

Energy

HIGHLIGHTS

Labour will:

- Plan for the clean energy revolution and a just transition to a sustainable low-carbon economy
- Promote energy efficiency, and ensure that at least 90% of New Zealand's electricity is generated from renewable sources by 2025, with close to 100% by 2040
- Ensure all future purchases of Government vehicles are electric (including the Crown ministerial cars) unless there is an exceptional reason not to

Introduction

New Zealand's plentiful renewable energy resources – hydro, wind, geothermal and solar – mean we are ideally placed to build an energy system that is affordable, sustainable and reliable.

Labour's *Energy* and *Climate Change* policies overlap in the need to improve energy use and slash greenhouse gas emissions.¹ The challenge is to ensure a just transition swiftly but smoothly towards a fully renewables-based energy system and a low-carbon economy.

To keep the global average temperature rise well below 2°C – in order to meet the Paris Agreement commitment and so avoid the worst effects of climate change – most known fossil fuel reserves must be kept in the ground (in the absence of widely-deployed, and still unproven, carbon capture and storage technology).

New Zealand has a significant petroleum production industry in a world still heavily reliant on oil and gas. But we and the rest of the world must nonetheless transition rapidly to renewable energy.

Renewable energy and energy efficiency make great sense economically and will reduce our greenhouse gas emissions. Huge investments are being made in renewable energy internationally with the cost of solar generation in particular dropping dramatically in the recent years. Local energy solutions with distributed generation are becoming a viable part of the renewables mix.

Labour will ensure that New Zealand is at the forefront of this renewable energy revolution and the economic, social and environmental benefits it will bring. A restored Emissions Trading

¹ Greenhouse gas emissions are also referred to in this policy as simply "emissions". "Low-carbon" is a shorthand reference to reducing all greenhouse gases (including particularly in New Zealand methane and nitrous oxide from agriculture) – but in the context of this policy "low-carbon" focuses on reducing carbon dioxide emissions from energy generation and use.

Scheme (ETS) will underpin this by putting a serious price on the use of fossil fuels. See Labour's *Climate Change* policy for further detail on the ETS.

Ensuring security of electricity supply

It is essential that New Zealand's homes and businesses have a secure supply of electricity. A large but diminishing part of our existing electricity generation – currently 60% – has come from hydro generation, but the limitations of lake storage mean that supply can be put under strain during dry years.

Diversity of supply is an important means of ensuring reliable electricity is always available. This means complementing our existing hydro, geothermal and wind generation capacity with solar and other renewable technologies including marine (tidal and wave) and biomass.

Labour will:

- Work to ensure a secure electricity supply that provides for the country's energy needs now and into the future, through increased diversity of supply from renewable sources with low environmental impact.

Taking all environmental costs into account

An assessment of the costs of any new generation plant or energy infrastructure should include all environmental costs. That would include, for example, the landscape or biodiversity values of undammed rivers or sections of rivers, given that so many have already been dammed.

For renewable energy generation, the relative degree of reversibility of the adverse environmental effects of proposed generation technologies should be taken into account. An assessment should also include the greenhouse gases produced, or avoided, by the project. These would be measured and priced through the ETS.

Since 2010 electricity demand has been flat. There is currently an oversupply of centrally-generated, grid-connected generation. If and when more baseline generation is needed, it can be readily accommodated by geothermal and wind. Hydro has matured, and there is unlikely to be any further significant hydro development.²

Labour will:

- Ensure that an assessment of the costs of any new generation plant or energy infrastructure includes all the environmental costs involved.

Promoting renewable energy

A clean renewable energy revolution is underway internationally, with huge investment now occurring and renewable energy being mainstreamed – in electricity generation, transport and

² See Labour's *Water* policy under "Protecting rivers ..." for more on the environmental costs of hydro.

heat production. It is crucial that the revolution succeeds in displacing the burning of fossil fuels, if the planet is to avoid the worst effects of climate change.

Labour has a target for at least 90% of our electricity to be generated from renewable sources by 2025 (currently over 80% thanks to initiatives of the last Labour government). Labour is determined to achieve or better the 90% target, with subsequent higher targets.

