

Rooftop solar is growing up

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The rise of rooftop solar in Australia has been extraordinary.

In 2009, there were fewer than 100,000 rooftop solar systems in Australia. Now, that number is more like 1,000,000. Rising electricity prices, falling equipment costs, higher levels of environmental awareness and large government subsidies have created the conditions for explosive growth.

Like a child moving into the more complicated world of adolescence, the rooftop solar industry is growing up. As a result, some of the rules governing its behaviour will also have to evolve as support is gradually removed and the industry interacts with the established power industry on a more even footing. This is not a bad thing – it marks the sector's coming of age.

A good first step was the Victorian government's decision to decrease the 'feed-in tariff' – the rate paid to households for every kilowatt-hour of electricity they export to the grid. On January 1 this year, the feed-in tariff was cut from 25 to 8 cents. This may seem like an excessive cut, but the 25 cent tariff was too high to be sustained with more and more systems being installed, and the impact has been cushioned by lower prices for photovoltaic cells. Critically too, this change only applies to new installations, so it does not undermine the support for customers who got in early to install solar panels when the upfront installation costs were higher.

The 25 cent feed-in tariff had two purposes. It encouraged households to install rooftop solar. Now that the price of panels has come down and solar is a more widely accepted technology, this incentive is no longer needed. Besides, the federal government's solar credits scheme – a subsidy that reduces the upfront cost of installing solar – remains in place.

The second purpose of the 25 cent tariff was to pay households for their power output and encourage them to export electricity into the grid. The 8 cent tariff is appropriate because it better reflects the wholesale cost of electricity, which is the actual cost of energy as seen by other users connected to the power grid.

The appropriate 'next step' would be for regulators to encourage households to think about how their rooftop solar systems affect the 'poles and wires' of the power grid.

As outlined in a recent Grattan Institute report, the rising cost of electricity distribution – the poles and wires – has been a major cause of rising prices in recent years. Finding ways to reduce pressure on the power grid would benefit all electricity users. Currently, households are paid a fixed rate for energy they send onto the grid, regardless of the time of day. So they have no incentive to think about when their solar systems are producing power.

What if power companies were able to offer households better prices for the electricity from their rooftop panels at times of higher demand? This would make it financially attractive for households to export power at times when it was really needed. However, a number of regulatory reforms are required to make this possible.

A good first step would be for power bills to show the cost for using the power grid separately from other charges. Down the track, this would then make it possible for 'pole and wire' businesses to offer rebates for power produced at more valuable times of the day.

An attractive feature of this type of reform is that it does not tell households how they must go about delivering more energy at times of high demand. This means the policy would not need to be changed if new techniques were discovered to increase output during peak periods, or if the economics of existing methods changed in unexpected ways.

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At present, customers could increase solar output during periods of high demand in two ways. First, they could change the angle of solar panels when they are installed. Solar panels produce the most energy when they face the sun directly.

In Australia, this means they are installed facing north to maximise the power output in the middle of the day, when the sun's rays are strongest. As a result, solar output is close to zero in the late afternoon and evening when the sun is in the west. Yet, this is exactly when household electricity demand is at its highest.

If solar panels were installed facing north-west, rather than due north, they would produce more power late in the afternoon. This would help 'pole and wire' businesses to reduce the maximum load on the power grid, which would reduce costs. However, it would also reduce total energy output because the solar panels would generate less energy in the middle of the day.

Alternatively, households with solar panels could install batteries to store energy during the day and release it in the evenings when demand is higher. As battery technologies improve, these types of systems are becoming cheaper and more attractive to install. Lowering the feed-in tariff also encourages the uptake of batteries by making it more attractive for households to use the electricity they generate, rather than sending it out onto the power grid.

If the number of installed solar systems continues to grow and tariffs for rooftop solar are not improved then all electricity users will pay for the consequences. Regulatory arrangements allow 'pole and wire' companies to recover an agreed amount of revenue each year. If there are no incentives to encourage solar output at times of high demand, then these businesses will recover their higher costs through higher tariffs or connection charges.

All households will face higher bills – even those that have installed solar panels. They will miss out on anticipated savings and be hit by the rise in fixed connection charges.

Governments may be reducing subsidies for household solar but renewable energy advocates should not see this as bad news. Rather, it's a sign the industry is maturing. We now need to introduce smarter rules to take the industry all the way through to adulthood.

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