



Guarini Center

Frank J. Guarini Center on Environmental,
Energy, and Land Use Law
at NYU School of Law

ENVIRONMENTAL SUSTAINABILITY AND THE REGULATION OF NEW ZEALAND'S ELECTRICITY MARKET

Kate Yesberg¹

This paper considers the implications of removing “environmental sustainability” as an objective of New Zealand’s electricity market regulation under the Electricity Industry Act 2010. To do so, it looks specifically at the impact of this change on the development of regulatory incentives for investment in distributed electricity generation. At a more general level, it considers the impact of severing the regulatory link between energy and environment. The paper argues that removing environmental sustainability from electricity market regulation has had an adverse impact on New Zealand’s regulatory capacity to deal with climate change, and concludes with a proposal for reform.

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¹Litigation solicitor at Chapman Tripp, Wellington, New Zealand. An earlier version of this paper was submitted as a component of the environmental law LLM program at New York University School of Law. I would like to thank Professor Katrina Wyman for her generous guidance, and Professor Barry Barton and Danielle Spiegel-Feld for helpful insights and comments. The views expressed, and responsibility for any errors, remain my own.

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I. INTRODUCTION

New Zealand's Electricity Industry Act 2010 instituted major changes to the structure and governance of the country's electricity sector, including dissolving the incumbent Electricity Commission and replacing it with a new regulator, the Electricity Authority (EA or Authority). In 2009, a ministerial review of the electricity sector concluded that the Electricity Commission had "too many objectives and functions and [was] seen as insufficiently independent from government".² The new Electricity Authority was established as an independent Crown entity,³ with greater independence and with a narrower regulatory mandate than the previous Commission. The Authority's objective under the 2010 Act is "to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers". Importantly, the 2010 Act removed the objective of ensuring "environmental sustainability" in the electricity market from the Authority's mandate. This function was not transferred to any other agency.

This paper considers the implications of removing environmental sustainability from electricity market regulation in New Zealand. To do so, it looks specifically at the impact of this change on the development of regulatory incentives for investment in distributed electricity generation (DG).⁴ At a more general level, it considers the impact of severing the regulatory link between energy and environment. The paper argues that removing environmental sustainability from electricity market regulation

² *Cabinet Paper: Ministerial Review of the Electricity Market – Regulatory Impact Statement*, 1 (RIA), available at <http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/electricity-market/implementing-the-electricity-market-review-recommendations/background-papers-on-2009-review/Elec.0026%20-%20Electricity%20Market%20Review%20-%20Regulatory%20Impact%20Statement.pdf> (last accessed Apr. 13 2014). The latter was certainly

true: alternatives In 2006, the Electricity Commissioner denied authorization for a transmission upgrade project in favor of cheaper non-transmission. The Minister of Energy publicly denounced the decision and declined to reappoint the Commissioner to office. A newly appointed Commissioner approved the project in 2007. See N.Z. PRODUCTIVITY COMM'N, REGULATORY INSTITUTIONS AND PRACTICES: DRAFT REPORT 116 (2014) [hereinafter PRODUCTIVITY COMMISSION REPORT].

³ Establishing the Electricity Authority as an independent Crown entity under the Crown Entities Act of 2004 meant, among other things, that the Minister would not be able to direct the Authority, the Authority would only be required to "have regard to" (not "give effect to") Government Policy Statements, and the Minister's powers to dismiss Authority board members would be heavily restricted.

⁴ Distributed generation or DG refers to local, often small-scale, generation that connects directly to the distribution system, rather than to the national electricity transmission grid. DG is most commonly associated with small-scale renewable generation, such as rooftop solar, small-scale hydro, wind and biomass, and other low-carbon technologies, like co-generation.

has had an adverse impact on New Zealand's regulatory capacity to deal with climate change. It concludes with a proposal for reform.

The following section of the paper, section II, provides background on the Electricity Industry Act 2010, and highlights key features of New Zealand's electricity sector. Section III describes and briefly evaluates current regulatory and market-based incentives for DG investment in New Zealand. It also outlines key barriers to market entry for DG in New Zealand. Section IV analyses the Electricity Authority's interpretation of its statutory mandate as it has been applied in two recent administrative reviews concerning incentives for investment in DG. Section V considers the role of sustainability in electricity market regulation, particularly in the context of climate change, and argues that environmental sustainability is not adequately accounted for in New Zealand's regulatory framework. Section VI concludes that the Electricity Authority can and should adopt a broader interpretation of its statutory mandate, which takes environmental sustainability into account to the extent that it relates to efficiency and reliability. It also suggests that Parliament consider amending the Electricity Industry Act 2010 to specifically provide for environmental sustainability objectives in electricity market regulation in New Zealand.