Despite our high proportion of renewable electricity, it only comprises 40% of our total energy consumption, with the rest coming from fossil fuels – oil, gas and coal. We will need more use of renewable electricity, combined with further improvements in energy efficiency, to replace the remaining 60%.

New Zealand's abundant marine resources could provide power in the future, provided that the environmental impacts of any generating plant are acceptable.

Electricity produced by hydro and fossil-fuelled thermal power stations is highly controllable. This assists the electricity system in matching supply with demand. Our hydro lakes are in effect giant batteries that back up variable renewables like wind and solar, but in dry years some thermal back-up is necessary as well. With more wind and solar power, new infrastructure may be required to manage variability.

Renewable energy needs to become integrated into “smartened” power grids and at every level of the economy – into homes and other buildings, throughout industry and in the transport sector.

Labour will:

- Plan for the transition to the next stage of energy culture, based primarily on renewably-generated electricity and low emissions
- Ensure that at least 90% of New Zealand's electricity is generated from renewable sources by 2025, with close to 100% being renewably generated by 2040³
- Investigate and develop new electricity system structures that can deal with higher proportions of variable renewable energy sources such as wind and solar power
- Explore options for marine power generation
- Add climate change mitigation and emissions reduction to the objectives of the Electricity Authority, in order to promote an increased uptake of renewable electricity.

The last Labour government banned until 2018 the building of new fossil-fuelled power stations to generate baseload electricity. National repealed this, despite the impetus the ban gave to the development of renewable electricity sources. There is no foreseeable need for further fossil-fuelled baseload, but Labour wants to provide continuing certainty to the renewables sector.

Coal is still being used to produce industrial heat, for example by Fonterra to produce milk powder. A fully restored ETS will discourage this by making coal use more costly, but a switch from coal to cleaner fuels should be also be encouraged by other means. Coal users need to be

³ “Close to” is possible, noting that geothermal releases some carbon dioxide during brine extraction, and that some thermal back-up may be necessary (although this could be biomass) to meet peak seasonal demand, especially in dry hydro years.

aware that new investment in coal burning boilers may turn out to be short-sighted and uneconomic.

The burning of biomass – forest and wood waste or specially grown crops – is a carbon-neutral way of making industrial heat, including as a substitute for coal.

Labour will:

- Reinstating until 2028 a moratorium on any new fossil-fuelled baseload electricity generation
- Promoting clean industrial heat and a move away from the use of thermal coal
- Encouraging the use of biomass as a way of making industrial heat.

Local energy solutions and distributed generation

Rural communities can face specific difficulties in terms of electricity prices due to their isolation and the cost to distributors of maintaining infrastructure. For some customers and communities it may make little sense to remain on the grid. Local sources of generation may be more appropriate, and cheaper than maintaining existing electricity distribution lines.

Labour will:

- Working in partnership with rural communities, distributors and generators to identify and promote opportunities for localised alternative sources of electricity generation.

Local energy solutions have potential applications and benefits well beyond rural or isolated communities. With technological advances and price reductions, distributed generation (DG) is becoming an economically viable part of the renewables mix, and increasingly credible at a business or household level. In particular, photovoltaic (PV) solar is increasing rapidly and will reduce the need for more centrally-generated electricity.

DG can include not only PV solar generation but also wind and micro hydro. Also in the mix are smart grids and meters, improved battery storage, solar water heating, and ground source heat pumps. All this is complemented by energy efficiency measures and time-management of energy use to flatten out peak electricity demand.

The continuing growth of DG is inevitable, and the government should facilitate its orderly roll-out. This it can do by helping overcome regulatory, technical, and practical barriers. Such barriers include limited workforce capacity in DG technology and its installation; and a lack of support in assisting consumers to choose a solution best tailored to their needs. The government should also regulate for high installation standards.

For grid-connected DG, there need to be stable arrangements for sending surplus electricity back into the grid by way of feed-in tariffs. This would provide some certainty of return, which would in turn make it easier for households and businesses to access the capital required to invest in DG.

Lines companies can have a positive role to play in local energy solutions. Such solutions would enable them to better manage traffic across their network especially at peak times, and to avoid costly and avoidable upgrades. Also, a diverse range of generating units enhances energy resilience, and generating at or close to the point of use reduces losses in transmission.

