such as improving operational efficiency, adopting cleaner technologies, or switching to lower-emission generation sources such as renewables. Companies that fail to respond appropriately risk becoming uncompetitive or losing market share.

This, however, is not necessarily the case for regulated entities. Electricity utilities operating under cost-of-service regulation for instance (such as Eskom) are typically allowed to recover operating costs through regulated tariffs, essentially passing through the carbon tax cost to consumers, reducing their own incentive to reduce emissions. While there are regulatory mechanisms to incentivise reductions in emission intensity, such as disallowing recovery of 'inefficient' carbon costs or setting performance targets, regulated firms have weaker direct financial incentives to respond to a carbon tax.

2.2 SYSTEM OPERATOR IMPACT POINT

The second impact point is at the level of the System Operator who manages the grid, ensuring demand is timeously met with supply by dispatching the appropriate generators. In a competitive electricity market, generators are typically dispatched according to a merit order which ranks the various generators according to their short-run marginal cost. Introducing a carbon tax increases the marginal cost of carbon-intensive generation, potentially pushing these sources further down the merit order. This can make cleaner technologies more cost-competitive and more likely to be dispatched ahead of higher-emitting plants, thereby reducing overall power system emissions. The extent of fossil-fuel displacement nonetheless depends on the carbon tax level, its share of total generation costs and the availability of competitive lower-carbon alternatives. However, even if short-term dispatch decisions remain unchanged, the increased costs of emitting power will provide a longer-term investment signal, encouraging the development of lower-emission capacity and discouraging investment in carbon-intensive generation.

2.3 CONSUMER IMPACT POINT

The final impact point where mitigation could be achieved is on the consumer demand side. If a carbon tax on emissions increases the cost of greenhouse gas intensive power, it could decrease the demand for that power. Consumers could then switch to suppliers of non-emitting power (if these are available), generate their own non-emitting power behind the meter, or increase the efficiency of their power use, all of which drive mitigation.

3 CARBON TAX DESIGN OPTIONS TO DRIVE MITIGATION

The three mitigation levels outlined above provide a useful structure through which to assess the mitigation impact of various carbon tax designs for the electricity sector. Here we present the Current Design under Phase Two as well as three alternative design options and consider how they fare in terms of mitigation and other considerations at each of the three impact points.

3.1 CURRENT DESIGN

The Current Design is outlined in National Treasury's Phase Two Discussion Paper, updated in the 2025 Budget Review, and was subsequently approved and adopted in the Draft TLAB. Under the Current Design, the Environmental Levy falls away and emitting generation companies are required to pay the carbon tax instead.

However, the Current Design is structured to allow tax-liable electricity companies that purchase renewable energy, such as Eskom, to reduce their tax liability to an Electricity Levy Equivalent (ELE) through the Renewable Energy (RE) Premium.

As detailed in our first briefing note, this carbon tax design effectively ensures that there is no additional incentive for mitigation under Phase Two compared to Phase One (and in effect, since the introduction of the Environment Levy in 2009). This is demonstrated in Figure 2. At the taxpayer impact point, Eskom generation faces no additional incentive to reduce its emissions as it pays the ELE to SARS and bids this cost into the SAWEM, effectively passing through the cost to consumers. Since the market bids only include the ELE carbon tax amount, the carbon tax has no additional impact on the merit order and therefore which resources are dispatched ahead of others. Finally, the commitment to price neutrality ensures that only the ELE is passed through to consumers, meaning no additional mitigation incentive is present at this level either.