II. BACKGROUND TO THE ELECTRICITY INDUSTRY ACT 2010

New Zealand's isolation, topography, and demography create unique challenges and opportunities for its electricity system. On the one hand, the system does not interconnect with electricity networks in other countries, and must navigate a long, narrow and mountainous terrain with low population density. It must also contend with the fact that the major load centers are located in the north of the North Island, while large generating assets are situated mainly in the south of the South island. On the other hand, New Zealand is endowed with significant renewable energy resources: it has significant hydro and geothermal capacity, as well as wind, marine, biomass and solar resources to a more limited extent. In wet years, New Zealand's electricity generation from renewable sources can reach 77%.⁵

A. Liberalization of New Zealand's electricity market: 1986 – 2001

Prior to 1986, New Zealand's electricity sector was largely state-owned and operated.⁶ The New Zealand Electricity Division (NZED) of the Ministry of Energy held a statutory monopoly over electricity generation and transmission in New

⁵ MINISTRY OF BUS., INNOVATION AND EMP'T, ENERGY IN NEW ZEALAND: 2012 CALENDAR YEAR EDITION 63 (2013). Although in dry years this has dropped to as low as 64.7%, with corresponding increases in natural gas and oil-fired generation: MINISTRY OF ECON. DEV., NEW ZEALAND ENERGY DATA FILE: 2011 CALENDAR YEAR EDITION 108 (2012). In 2012, generation from renewables was at 73%. This was down from 77% in 2011 due to low rainfall, with a corresponding increase in natural gas and coal generation.

⁶ For a thorough evaluation of the regulatory system before 2002, see Barry Barton, *From Public Service to Market Commodity: Electricity and Gas Law in New Zealand*, 16 J. ENERGY & NAT. RESOURCES L. 351-52 (1998). He notes that this level of government involvement in the electricity sector was not peculiar to that sector along, as "from the earliest days of colonial development the state had been the vehicle for economic development and for infrastructure such as railways, communications and energy.

Zealand.⁷ Local publicly owned electricity supply authorities controlled electricity retail and distribution under exclusive franchise.

Between 1986 and 1998, New Zealand's electricity sector went through a period of rapid and deep liberalization. In April 1987, the NZED was corporatized into a state-owned enterprise, the Electricity Corporation of New Zealand (ECNZ), under the State-Owned Enterprises Act 1986 (SOE Act). The 1987 reforms also created Transpower as a wholly owned subsidiary of ECNZ to own and operate the national transmission grid. The SOE Act directed these new enterprises to be "as profitable and efficient as comparable businesses that are not owned by the Crown", and to exhibit a "sense of social responsibility by having regard to the interests of the community in which [they] operate".⁸

In 1992, the Electricity Act removed exclusive franchise from the 61 publicly owned electricity retail and distribution businesses, spurring consolidation of the sector into around 28 retail and distribution businesses.⁹

In 1993, Transpower was separated out from ECNZ into a stand-alone state-owned enterprise (SOE). In 1995, Contact Energy was established as an SOE and acquired a number of ECNZ's generating assets.¹⁰ The Electricity Industry Reform Act of 1998 split ECNZ's remaining assets into three state-owned generators: Genesis Power Ltd, Meridian Energy Ltd, and Mighty River Power Ltd.¹¹

The 1998 legislation also prohibited common ownership of electricity distribution and electricity retailing or generation businesses (referred to as an ownership split). The ownership split was intended to increase competition in the generation and retail markets, by preventing cross-subsidization of generation and retailing from lines (distribution) businesses.¹² The ownership split ushered in an intensive period of takeovers and mergers, as industry players jockeyed for positions.¹³ Between July 1998 and April 1999, the majority of integrated electricity businesses retained their distribution business and sold off their retail and generation assets.¹⁴ The large

⁷ Electricity Act 1968, §§ 25- 26 (N.Z.).

⁸ State-Owned Enterprises Act 1986, § 4 (N.Z.).

⁹ Shen, D. & Q. Yang, *Electricity Market Regulatory Reform and Competition – Case Study of the New Zealand Electricity Market*, in ENERGY MARKET INTEGRATION IN EAST ASIA: THEORIES, ELECTRICITY SECTOR AND SUBSIDIES, ERIA RESEARCH PROJECT REPORT 2011-17, JAKARTA: ERIA, 103-139, 119 (Wu, Y., X. Shi, & F. Kimura eds., 2012) [hereinafter *Electricity Market Regulatory Reform*].

¹⁰ Contact Energy was privatized in 1999.

¹¹ In 2012, legislation was passed to facilitate the part-privatization of these three generation SOEs, allowing the sale of up to 49% of each companies' shares to private investors. See the Public Finance (Mixed Ownership Model) Amendment Act 2012.

¹² New Zealand is the only country to have instituted mandatory unbundling of distribution from retail and generation activities. Gert Brunekreeft & Eckart Ehlers, *Ownership Unbundling of Electricity Distribution Networks and Distributed Generation*, 7 Competition & Reg. Network Indus. 63, 64 (2006).

¹³ Geoff Bertram, *Weak regulation, rising margins, and asset revaluations: New Zealand's failing experiment in electricity reform*, in EVOLUTION OF GLOBAL ELECTRICITY MARKETS: NEW PARADIGMS, NEW CHALLENGES, NEW APPROACHES, 645-677 (F.P. Sioshansi, Amsterdam eds., Elsevier Academic Press 2013) [hereinafter *Weak Regulation*].

¹⁴ TrustPower, now one of the five large generator-retailers, was one of the companies that instead sold its lines business, becoming a vertically integrated generator-retailer. See *Weak Regulation*, supra note 13 at [3.1]. See also Daniel Kalderimis, *Pure Ideology: The "Ownership Split" of Power Companies in the 1998 Electricity Reforms*, 31 VUWLR 225 (2000), for a critical analysis of 1998 reforms.

former-ECNZ generators saw an opportunity to expand into electricity retailing, prompting a wave of mergers between generators and retailers,¹⁵ and resulting in the formation of five large vertically integrated “generator-retailers”, three of which remain majority-state-owned, which came to dominate New Zealand’s electricity market. At present, the five large generator-retailers control 95% of New Zealand’s electricity retail market and 91% of generation.¹⁶ While the requirements of the ownership spilt were relaxed incrementally soon after the 1998 reforms,¹⁷ a major transformation of New Zealand’s electricity market had taken place.