Lines companies can ensure that DG roll-out is properly coordinated in relation to capacity demand, and that installations are properly maintained and monitored so as to achieve maximum effectiveness. Lines companies could even rent PV equipment and battery storage to customers.

Labour will:

- Facilitate the orderly roll-out of economically viable distributed generation, identify and address barriers to this occurring, and regulate for high installation standards
- Ensure that demand side and local energy solutions are given a serious footing up against supply side and centralised energy solutions for meeting energy demand
- Ensure that households and other distributed generators can be grid-connected at a fair rate, and sell surplus electricity back into the power grid at a fair price (linked to the wholesale price)
- Enable lines companies to play a positive role in DG roll-out and in promoting energy efficiency.

Planning for disruptive energy technology and a low-carbon economy

New Zealand must keep pace with the effect of disruptive technology on our energy system – especially the rapidly declining cost of PV solar, advances in battery technology, and the advent of electric vehicles. These changes mean that households and businesses will be able to much better control their energy supply and demand profile, especially in relation to electricity.

In a 2016 report *Transmission Tomorrow* Transpower points out that the New Zealand power system is on the cusp of significant change, with tomorrow's system looking very different from today's. It says:⁴

“For our business, the big breakthrough comes [around 2040] when distributed storage becomes so extensive, visible and well co-ordinated that reliability ‘behind the grid’ begins to substitute for reliability of the grid. In this state, loss of grid supply doesn’t impact end users – provided we can restore supply before distributed storage runs too low. Our business fundamentally changes from providing 24/7 reliability and real-time balancing to providing a resilient battery-charging service.”

Transpower envisages that distributed battery storage would significantly even out peak demand. This would assist Labour's target of close to 100% renewable electricity generation,

⁴ Transpower, *Transmission Tomorrow*, May 2016, pages 20–21.

because there would be less need for thermal peaking generation plant (and the cost of keeping it in reserve).

The Transpower approach assumes that remaining grid-connected will continue to be beneficial for those with distributed generation and storage systems. But this would require grid-connection to be attractive to distributed consumers in financial and back-up terms, and for them to be able to readily feed power back into the grid if their batteries are full. Keeping distributed consumers on the grid would mean that the cost of providing grid service could be widely shared, as it is at present. And the owners of existing centralised generation plant and power grids would be less concerned about their assets becoming “stranded” if a high rate of grid-connection is maintained.

Labour believes that the grid (despite its part private ownership by local lines companies) is a public good like roading, which ensures people can move around and get things done efficiently and effectively.

Labour will:

- Ensure that there is a coherent plan to manage and maximise the benefits of the transformation that disruptive energy technologies will bring
- Convene a cross-agency and cross-interest working group to undertake a wide-ranging review of the electricity sector and address issues including:
 - regulatory and equity issues arising from the impact of the new technologies
 - the optimal role for the electricity sector in making a just transition to a low-carbon economy
 - whether in achieving this, any changes need to be made to current electricity industry arrangements, or any policy inconsistencies across the wider economy addressed
 - any barriers that currently exist to improving energy productivity
 - whether responsibility for an overarching transitional plan should be placed with the Electricity Authority, as the regulator of the overall electricity system.

Promoting energy efficiency

The growth in energy use has been a significant factor in New Zealand’s increased greenhouse gas emissions since 1990. While increasing the amount of electricity generated from renewable resources decreases emissions, we can by energy conservation and improved energy efficiency make the best use of each unit of electricity and decrease electricity demand.

The Electricity Authority regulates the electricity industry in place of the former Electricity Commission. However, National removed the previous energy efficiency objective. Labour will reinstate this as a responsibility of the Authority.

Labour will:

- Ensure that New Zealand invests in improved energy efficiency where this is cheaper than the cost of generating extra energy or building extra energy infrastructure

- **Entrench the energy efficiency principle in all sectors, and in the objectives of the Electricity Authority.**

Energy efficiency at home and addressing energy poverty

Houses in New Zealand are notoriously cold, damp and draughty. Ensuring that homes are warm and dry is an urgent priority for our housing stock. All new residential builds should have a high energy efficiency rating. For a relatively small increase in building costs (but significant savings in running costs), this would see a progressive improvement in the country's housing stock so that warm, dry, energy-efficient homes become the norm.

