

# Opinion & Analysis

## Time to sit the electric cool car acid test



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A national fleet of electric cars could capitalise on Ireland's abundant zero-emissions wind energy

**T**HE ELECTRIC car was the dominant form of automotive transport in the late 19th century. That all came to a juddering halt with the introduction of Ford's cheap Model T in 1908. Now, after a century in obscurity, the electric vehicle seems set for a 21st century renaissance, with Ireland vying for a front seat in this revolution.

Will the future really be electric? If so, does it actually matter? Fine Gael's Simon Coveney believes the answer on both counts is a resounding Yes. Last year he authored a report called *Drive for zero* on behalf of the joint Oireachtas committee on climate change and energy security. It offers a tantalising road map to a very different energy future for Ireland.

Transportation today produces more than one-fifth of Ireland's almost 70 million tonnes of annual carbon emissions. This sector has been far and away our worst growth area, with transport-related emissions up 165 per cent since 1990. In that time, our national fleet of private cars has ballooned from 800,000 to two million. The average Irish car emits several times its weight – about 3.25 tonnes – in climate-altering CO<sub>2</sub> every year. We are 99 per cent dependent on imported energy to power our transport system, spending €2 billion a year on liquid fuels alone, leaving us extremely vulnerable to any future disruption in supply.

Ireland, on the other hand, is especially well endowed with zero-emissions energy in the form of the EU's highest average wind speeds. Electricity is, however, notoriously difficult to

store, so having huge amounts of wind power available in the middle of the night when demand is low is currently of little use.

A national fleet of electric cars could change that dramatically, with impressive gains on both sides of the equation. Since most cars would be plugged in to recharge overnight, they could capture energy at the time of lowest demand, thus balancing out power production and consumption.

The ESB, which is piloting public charging points, predicts there will be 6,000 electric vehicles on the roads by 2012, rising to 250,000 in 10 years. With the infrastructure fully established, the entire fleet should transition to electric by 2030. Powering this would require an additional 5.6 gigawatt hours of electricity production, but this is well within the projected new wind capacity online by then. Wind turbines are of course limited by the wind itself, and typically only produce power 40 per cent of the time. That's why we need huge amounts of wind generation capacity, and a reliable method of storing this energy bounty.

The ESB's electric vehicles division head, Paul Mulvaney, tells me they will have installed 2,000 domestic and 1,500 street charging points by next year. In addition, high-speed points that can recharge an electric vehicle in less than 25 minutes will also be rolled out. Another option is to allow cars to simply swap out their batteries at a charging station. Most people use their cars for less than 40km a day, and a cheap overnight recharge is all they'll usually need, but for longer journeys, people need to know

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they're not going to be left high and dry.

The Government's White Paper on energy policy set a highly ambitious target of 40 per cent of our energy coming from renewable sources within 10 years. No amount of tweaking with existing systems can deliver transformation on this scale or timeframe. The ESB itself is committed to being a carbon-neutral organisation by 2035. Both these aims aren't just compatible with an electric vehicle revolution; they depend on it.

A national programme of smart electricity meters would be needed to complement this transition. This would allow each individual vehicle to communicate with the grid, and automatically adjust and even return power to the system, depending on the ebb and flow of energy within the grid.

Smart meters depend in turn on a smart, robust grid. Much of our best renewable energy is located in areas remote from the grid. A proposed 400MW wind farm in Co

Mayo may be unable to come online for several more years, as the grid can't currently accept this extra power. There's not much point in building windmills without the infrastructure to feed this energy smoothly into the national grid.

Assuming that the bullish projections for very substantial additional renewable power coming on to the grid in the next 10-20 years materialise, a move to electric vehicles becomes compelling for Ireland, for reasons far beyond emissions reductions.

For the public, the appeal of a 90 per cent drop in fuel costs versus petrol or diesel, translating into an annual saving of €1,600 per car should help offset concerns about an unfamiliar technology. The elimination of tailpipe emissions would also be a wider public health boon, as would the dramatic drop in traffic noise.

An electric motor is three to four times more efficient at converting energy into motion than a conventional engine. "In a typical day, an electric car uses only about as much energy as four plasma TVs," says Mark Duvall of the Electric Power Research Unit in Palo Alto, California. Obstacles remain, including concerns over the range and recharging times of electric vehicles. Early laptops had similar problems, but advances in battery technology overcame these. However, the greatest obstacle to transformation remains inertia. Success here will require redefining and electrifying the public debate in tandem with the national car fleet.

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