Through this period of liberalization, the electricity sector was subject to little industry-specific regulation: while the Electricity Act 1992 provided for safety regulation, information disclosure and property access, beyond this, the sector was for the most part subject only to generic regulation under, for example, the Resource Management Act 1991 and the Commerce Act 1986. The Commerce Act was intended to “promote competition in markets for the long-term benefit of consumers within New Zealand”, but contained little protection for consumers in markets where competition was weak or absent.¹⁸ Subsequent development of market rules was left to voluntary agreement among market participants in the electricity sector, with the threat of further regulation intended to incentivize responsible self-regulation by industry. However, a “general failure to further develop the market” triggered further government intervention in 2001.¹⁹

B. Development of industry-specific regulation in the electricity sector

In response to growing public dissatisfaction with alleged profiteering by distribution companies,²⁰ the Commerce Amendment Act 2001 introduced Part 4A of the Commerce Act 1986, which authorized the Commerce Commission to impose targeted control of the prices charged by electricity distribution businesses. Under the targeted control regime, the Commission set thresholds for distribution companies as to their price and quality performance. If a company crossed a threshold, the Commission could investigate to decide whether it should be subject to *ex post* price control.²¹

The Electricity Amendment Act 2001 established the Electricity Commission, with the principle objectives of:²² (a) ensuring that electricity was produced and delivered to all classes of consumers in an efficient, fair, reliable, and environmentally

¹⁵ *Electricity Market Regulatory Reform*, *supra* note 9, at 115.

¹⁶ OECD, POLICY ROUNDTABLE – ELECTRICITY: RENEWABLES AND SMART GRIDS, 143 (2010) [hereinafter POLICY ROUNDTABLE]. The four former-ECNZ companies (Contact, Meridian, Genesis and Mighty River Power), plus TrustPower.

¹⁷ See discussion in Barry Barton, *Law and Regulation for Energy Networks in New Zealand*, in ROGGENKAMP ET AL., ENERGY NETWORKS AND THE LAW: INNOVATION SOLUTIONS IN CHANGING MARKETS 284 (Oxford Scholarship Online, 2012) [hereinafter *Law and Regulation for Energy Networks*].

¹⁸ *Weak Regulation*, *supra* note 13, at [1].

¹⁹ International Energy Agency, *Lessons from Liberalized Electricity Markets* (2005), 60.

²⁰ *Weak Regulation*, *supra* note 13, at [3.3].

²¹ *Law and Regulation for Energy Networks*, *supra* note 17, at 277. See also Barry Barton, *Electricity Regulation in New Zealand: the Early Stages of a New Regime*, 26(2) J. ENERGY & NAT. RESOURCES 207 (2008) [hereinafter *Early Stages of a New Regime*].

²² Electricity Act 1992 §172N (N.Z.) (reprinted in Sept. 2007).

sustainable manner; and (b) promoting and facilitating the efficient use of electricity. The Commission was directed to achieve the following specific outcomes:²³

- (a) energy and other resources are used efficiently;
- (b) risks (including price risks) relating to security of supply are properly and efficiently managed;
- (c) barriers to competition in the electricity industry are minimized for the long-term benefit of end-users;
- (d) incentives for investment in generation, transmission, lines, energy efficiency, and demand-side management are maintained or enhanced and do not discriminate between public and private investment;
- (e) the full costs of producing and transporting each additional unit of electricity are signaled;
- (f) delivered electricity costs and prices are subject to sustained downward pressure; and
- (g) the electricity sector contributes to achieving the Government's climate change objectives by minimizing hydro spill, efficiently managing transmission and distribution losses and constraints, promoting demand-side management and energy efficiency, and removing barriers to investment in new generation technologies, renewables, and distributed generation.

Critics argued that the Commission would be left with unclear objectives, roles and responsibility, and few ways to avoid conflicts between them. They also suggested that the Commission would be constrained by high levels of ministerial intervention, and a weak accountability framework.²⁴ These cautionary voices proved prophetic: The Commission's first three years were plagued by an "acrimonious dispute" over Transpower's plan to build a 400MW transmission line between hydro stations in the Waikato region in the center of the North Island and Auckland, New Zealand's largest city; this plan required the Commission's approval.²⁵ In 2006, the Electricity Commission denied authorization for the transmission upgrade in favor of cheaper non-transmission alternatives. The Minister of Energy publicly denounced the decision and declined to reappoint the Commissioner to office.²⁶ A newly appointed Commissioner approved the project in 2007.²⁷ Following this dispute, the Commission survived only another two years in the face of growing opposition within the industry.²⁸

C. Electricity Industry Act 2010 and the Electricity Authority

²³ *Id.*

²⁴ *Early Stages of a New Regime*, *supra* note 21, at 218; *See also* G SCOTT, SUBMISSION TO THE COMMERCE COMMITTEE ON THE ELECTRICITY AND GAS INDUSTRIES BILL 2003 (2004).

²⁵ *Weak Regulation*, *supra* note 13, at [3.2].