Up to five dollars worth of health and other benefits arise from every dollar spent on insulating existing homes. While a home insulation scheme started under Labour has been very successful, there is still a long way to go, especially for rental housing.

Labour supports the now compulsory requirement for landlords to declare in tenancy agreements whether there is insulation in a rental home and of what type and condition. We also support the requirement for ceiling and underfloor insulation to be compulsory in all rental homes from mid 2019 where it is reasonably practicable to install.

Labour will go further than this by introducing a healthy homes guarantee for every rental home. This will require not only insulation but also efficient non-polluting heating, as well as minimum standards of ventilation, safety, food storage and cooking, water supply and wastewater disposal. The guarantee will be extended to all homes over time.

Labour will back its insulation and home heating policy with financial assistance. Supplementary assistance could be provided from local councils, by way of loans repayable over time through homeowners' rates bills.

Other means of improving energy use, and saving consumers money, are energy-efficient appliances and lighting, and the use of smart grids and meters to lower peak electricity demand.

Many low-income people, or large families, have difficulty paying their power bills and skimp on staying warm, at the expense of their comfort and health. This energy poverty can in part be alleviated by the measures discussed above. A more immediate way of addressing the problem could be through fixed charge tariffs. The current low fixed charge tariff for low domestic users (low user tariff) benefits only some of those in energy poverty, and assists others who are not.

Labour will:

- **Consider whether the Building Code should require all new residential builds to comply with a higher minimum efficiency rating than at present**
- **Introduce a healthy homes guarantee so that every rental home in New Zealand is a healthy home that meets minimum standards not only of insulation but also of efficient non-polluting heating**

- Assist homeowners and landlords to make their houses warm and healthy to live in with grants of up to \$2000 towards upgrading insulation and home heating
- Encourage local councils to provide supplementary assistance for upgrading insulation and home heating, by way of loans repayable over time through homeowners' rates bills
- Promote the use of smart grids and meters to empower consumers to best manage their electricity requirements
- Review the low user tariff to make it, or an alternative, fit for the purpose of addressing energy poverty
- Introduce a Winter Energy Payment for people receiving superannuation or a main benefit. This will be \$450 a year for a single person and \$700 a year for a couple or a person with dependent children, paid in monthly payments from May to September.

See Labour's *Housing* policy for more on the Healthy Homes Guarantee. See Labour's *Building and Construction* policy for more on building standards.

Energy efficiency in businesses

Labour believes that businesses can be competitive and more productive by adopting energy efficiency and conservation measures and increasing their uptake of renewable energy. In doing so, they can better manage energy and emissions prices and become more profitable. The government can lead by example in the buildings it occupies.

Labour will:

- Through EECA, help businesses to save energy, and money, by increasing their uptake of cost-effective energy management practices and technologies
- Strongly encourage government departments to only occupy high energy-efficient buildings, whether owned by the government itself or leased from the private sector.

Transport and electric vehicles

While New Zealand is a world leader in renewable electricity, we rely heavily on fossil fuels for transport – light vehicles, heavy vehicles (such as trucks, buses and trains), shipping and aviation. Road transport emissions are rising and contribute 17% of our overall greenhouse gas emissions.

There is huge potential for measures that would not only cut emissions but also transport costs. They include: support for public transport and car sharing; enhanced options for walking and cycling; alternatives to road freight such as rail (especially if it is further electrified) and coastal shipping; fuel efficiency standards for imported vehicles; alternative fuels such as biofuels and hydrogen; and a substantial uptake of electric vehicles (EVs).

EVs can make a big difference to emissions if they are made from predominantly recyclable materials and powered from renewable sources such as New Zealand has. The closer to 100% renewable our electricity can become, the greater the emissions reduction EVs can achieve for us. There is potential for much of our light vehicle fleet (ie most new vehicles) to be electrified in

the next 10–15 years, as well as a significant number of heavy vehicles. Hybrid petrol/electric vehicles will play a transitional role, but are likely to be superseded by full EVs.

The government can facilitate an EV roll-out with numbers increasing as prices come down, “range anxiety” decreases, and charging facilities become commonly available. EVs used for local travel can be recharged at an owner’s home, but for longer distances need a charging network to support them – for which initiatives are already underway. Such infrastructure, together with improving battery storage, will cause range anxiety to diminish.

