ECONOMIC CONSULTING ASSOCIATES

Viewpoint

Avoiding energy network tariff spikes

January 2020

For regulated entities, lumpy investments in electricity and gas infrastructure lead to a sudden expansion in the asset. This increase is not always matched with a commensurate rise in transported electricity or gas volumes. Demand may take time to grow in which case these investments can result in sudden tariff increases for network users and consumers with no immediate benefit in return. This can apply to the development of new networks, expansion of existing networks, development of LNG terminals or investments in interconnectors. Many regulatory regimes around the world are ill-equipped to deal with these price spikes. Drawing on our international experience, we highlight four approaches that could be adopted to smooth tariff profiles in the wake of large investments or lower than expected demand[1].

Approach 1: adjusting the depreciation profile

The role of regulatory depreciation is generally to (i) divide the cost of investments out across their useful lives, or alternatively (ii) provide an annualised measure of the continuing cost of renewing and maintaining infrastructure assets.

It can also be used as a tool to shape the longer-term profile of tariffs. Provided there is symmetry between the level of depreciation included in allowed revenue calculations and the level of depreciation applied to the Regulatory Asset Base (RAB), depreciation allowances will be net present value neutral for investors. Regulatory depreciation affects only the *timing* of how assets are remunerated. Two key levers can be adapted to adjust the timing of depreciation:

- **Asset life** - by increasing the asset life, tariffs will decrease as the cost of the assets is recovered over a longer period.
- **Method of depreciation –** typically straight line depreciation is observed, however other methods such as accelerated (frontloaded) or progressive (backloaded) exist.

Although very rarely observed[2], progressive depreciation could be a useful regulatory tool in some circumstances. Under this approach, the annual depreciation allowance would increase each year. By allowing this, regulators can set tariffs at a lower level in the early years of operation, thereby ensuring cost recovery matches asset utilisation and demand growth more closely. Lower tariffs could also attract more connections and therefore costs can be spread across a larger customer base.

Approach 2: removing assets from the Regulatory Asset Base

Where assets are no longer in service or are not contributing to the operating capacity of an entity, ie they are redundant, some regulators have recognised that an adjustment to the asset base may be necessary (‘used and useful’ test). In some cases, a mechanism also exists that allows these to be added back to the asset base if they cease being redundant.

Given that stranded assets are generally capex that has been previously approved by the regulator, the policies surrounding this issue tend to lean towards protecting the investor from not being able to recover the value of those assets (thereby ensuring lower risk and a lower cost of capital). However, there are situations where stranded assets can be *temporarily* removed from

[1] For this viewpoint we assume that investments have benefits for all connected customers and are not considering the separate issue of how to recover a investments serving only a subset of customers.

[2] The Croatian gas transmission network regulation regime is the only example we have come across in the EU.

the RAB so that customers are not charged for a service that is not being provided.

This approach would mean that assets that are currently underutilised would have their values reduced in the RAB, resulting in lower allowed revenues. The shortfall would be recorded in the regulatory accounts and rolled forward at the regulatory rate of return for possible transfer to the RAB during a later period when consumption increases sufficiently. The 'used and useful' test is an established mechanism in many regimes worldwide (eg USA); the reinstatement of previously excluded assets with the inclusion of foregone returns is less common.

Approach 3: capitalising operating expenditure

'Slow money' is a concept that is used in the UK for gas and electricity transmission and distribution tariff regulation. The concept is that opex and capex are summed together to form a 'totex' figure which is then split by a fixed percentage into 'slow' and 'fast' money. Slow money is added into the RAB each year whereas fast money is recovered through tariffs in the year in which they are incurred. Using this approach can spread operating costs over a longer period allowing for lower tariffs in the short term.

Using this approach gives regulators further control over the timing and level of cost recovery from tariffs. If the capitalisation percentage (the proportion added to the RAB) is set high enough so that some of the opex is capitalised, the regulator is effectively lengthening the period over which the expenditure in each year is recovered. This can reduce the tariff in each year as instead of the full amount of opex being passed through, only a percentage equal to the Weighted Average Cost of Capital (WACC) times the relative slow money is added to the tariff.

Approach 4: shaping the equity return profile

For greenfield projects, such as interconnectors or LNG terminals, some regulators apply a 'Cash Needs' approach where a discounted cash flow methodology with a target Internal Rate of Return (IRR) or Debt Service Coverage Ratio is used to determine tariffs.

In the case of a target IRR regime, tariffs are set such that the net equity cash flow over the lifetime of the project – discounted at the IRR - equals zero. The investment cash flow is made up of three main components:

- **Debt servicing costs** – consisting of the debt costs (interest charges) and principle repayment.
- **OPEX** – both variable and fixed opex.
- **Equity return** – the 'fee' over and above the cost parameters that provides investors the required IRR.

The equity return fee is the most flexible component and can be 'shaped' differently over the lifetime of the project. Indicatively, the equity return component can be applied as follows:

- **Constant 'equity fee'** - annual equity returns are assumed to be constant throughout the lifetime of the project.
- **Volume linked equity return** – the equity return profile is defined by expected throughput volumes.
- **Depreciation linked equity return** - returns follow the hypothetical depreciation profiles of the assets. Depreciation is used as a proxy for debt repayment costs.
- **Flat tariff level** – a flat network or terminal usage tariff is applied throughout the lifetime of the project and the equity return profile is shaped accordingly.

The choice of the optimal equity return profile will not only be driven by the resulting tariffs but will also depend on the project specifics including the financing terms, the risk appetite of investors and their preference for the timing of cash flow among others. These would need to be considered when designing the shape of the equity return profile.

The smoothing of regulated energy network tariff profiles helps reduce risk and uncertainty for network users and consumers. The snapshot of key approaches presented here is based on international experience from ECA's network regulation team in advising on the regulatory treatment of large investments in existing networks or for greenfield projects. Each of these approaches and their application will have impacts on other parts of the regulatory regime and therefore should not be considered in isolation. They should act as levers around which regulators can start to approach the issue of tariff spikes.

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