²⁶ *See Early Stages of a New Regime*, *supra* note 21, at 214.

²⁷ PRODUCTIVITY COMMISSION REPORT, *supra* note 2, at 116.

²⁸ *Weak Regulation*, *supra* note 13, at [3.2].

In 2009, a newly elected conservative National Government conducted a ministerial review of the electricity sector. The review identified a number of problems, including high retail prices and insufficient competition, poor reliability especially in dry years, and unsatisfactory governance arrangements. With respect to the governance issues in particular, the review noted “the Electricity Commission has too many objectives and functions and is seen as insufficiently independent from government.”²⁹

In 2010, the Electricity Commission was dissolved³⁰ and its functions and powers were transferred to the new Electricity Authority “to the extent that those functions and powers are consistent with the functions and powers of the Authority under the [Electricity Industry Act 2010].”³¹ The objective of the Authority under section 15 of the Electricity Industry Act is to “promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers”. The Authority is established as an independent Crown entity under the Crown Entities Act 2004, with greater independence from Ministerial control than the former Electricity Commission (a Crown agent under the 2004 Act).

Notably, the Authority’s mandate no longer includes an obligation to ensure that electricity is produced and delivered in an environmentally sustainable manner. Specific functions relating to the removal of barriers to investment in new generation technologies and distributed generation were also removed from the regulator’s mandate.

Several other of the Commission’s functions were transferred elsewhere.³² Information provision, short- and medium-term security of supply, and the duty to manage supply emergencies were transferred to Transpower.³³ The promotion of energy efficiency would be “considered and consolidated in the Energy Efficiency and Conservation Authority”.³⁴ Approval of transmission grid upgrades and application of the grid investment test were transferred to the Commerce Commission, providing overall regulatory control of Transpower’s revenues and expenditure.³⁵ The Ministry of Economic Development assumed responsibility for making statements of opportunities as a part of grid investment planning.³⁶ However,

²⁹ Cabinet Paper: Ministerial Review of the Electricity Market – Regulatory Impact Statement, 1 (RIA), available at <http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/electricity-market/implementing-the-electricity-market-review-recommendations/background-papers-on-2009-review/Elec.0026%20-%20Electricity%20Market%20Review%20-%20Regulatory%20Impact%20Statement.pdf> (last accessed Apr. 13, 2014). See also *Law and Regulation for Energy Networks*, *supra* note 17 at 282.

³⁰ Electricity Industry Act 2010, § 133 (N.Z.).

³¹ *Id.* § 134.

³² For further discussion, see *Law and Regulation for Energy Networks*, *supra* note 17, at 283.

³³ Electricity Industry Act 2010, § 8 (N.Z.).

³⁴ Hon Gerry Brownlee, Debate on the first reading of the Electricity Industry Bill (Dec. 15, 2009), in 659 NZPD 8567. Note that there has been no substantive amendment to the Energy Efficiency and Conservation Act 2000, EECA’s governing legislation, since it was first passed in 2000.

³⁵ Section 155 of the Electricity Industry Act 2010, inserting new sections 54R and 54U into the Commerce Act 1986.

³⁶ Section 34(3) of the EIA 2010 stated that the Code developed by the Electricity Authority must not include provisions relating to statements of opportunities or grid planning assumptions.

the objective of ensuring environmental sustainability in the electricity industry was not transferred to any other agency.³⁷

This paper argues that the decision to remove environmental sustainability from the objectives of electricity market regulation has threatened the development of regulatory incentives for investment in distributed electricity generation (DG), renewables and demand-side management (although the latter two are not the subject of this paper).

The following section discusses current regulatory and market-based barriers to, and incentives for investment in DG.

III. BARRIERS AND INCENTIVES FOR INVESTMENT IN DISTRIBUTED GENERATION

Distributed generation refers to local, often small-scale, generation that connects directly to the distribution system, rather than to the national electricity grid. DG is typically associated with small-scale renewable generation, such as rooftop solar, and small-scale hydro, wind and biomass, or low-carbon technologies, like combined heat and power systems.³⁸ Distributed generation is defined in the Electricity Industry Participation Code (the Code) as the “equipment used, or proposed to be used, for generating electricity that: (a) is connected, or proposed to be connected, to a distribution network, or to a consumer installation that is connected to a distribution network; and (b) is capable of injecting electricity into that distribution network”.³⁹

Commonly cited benefits of DG include: promoting the use of renewable energy sources that may not be suitable for large electricity generating plants; reducing the use of non-renewable energy sources and their related greenhouse gas emissions; reducing environmental impacts from smaller scale installations; increasing the overall efficiency and resilience of energy systems by spreading energy generation through the network, which may also result in deferred network investment; improving energy security by making end-users more self-reliant; promoting economic competition by introducing new technologies into the marketplace; encouraging regional development and job creation; raising individuals’ awareness of energy use, leading to positive behavioral changes; and ultimately lowering energy prices as a result of greater competition, lower distribution and transmission costs, and more diverse generation to support security of supply.⁴⁰

³⁷ Importantly, the objective of ensuring that electricity is produced and delivered in a “fair” manner was also removed from the Electricity Authority’s mandate, and was not transferred to any other agency. The implications of this decision warrant further investigation, but are not the subject of this paper.