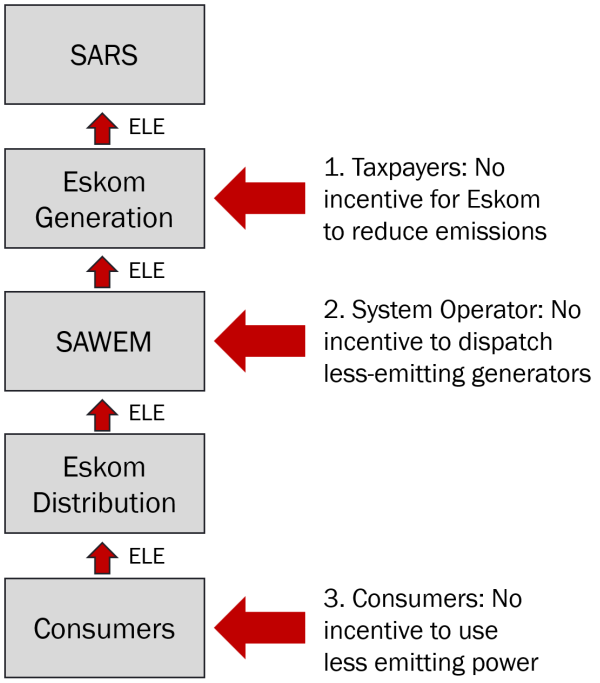

Figure 2: Carbon tax flows and mitigation incentives under the Current Design

Furthermore, emitting independent power producers (IPPs), such as open-cycle gas turbines (OCGTs) IPPs, are unlikely to purchase renewable energy themselves. This makes them ineligible for the RE Premium offset. This creates a disparity between Eskom generators and IPPs in terms of their treatment under the tax: Eskom pays the ELE to SARS, whilst OCGT IPPs likely pay the full CCT.

Overall, the Current Design delivers no additional mitigation incentive across the three impact points.

3.2 ALTERNATIVE DESIGN 1: VESTING CONTRACTS

Alternative Design 1 aims to leverage the proposed vesting contracts – a transitional feature of the future SAWEM design – as a mechanism through which the carbon tax can exert a stronger influence on dispatch.

Given Eskom's current dominant position as the incumbent national electricity utility, mechanisms are needed to facilitate the transition to a competitive market, so that Eskom does not abuse its initial market dominance. One such measure is the use of vesting contracts between the Central Purchasing Agency (CPA) and individual Eskom generators. These contracts will require each generator to bid into the market at their NERSA-regulated variable costs of production. To ensure Eskom's coal generators are not unduly penalised nor unfairly benefited by these obligations, the price they receive in the market will be hedged back to an agreed price that covers their costs.

In addition to vesting contracts with individual Eskom generators, the CPA will conclude vesting contracts with licensed distributors, such as Eskom Distribution, who will buy power from the market at the market clearing price, but will still be required to sell electricity at regulated tariffs. As with the upstream coal generators, downstream vesting contracts with distributors will include a hedge to ensure they are not financially disadvantaged from the ongoing regulation.

Whilst these mandatory hedging arrangements are intended as transitional instruments – with the volume of energy covered expected to

decline over time as market competition grows – they are likely to persist beyond 2030.

Beyond addressing Eskom's initial market dominance, the vesting contracts provide a mechanism through which the carbon tax can have a greater impact on mitigation without increasing the cost of electricity for consumers. Under Alternative Design 1, Eskom would still pay the Electricity Levy Equivalent (ELE) to SARS, as in the Current Design. However, Eskom generators would be required to include the full Calculated Carbon Tax (CCT) in their bids into the SAWEM. These CCT costs are then used to establish the merit order which the System Operator uses to schedule generators for dispatch.

As a result, there is an additional mitigation incentive (CCT > ELE) at the level of System Operator. Further, the inclusion of the CCT in market bids will raise the price of power on the spot market – increasing the price at which all dispatched generators are remunerated. This creates a long-term investment signal that encourages the development of cheaper lower-emission capacity and discourages investment in carbon-intensive generation, thus lowering emissions over time.