Full pricing through the ETS of emissions from internal combustion vehicles will also assist the economic viability of EVs. And the government should lead by example by substantially electrifying its own vehicle fleet. This would help establish critical mass by kick-starting the availability of second hand ex-fleet vehicles.

The current government’s EV policy includes an EV road user charge exemption until 2% of the national fleet is electric, and reviewing depreciation and fringe benefit tax for EVs.

Labour will:

- Work with the electric vehicle industry to encourage the uptake of electric vehicles and the provision of charging infrastructure
- Ensure that the majority of the central government vehicle fleet is electric by 2025, all future purchases of all Government vehicle fleets (including the Crown ministerial cars) unless there is an exceptional reason not to
- Introduce fuel efficiency standards (based on carbon dioxide emissions) for vehicles entering the country, with the standards being progressively raised over time
- Work to remove obstacles to the adoption of private corporate EV fleets.

Managing our petroleum resources

New Zealand has a significant petroleum (oil and gas) industry. Measures set out in this policy will lessen our reliance on petroleum, make New Zealand more resilient to international oil price shocks, and transition us to a renewable, post-oil energy future. But petroleum will continue to have an important, if diminishing, role during the renewables transition.

Upgrading onshore environmental standards

The Resource Management Act 1991 (RMA) regulates petroleum and other minerals activities on land and in the territorial sea, i.e. out to 12 nautical miles.

In 2014 the Parliamentary Commissioner for the Environment (PCE) reported on drilling for oil and gas on land, including fracking.⁵ The report recommended a thorough regulatory overhaul of the oil and gas sector – including providing for standards appropriate for different regions, application of international best practice, and consistency of RMA consent processes. Effective

⁵ PCE, *Drilling for oil and gas in New Zealand: Environmental oversight and regulation*, June 2014.

regulation will protect environments, water aquifers, and other industries that may be incompatible with petroleum exploration.

Labour will:

- Ensure the implementation of the PCE's 2014 recommendations, including the preparation of a NPS on onshore oil and gas exploration to provide direction to councils.

Upgrading offshore environmental standards

While the PCE's report was limited to activities on land, it will inform activities in the territorial sea, which through the RMA are under the jurisdiction of the adjacent regional councils. There may also be useful advice applicable to the Exclusive Economic Zone (EEZ).

Labour will:

- Consider the PCE's report with regard to onshore drilling, in terms of what this means for offshore drilling and its consequences.

The grounding of MV Rena off Tauranga in 2011 graphically illustrated the destructiveness of even a relatively small oil spill at sea, and why the environmental risks of petroleum and other activities in our marine environment must be minimised.

The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act) regulates activities in the EEZ (from 12 to 200 nautical miles) and the Extended Continental Shelf (ECS) beyond. (For convenience, the EEZ and ECS are referred to below as just the 'EEZ'.)

It is crucial that effective regulation be in place where mining activity (exploration or production) is proposed in deeper water with harsher environmental conditions and greater risk. That will give the public confidence that any activity is carried out to the highest safety standards that will ensure protection of our marine environment.

Labour will:

- Insist on high environmental standards and stringent safeguards, to international best practice, for oil and gas and other minerals activities, especially in the EEZ.

The detailed supervision of any petroleum drilling in the EEZ (monitoring, physical audits etc) is the responsibility of the Environmental Protection Authority (EPA) as the regulatory authority. Labour is concerned about the adequacy of EEZ Act penalties for breaches, and the provisions for cost recovery in the event of an accident. The Act does not require insurance or bonds that would realistically come anywhere near covering the full costs of a major clean-up.

Labour will:

- Ensure that penalties for breaches of the EEZ Act provide a major disincentive to such breaches occurring and that bonds are sized accordingly
- Ensure that substantial parent companies are fully liable for any mistakes, spill clean-ups and financial losses (rather than a smaller New Zealand subsidiary), by way of a bond or liability insurance or both.

Monitoring and response capability

We must ensure that petroleum exploration and production complies with international best practice for environmental safeguards, monitoring and contingency plans.