³⁸ It is worth noting that there is also dirty DG, like diesel generators used for emergency back-up power; however, these tend not to be the focus of DG policy-making, which usually conditions support on the use of renewable or low-carbon technologies.

³⁹ Electricity Industry Participation Code, cl 1.1(1).

⁴⁰ See eg, PARLIAMENTARY COMM’R FOR THE ENV’T, GET SMART, THINK SMALL: LOCAL ENERGY SYSTEMS FOR NEW ZEALAND (2006), cited in RETAIL ADVISORY GRP., ELEC. AUTH., REVIEW OF ARRANGEMENTS FOR PURCHASE OF POWER BY RETAILERS FROM SMALL-SCALE DISTRIBUTED GENERATION 28-29 (June 29, 2012).

This section outlines and briefly evaluates current regulatory and market-based incentives for DG investment in New Zealand. It also discusses key barriers to entry for DG in New Zealand's electricity market.

A. Regulatory incentives

Unlike many OECD countries, New Zealand does not directly subsidize investment in DG.⁴¹ However, it does provide two key regulatory incentives for DG investment in New Zealand in Part 6 of the Electricity Industry Participation Code ("the Code"), and section 54Q of the Commerce Act, which were both established under the former Labour Government in 2007 and 2008, respectively.

i. Part 6 of the Electricity Industry Participation Code

Part 6 of the Code governs the interconnection of DG to the local distribution network. It requires that distributors connect DG to their network (provided certain safety standards are met), and provides regulated terms of interconnection (some of which may be contracted out of) and a set of pricing principles. Once connected, a distributed generator may either sell directly to the half-hourly wholesale market, or to another party (i.e. a retailer) under bi-lateral contract.⁴²

The Schedule 6.4 pricing principles require that:⁴³

Connection charges to DG must not exceed the incremental costs of providing connection services to the DG. The incremental cost is net of transmission and distribution costs that an efficient market operation service provider would be able to avoid as a result of the connection of the DG. ... In summary, DGs that cause a net incremental cost to the distributor must pay the distributor, but if the incremental costs are negative (that is, the DG reduces the costs to the distributor), the distributor must pay the DG for the 'network support services' provided by the DG to the distributor.

The payments made to DG under Schedule 6.4 are known as "avoided cost of transmission" or ACOT payments, and are an important revenue stream for many distributed generators. ACOT payments are generally calculated on the basis of the distributor's avoided transmission charges (i.e. the charge that the distributor would have otherwise paid to Transpower for electricity from the grid, if that electricity had not been provided by the DG). Transmission charges accrue to distributors during periods of peak demand, which means that distributed generators only receive ACOT payments for peak-period power generation.

The current pricing principles were promulgated in 2007, under the then Electricity Commission, but payment for avoided transmission and distribution costs have been a part of New Zealand's electricity regulatory framework since the 1950s.⁴⁴ The EA has estimated that ACOT payments will provide "approximately \$50 million ... to 766

⁴¹ See generally POLICY ROUNDTABLE, *supra* note 16.

⁴² *Id.*, at 145.

⁴³ Elec. Auth., Transmission Pricing Methodology: Avoided cost of transmission (ACOT) payments for distributed generation: Working Paper 15 (Nov. 19, 2013) [hereinafter ACOT Working Paper].

⁴⁴ See discussion of the Bulk Supply Tariff in STRATA ENERGY CONSULTING, REPORT OF THE HISTORY OF THE BULK SUPPLY TARIFF AND TRANSMISSION PRICING IN NEW ZEALAND (Jan. 2014) (prepared for Trustpower Limited).

MW of qualifying generation during 2013/14... which is likely to represent a substantial portion of the capital costs of DG.”⁴⁵

The importance of ACOT payments to the viability of DG projects in New Zealand was highlighted in submissions to a recent EA Working Paper. The Working Paper proposed a review of the ACOT payment scheme following preliminary findings that the scheme is promoting inefficiency in the electricity market (these issues are discussed further below). But for now, ACOT payments continue to provide a benefit to many DG operators.

It should be noted, however, that ACOT payments appear to provide benefit primarily to larger-scale DG, and those that can generate during periods of peak demand. In 2011, the EA noted that while Part 6 of the Code requires distributors to return network and transmission benefits to distributed generators (through ACOT payments), it is difficult to identify specific network benefits of micro-DG (i.e. less than 10 kW), and a relatively complex analysis is required.⁴⁶ Small-scale DG is less likely to benefit from ACOT payments as a consequence.

ii. Section 54Q of the Commerce Act

Section 54Q of the Commerce Act, inserted in 2008, states that the Commerce Commission must, in carrying out price and quality control regulation, “promote incentives, and must avoid imposing disincentives, for suppliers of electricity lines services to invest in energy efficiency and demand side management, and to reduce energy losses.”

This provision, Barton suggests, is “full of far-reaching implications”:⁴⁷

This is a positive obligation, to promote, and imposed on an influential established agency. It will be interesting to see how the Commission interprets its duty to promote incentives for distribution companies to invest in energy efficiency. The incentives could appear in input methodologies by requiring companies to engage with energy consumers in order to improve their energy efficiency, to shift peak load, and to reduce demand generally as part of the price-quality path.

Section 54Q does not yet appear to have been invoked explicitly by the Commerce Commission. However, to the extent that distributed generation helps reduce energy losses and support demand-side management, the Commerce Commission may decide, in the implementation of s 54Q, to incentivize DG through the regulation of distribution companies.