Since the vesting contracts and the hedge with the CPA essentially ensure Eskom generators remain regulated entities that are able to recover their costs, there is no additional direct incentive for Eskom to reduce emissions at the taxpayer level. In fact, since Eskom generators bid and receive the CCT in the spot market, but Eskom only pays the lower ELE to SARS, Eskom effectively over-recovers its costs in the spot market. To address this, the vesting contracts would need to specify that Eskom's coal generators pay the difference between the CCT and the ELE to the CPA (see Figure 3). The CPA in turn would pass this on to Eskom Distribution (and other licensed distributors) who will be buying power at the market price (which includes the CCT) but selling at regulated tariffs that only include the ELE, thus ensuring price neutrality. The CCT-ELE difference payment therefore ensures that Eskom Distribution is not left out of pocket. Since consumers only pay the ELE, there is no incentive for them to adjust their behaviour to use less emitting power.

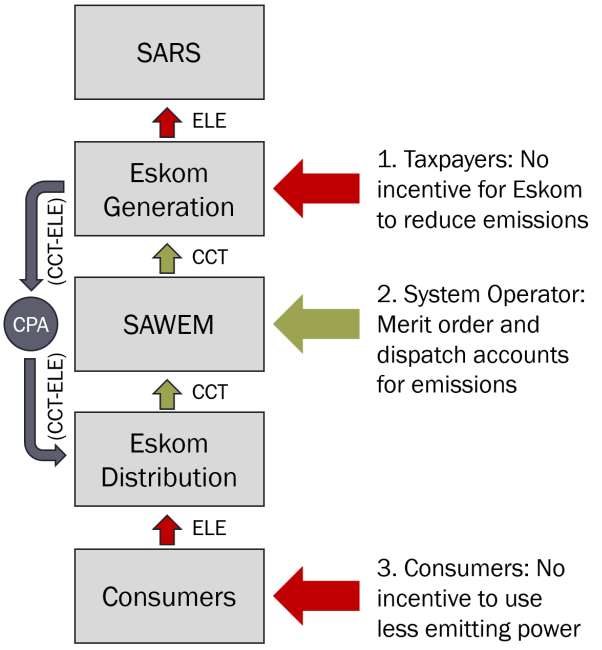

Figure 3: Carbon tax flows and mitigation incentives under Alternative Design 1 (Vesting Contracts)

While the CCT-ELE difference payment mechanism works for Eskom's coal fleet, this is not the case for peaking plants such as Eskom's diesel-fired OCGTs. These plants will not be hedged as they play a fundamentally different role in the power system to that of Eskom's coal fleet. This presents a problem for the operation of the carbon tax in this design as Eskom's peakers would be receiving the full CCT without any mechanism in place for them to pay back the difference between the CCT and the ELE. One option to resolve this issue would be to specify that a one-way CCT-ELE difference payment to the CPA is included in the peaking plant vesting contracts. However, this would not resolve the disparity between Eskom and IPP peakers, the latter of which would still be paying the full CCT to SARS. A second option that addresses both issues would be to amend the Carbon Tax Act to only allow the carbon tax

liability associated with Eskom's coal fleet to be offset against the RE Premium.

A final point worth noting is that incorporating the CCT-ELE difference payment in the vesting contract hedge is complex, and its implications for the broader electricity market need to be understood.

3.3 ALTERNATIVE DESIGN 2: RE PREMIUM REMOVAL

In Alternative Design 2 the RE Premium offset is removed completely, meaning that Eskom pays the full CCT to SARS and each emitting Eskom generator would include the CCT in their market bids into the SAWEM (see Figure 4).