Labour will:

- Not allow offshore petroleum drilling to occur unless high environmental standards and stringent safeguards are in place, as well as robust contingency plans
- Adopt the robust Norwegian regulatory model, which includes physical audits rather than just paper-based systems. This will include having expert independent observers present on each drilling rig, with the cost of their employment being paid for by the operator
- Require operators to have an effective rapid response capability if an incident occurs, including capping devices being readily available
- Consult with interested parties, including the industry and other stakeholders, as to what rapid response capability is appropriate and where it is to be located.

See Labour's *Environment* policy under "Managing our oceans wisely" for more on the EEZ Act; and on "Improving the effectiveness of the EPA".

Access to petroleum resources, and transitioning from them

Before regulation for environmental standards arises under either the RMA or the EEZ Act, an operator must first gain access to the area concerned. Each year the government's New Zealand Petroleum and Minerals (NZPAM) conducts a "block offer" of onshore and offshore areas with petroleum potential. Successful applicants are granted exploration permits for 10 to 15 years (under the Crown Minerals Act 1991, or CMA).⁶

NZPAM is legally required to consult with iwi and hapu in the proposed block areas, and also consults with relevant local government authorities (although is not legally required to). There is no opportunity for wider public participation or submissions. And there is no analysis of the potential environmental effects of physical work that might be undertaken.

Once an exploration permit is granted and before any activity (other than a "permitted activity") is undertaken, an operator must arrange a resource consent under the RMA or a marine consent under the EEZ Act.⁷

Labour supports the idea of environmental effects being considered at the Crown's initiative during, or prior to, the block offer process. That would enable a broad consideration of potential impacts such as a proliferation of wells and fracking in shale basins. Such an issue is not well dealt with by way of individual consent applications.

⁶ Schedule 4 of the CMA applies. For other areas on land, the landowner's consent must be arranged. No access arrangement is generally required for access to the seabed.

⁷ A single consent can cover the drilling of multiple holes within a permit area.

Labour recognises that worldwide most known fossil fuel reserves must be kept in the ground if the objectives of the Paris Agreement are to be achieved and the worst effects of climate change avoided.⁸ We note that recent take-up of block offers in New Zealand has been weak, and that our known gas reserves will last for many years (with most oil being exported).

Fossil fuel subsidies are a contentious issue internationally and the New Zealand government has spoken out strongly against them.

Labour will:

- Investigate how environmental effects of activities, including cumulative effects, could be considered at the Crown's initiative during, or prior to, the block offer process – and with the inclusion of public participation
- Over time, migrate existing petroleum exploration and production permits to any higher standards that have been brought in
- Identify and remove any clear government subsidies to the petroleum industry.

See Labour's *Climate Change* policy for more on the Climate Commission, carbon budgeting, and a low-carbon just transition plan.

Transitioning from coal

New Zealand has large coal and lignite resources. Of all the fossil fuels, coal is the highest producer of carbon dioxide per unit of energy. Lignite is the lowest and worst grade of coal in that regard, and the environmental case against using it is overwhelming.

The New Zealand coal industry is in steady decline. While 40% of coal is exported, it is still a significant contributor to our domestic greenhouse gas emissions – although its use will reduce further once emissions are fully priced under the ETS.

Labour will:

- Not support any mining of lignite, and/or its conversion to liquid fuels; and will require any lignite development to face the full cost of its emissions under the ETS
- Work out an orderly transition from thermal coal to non-carbon sources of heat, a process in which the Climate Commission will play an important role
- Consider the need to use metallurgical/coking coal in steelmaking, as to whether alternatives to this use can be possible in future.

Mining other minerals

Many products of mining are central to our way of life – in the vehicles we drive, the houses we live in, and the communications and other technologies we all rely upon.

Mining is prohibited on areas described in Schedule 4 of the CMA. However, it is in New Zealand's economic interest that we mine our own valuable minerals, in appropriate areas,

⁸ In terms of energy value, natural gas comprises about 75% of New Zealand's petroleum production and crude oil about 25%. Natural gas emits about 30% less carbon dioxide per unit of energy produced than oil does and about 50% less than coal does.

rather than importing them. That is provided environmental impacts can be, and are, appropriately mitigated under the RMA and CMA.

Labour will:

- Insist on high environmental safeguards in the development of New Zealand's mineral resources.

See Labour's *Conservation* policy for more on mining activity on public conservation land.