B. Market-based incentives

Market-based incentives favoring (renewable) DG include New Zealand’s emissions trading scheme, and nodal pricing.

i. Emissions Trading Scheme

⁴⁵ ACOT Working Paper, *supra* note 43, at iii.

⁴⁶ ELEC. AUTH., PURCHASE BY RETAILERS OF POWER FROM SMALL SCALE DISTRIBUTED GENERATION (DG): SCOPE OF PROJECT (Sept. 7, 2011).

⁴⁷ *Law and Regulation for Energy Networks*, *supra* note 17, at 290.

The 2008 Climate Change Response (Emissions Trading) Amendment Act established the New Zealand Emissions Trading Scheme (NZ ETS) and introduced a 10-year restriction on the construction of new base-load fossil-fuelled thermal electricity generation, except to the extent required to ensure security of supply. The moratorium on new fossil-fuelled generation was subsequently repealed in 2009 with the change of government, but the NZ ETS remains in force.⁴⁸

The NZ ETS raises the cost to electricity generators using thermal energy and is intended to make electricity generated from renewable energy sources a relatively more profitable option for electricity companies.⁴⁹ However, given its recent vintage, there have been no conclusive studies showing the impact of the NZ ETS on electricity prices. A 2011 Covec report stated:⁵⁰

Actual electricity prices are highly variable over time as a result of changes to other factors, including weather (and thus availability of wind and hydro) and to levels of demand (which affects which is the marginal supplier setting price). From the data available, and because of this complexity, we are unable to identify an impact of the ETS at this stage... An impact of the ETS is expected to emerge over time as the balance of new generation shifts towards renewables. However, because different generation sources have different attributes, particularly relating to availability and flexibility, some thermal fuel plants are expected to be built even at high carbon prices... expectations remain of continued investments in thermal plant at levels similar to historical averages. It is too early to detect a clear trend towards more renewables, particularly as it is not clear which consented plants will actually be built.

To the extent that the NZ ETS provides a disincentive to thermal generation, it is a price signal in favor of renewable generation, including renewable DG, although the strength of that signal remains to be seen.

ii. Nodal pricing

Nodal pricing is a mechanism used to calculate wholesale electricity prices based on marginal costs at multiple injection and off-take points on the national transmission grid.⁵¹ Nodal pricing allows wholesale prices to respond to constraints at different points on the grid, with the result that electricity will be more expensive in more constrained regions (i.e. where demand is high relative to transmission capacity), and less expensive in regions with lower constraints (i.e. where demand is low relative to transmission capacity). In this way, nodal pricing is intended to send accurate pricing

⁴⁸ Note that transitional and exceptions provisions have been extended by the National Government, leading some commentators to suggest that the effectiveness of the NZ ETS has been seriously eroded. See for example PARLIAMENTARY COMM'R FOR THE ENV'T, SUBMISSION ON THE CLIMATE CHANGE RESPONSE (EMISSIONS TRADING AND OTHER MATTERS) AMENDMENT BILL (2012), available at <http://www.pce.parliament.nz/assets/Uploads/PCE-Submission-on-the-Climate-Change-Amendment-Bill.pdf> (last accessed May 14, 2014).

⁴⁹ *Doing New Zealand's Fair Share: ETS Review 2011 Final Report*, 97.

⁵⁰ Covec *Impacts of the NZ ETS: Actual vs Expected Effects* (prepared for Ministry of the Environment, April 2011), 26. Report is available at: <https://www.climatechange.govt.nz/emissions-trading-scheme/ets-review-2011/supporting-info/impacts-of-actual-vs-expected-effects.pdf> (last accessed 15 May 2014).

⁵¹ Revenue and Pricing, TRANSPOWER.CO.NZ, available at <https://www.transpower.co.nz/about-us/industry-information/revenue-and-pricing> (last accessed Mar. 22, 2014).

signals to consumers to decrease consumption in response to transmission and other constraints.

Nodal pricing provides a positive signal to DG investment where DG operates in a constrained region and sells directly into the wholesale spot market. It does not provide as useful a price signal to DG that sells excess electricity directly to a retail company because in this case the purchase price is set by the retail company itself (although the comparative average cost of power on the wholesale market at a particular off-take point on the grid may influence the price a retailer is willing to pay for power under a bilateral contract).

(c) Potential barriers to investment in small-scale distributed generation

In general, extant regulatory and market signals provide an incentive for large scale DG that sells directly into the wholesale market, and DG that has a measurable impact on avoided transmission cost. These signals do not, therefore, provide a significant incentive for investment in small-scale DG (SSDG) in New Zealand.

SSDG, like roof-top solar, cannot sell directly into the wholesale market, as the costs of doing so are prohibitive.⁵² SSDG is therefore reliant on power purchase agreements with electricity retailers, most of whom own their own generation and have little incentive to buy power from competing distributed generators, especially small-scale renewable generators, where transaction costs are high relative to output, and generation is intermittent. SSDG is therefore at the greatest disadvantage under the current regulatory framework.

(d) Other barriers to entry for distributed generation

The industrial organization of New Zealand's electricity market also creates barriers to entry for all independent DG operations, both small and larger scale. New Zealand's electricity market continues to be dominated by five vertically-integrated large generator-retailers, who together hold around 91% of the generation market and 95% of the retail market.