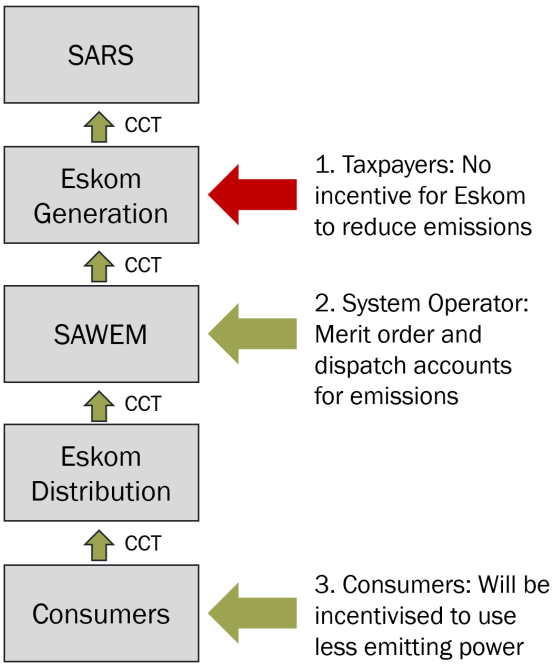

Figure 4: Carbon tax flows and mitigation incentives under Alternative Design 2 (RE Premium Removal)

This Design would result in the same mitigation benefit at the System Operator level as with Alternative Design 1. Also as per Design 1, for as long as Eskom remains a regulated entity that is allowed to recover its legitimate costs, it will continue to face no incentive to reduce emissions at the taxpayer level. Consumers, however, will be exposed to the full CCT carbon tax, which may raise the cost of wholesale power by up to 5% between 2026-2028[2], providing an incentive for consumers to use less emitting power, through efficiency improvements, reduced demand, or switching to low-emission electricity supply options.

By removing the RE Premium offset, there is no longer any distortion between the costs faced by Eskom and IPP peaking plants.

However, while passing the CCT to consumers incentivises emission reductions, raising electricity prices is regressive[3] as it disproportionately impacts poorer households while also putting companies, particularly energy intensive ones, under additional strain. In a context of rapidly increasing tariffs, any additional increase to the electricity price will likely be deeply unpopular.

3.4 ALTERNATIVE DESIGN 3: ELECTRICITY SUBSIDY

Alternative Design 3 takes the same form as Alternative Design 2 in that the RE Premium is removed, with the full CCT being passed through to consumers. It therefore has the same mitigation impact across the three impact points but includes an additional electricity subsidy to consumers to alleviate the increased cost of electricity (see Figure 5).

The subsidy could be calculated as the difference between the CCT and the ELE, effectively ensuring electricity price neutrality without putting additional financial pressure on the national budget. There are various mechanisms by which this subsidy could be implemented. In particular it would be important to consider opportunities for mechanisms arising from the new institutional and market structures being developed alongside the SAWEM when designing this subsidy.

[2] *Calculated as a percentage of Eskom Generation's NERSA-approved allowable revenue from MYPD 6, assuming no additional mitigation occurs as a result of the tax (and hence no coal fuel cost savings).*
[3] *See Köppl & Schratzenstaller (2023) Carbon taxation: A review of the empirical literature. Available here.*

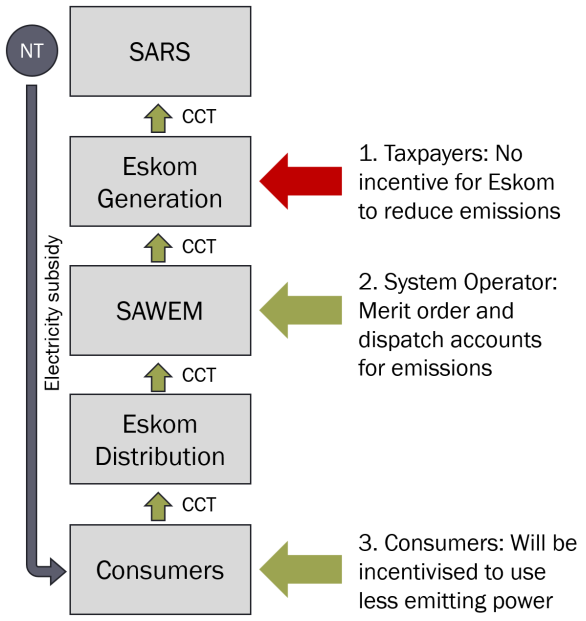

Figure 5: Carbon tax flows and mitigation incentives under Alternative Design 3 (Electricity Subsidy)

For example, an option could be to use the additional carbon tax revenue to offset some of the costs passed to all consumers in the proposed Legacy Charge. The Legacy Charge is a fee to ensure the recovery of historical and transition-related costs, such as those associated with the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), that may not be recovered in the competitive market price. The charge is intended to be payable by all consumers connected to the Eskom transmission network (including privately wheeled power), and subsequently passed on by distributors to all customers connected to the distribution network.