A report commissioned by the Commerce Commission in 2009 (the Wolak report) estimated market power rents at \$4.3 billion over the period 2001 – 2007, or 18 percent of total wholesale market revenues received by all generators over that time. The report triggered “an extremely hostile reaction from the generators”.⁵³ The Commerce Commission declined to take further action, because it found no evidence that the market power identified by Wolak had been “exercised for any anticompetitive purpose”. The Commission did note, however, that:⁵⁴

...there are serious systemic issues arising out of the current market structure, market design and market rules that provide the generators with the ability and incentive to exercise market power under certain periodic and recurring conditions.

⁵² RETAIL ADVISORY GRP., INVESTIGATING BARRIERS FACING SMALL-SCALE DISTRIBUTED GENERATION: DISCUSSION PAPER 4 (Feb. 7, 2011) [hereinafter SSDG DISCUSSION PAPER].

⁵³ *Weak Regulation*, *supra* note 13, at 39.

⁵⁴ COMMERCE COMM'N, INVESTIGATION REPORT: COMMERCE ACT 1986 S. 27, S. 30 AND S. 36 ELECTRICITY INVESTIGATION 6 (2009).

Bertram argues that:

Foreclosure [in New Zealand’s electricity market] is a consequence of vertical integration of generation with retail, which forces any potential entrant to begin operations in two industries simultaneously if it is to escape the sort of fatal imbalance that destroyed TransAlta/OnEnergy in 2001. That company’s failure to secure sufficient generation capacity out of the breakup of the old ECNZ portfolio left it overweight in retail and dependent on the spot market for wholesale supply during the 2001 dry winter; bankruptcy was the outcome.

DG operators rely on wholesale market prices (with a limited ability to hedge price risk), or on negotiated power purchase agreements with retailers. Bertram notes that DG operators are unable to sell reliable power other than in partnership with one of the incumbent large retailers, which already have their own upstream, diversified generation, and are internally hedged. This is in contrast to independent generators, who would be forced to purchase backstop supply on the wholesale market in order to provide reliable supply to customers.⁵⁵

IV. ELECTRICITY AUTHORITY’S APPROACH TO DISTRIBUTED GENERATION

This section looks first at the way in which the Authority has interpreted its statutory mandate in a generic sense, through the publication of “interpretations” and decision-making frameworks. It then looks at the way the Authority has applied its mandate in practice, in relation to two programs of work related to distributed generation.

A. Interpreting section 15 of the Electricity Industry Act 2010

The Electricity Authority has released an “Interpretation of the Authority’s statutory objective” (the Interpretation) and a “Decision-making and economic framework” (the Framework), which provide insight into the Authority’s interpretation of its statutory mandate.

The Authority describes the Interpretation as a “key strategic statement” which provides clarification of the interpretation of the Authority’s statutory objective to assist the Authority’s Board to make consistent decisions, and assist staff, advisory groups, and other stakeholders to develop Code amendments and market facilitation proposals.⁵⁶ Notably, the interpretation states that the promotion of efficiency for the long-term benefit of consumers does not cover all matters that may deliver long-term benefits to consumers, but rather only those “externalities specific to the electricity industry”. Excluded are “externalities arising generally from industry and consumer activity”, such as carbon emissions.⁵⁷ The Interpretation is analyzed in greater detail in section VI.A, below.

The Framework is specifically designed to guide the Authority’s review of the transmission pricing methodology. It states that the Authority’s objectives of promoting efficiency and reliability in the electricity industry involve facilitating:

⁵⁵ Geoff Bertram, Notes on DG, available at [http://igps.victoria.ac.nz/events/completed-activities/breaking_pdfs/geoffbertramDG-mwm%20\(2\).pdf](http://igps.victoria.ac.nz/events/completed-activities/breaking_pdfs/geoffbertramDG-mwm%20(2).pdf) (last accessed May 15, 2014).

⁵⁶ ELEC. AUTH., INTERPRETATION OF THE AUTHORITY’S STATUTORY OBJECTIVE 7 (Feb. 14, 2011) [hereinafter INTERPRETATION].

⁵⁷ *Id.*, at 60-62.

- (a) efficient investment in the electricity industry through providing incentives so that the right investments of the right amount occur at the right time, are in the right place and use the right technology. These investments can be in the transmission grid, generation (including distributed generation), distribution networks or by electricity consumers; and
- (b) efficient operation of the transmission grid, generation (including distributed generation), distribution networks and demand-side management. This means providing incentives so that the day-to-day operation of transmission, generation, distribution and electricity demand-side infrastructure involves an efficient trade-off between reliability and cost.

The Framework also includes a commitment by the Authority to consider both static and dynamic efficiency gains from price signals in relation to future investment in the electricity sector.⁵⁸ The Authority notes that dynamic efficiency effects can be more difficult to quantify, and commits to paying “particular attention to ensuring it does not under-estimate dynamic efficiency effects when conducting cost-benefit analyses...”⁵⁹

Since its establishment in 2010, the EA has considered its role in facilitating investment in DG on two occasions: first, in response to a 2009 ministerial review recommendation that the EA take steps to support SSDG receiving a fair price for power from retailers; and secondly, in relation to the avoided cost of transmission (ACOT) payments, discussed above.