The Legacy Charge is being proposed as a separate charge in the wholesale tariff structure. Unlike the Current Design and Alternative Design 1, which achieve price neutrality by only passing through the ELE, reducing the Legacy Charge allows the full CCT to be reflected in consumer tariffs while keeping overall electricity prices neutral. Although total electricity bills do not increase, the underlying price structure continues to reward lower-emission choices: consumers who reduce consumption or shift to cleaner supply options will see their costs fall further. In this way, lowering the Legacy Charge provides a consumer subsidy that mitigates distributional impacts while preserving incentives for decarbonisation.

4 EVALUATION OF OPTIONS

A comparison of the Current Design with the three Alternative Design Options is presented in Figure 6, which evaluates each option against six criteria. The first three criteria correspond to the three mitigation impact points discussed in Section 2 – namely, the taxpayer, the System Operator, and the consumer. The three further criteria assess the extent to which each design achieves price neutrality, whether a level playing field for IPPs is ensured, and overall complexity.

The Current Design performs poorly across all three mitigation-related criteria, making it the weakest of the four design options in terms of mitigation. In contrast, all three of the alternative designs ensure that the full CCT is reflected in each Eskom generator's market bids, thereby delivering a mitigation benefit at the System Operator impact point. This is arguably the most important impact point in the current South African power sector context as it sends a strong signal incentivising the build out of non-emitting capacity.

While the Current Design and Alternative Design 1 perform poorly in incentivising consumers to reduce emissions, Alternative Design 2 and 3 ensure that the full CCT carbon price signal is passed through to consumers, providing an incentive for behaviour change on the demand side. This incentive becomes increasingly important as consumers are able to choose green sources of power over emitting power.

In terms of the three non-mitigation criteria, only Alternative Design 2 leads to an increase in electricity prices. The designs vary in terms of their ability to create a level playing field for Eskom generators and emitting IPPs. The

Current Design fails to achieve this, Alternative Design 1 could, if Eskom is not allowed to offset emissions from peaking plants against the RE Premium, and both Alternative Designs 2 and 3 achieve a level playing field for emitting IPPs.

The final criterion relates to the overall complexity of the tax design. Alternative Design 1 and 3 are anticipated to be the most complex of the four to design. Significant uncertainty remains around the final details of the vesting contract mechanism, and identifying an appropriate electricity price subsidy mechanism as well as achieving political buy-in for this may prove challenging. Alternative Design 2 by contrast is the simplest, although further increasing electricity tariffs is likely to prove politically impossible in the current economic climate. In terms of complexity, the Current Design falls somewhere in between.

Overall, each of the alternative design options improves on the Current Design from a mitigation perspective, primarily by sending a clear investment signal for non-emitting capacity. Whilst Alternatives 1 and 3 are more complex to design, both warrant further investigation given their ability to retain price neutrality and incentivise investment in non-emitting capacity.

	Climate mitigation			Other considerations		
	Taxpayer mitigation impact	System Operator mitigation impact	Consumer mitigation impact	Price neutrality	Level playing field for IPPs	Complexity
Current Design	Poor	Poor	Poor	Yes	No	Medium
Alternative Design 1: Vesting Contracts	Poor	Good	Poor	Yes	Possible	High
Alternative Design 2: RE Premium Removal	Poor	Good	Good	No	Yes	Low
Alternative Design 3 Electricity Subsidy	Poor	Good	Good	Yes	Yes	High

Figure 6: Evaluation of potential carbon tax designs for the electricity sector