B. Purchase of power by retailers from small-scale distributed generation

The 2009 ministerial review recommended the development of mandatory terms and conditions for purchase by retailers of power from small-scale DG to minimize the transaction costs to individual DG investors negotiating with retailers.⁶⁰ The Authority requested that its Retail Advisory Group (RAG) consider this recommendation. In 2011, the RAG released a discussion paper on the “Purchase of power by retailers from small-scale distributed generation”, and asked (a) whether there were barriers to entry for small-scale DG, and (b) whether there are likely to be significant social benefits (externalities) associated with the entry of small-scale DG to the market that are not being captured. The RAG received nine submissions in response to the discussion paper, seven of which were from large electricity retailers, generators or network operators.⁶¹

⁵⁸ Dynamic efficiency is a term in economics, which refers to an economy that balances short-run concerns (static efficiency) with concerns in the long run. *See* Joseph Stiglitz and Carl Walsh, *Economic Glossary A-3* (WW Norton 4th ed, 2006).

⁵⁹ ELEC. AUTH., DECISION-MAKING AND ECONOMIC FRAMEWORK FOR TRANSMISSION PRICING METHODOLOGY 7 (May 7, 2012) [hereinafter DECISION-MAKING AND ECONOMIC FRAMEWORK].

⁶⁰ Electricity Market Review, 21. Note that the review team did not consider there was a case for mandating subsidies by retailers by way of tariffs for purchased DG power (i.e “feed-in tariffs”).

⁶¹ It is unclear why so few SSDG operators submitted on the RAG discussion document, given the high level of participation from the DG community in other EA consultation processes, including on the ACOT Working Paper and the operational review of Part 6 of the Code.

The RAG concluded that there were no barriers to entry for small-scale DG, and considered that:⁶²

... contracts between retailers and investors should be on a commercial basis, and that there is no reason to require retailers to use standard or model contracts, to require retailers to contract with small-scale DG or to mandate that retailers offer a set rate or contract duration to small-scale DG.⁶³

In relation to the first question - whether there were barriers to entry for small-scale DG - the RAG identified areas where SSDGs face prohibitive costs, but declined to assess whether these costs created barriers to entry. For example, the RAG stated:⁶⁴

A DG owner participates in the wholesale market by entering an agreement with their retailer for the sale and purchase of any surplus generation their unit produces over and above their own consumption. In theory, the DG owner could sell to another party, such as the Clearing Manager, but the costs associated with doing this are prohibitive. This paper does not assess whether the requirements for the sale of DG output to the Clearing Manager creates barriers to entry.

In relation to the second question - whether there are likely to be significant social benefits associated with the entry of small-scale DG to the market that are not being captured - the RAG listed the potential benefits of local energy systems and the wider uptake of DG recognized by many agencies around the world, including: the promotion of renewables, increasing the overall efficiency and resilience of energy systems, improving energy security, promoting competition through the introduction of new technology, encouraging regional development, raising individuals' awareness of energy use, deferred network investment and reduced energy losses, and overall lower energy prices.⁶⁵ However, the RAG concluded that such benefits were "outside the scope of [its] report, and arguably the responsibility of the Ministry of Economic Development or EECA rather than the Electricity Authority." Note that many of these listed benefits relate specifically to reliability and efficiency, as well as to environmental sustainability and broader social benefits which should arguably be taken into account in relation to dynamic efficiency in the electricity system. In reaching this conclusion, the RAG appears to have unjustifiably shirked its responsibility. The EA, which subsequently accepted the RAG's conclusions without taking any further action, appears to have done the same. The RAG's conclusion that there are "no barriers to entry for small-scale distributed generation" was based on a process in which it declined to assess the full costs and benefits associated with SSDG, including costs associated with wholesale market access (a competition issue), and benefits clearly relevant to efficiency and reliability in the electricity system. These issues fall squarely within the EA's mandate, and, having initiated a process to

⁶² RETAIL ADVISORY GRP., REVIEW OF ARRANGEMENTS FOR PURCHASE OF POWER BY RETAILERS FROM SMALL-SCALE DISTRIBUTED GENERATION [5.1.5] (June 29, 2012).

⁶³ Instead, the Retail Advisory Group concluded "there may be merit in the Authority producing a fact sheet about the regulatory arrangements for small-scale DG to facilitate informed debate about the future role of small-scale DG... [but that] economic analysis of the costs and benefit of small-scale DG is better communicated by other entities" (the "other entities" the Group refers to are not specified). RETAIL ADVISORY GRP. & ELEC. AUTH., REVIEW OF ARRANGEMENTS FOR PURCHASE OF POWER BY RETAILERS FROM SMALL-SCALE DISTRIBUTED GENERATION [2.1.1] (June 29, 2012).

⁶⁴ SSDG DISCUSSION PAPER, *supra* note 52, at 4.

⁶⁵ *Id.*, at 30.

review the purchase of power by retailers from small-scale distributed generation, it was required to do so in accordance with its statutory mandate.

C. Review of avoided cost of transmission payments

In November 2013, the Electricity Authority released a working paper on ACOT payments to inform its broader review of New Zealand's transmission pricing methodology. Recall that ACOT payments compensate DG for avoided transmission and distribution costs, and are usually based on avoided Transpower transmission charges.

The EA made a number of findings and preliminary conclusions, including that "ACOT payments, and the existence of DG, appears to have no observed effect on transmission investments [as DG is not sufficiently reliable to act as a transmission alternative]... and little observed effect on distribution investment or costs."⁶⁶ The EA concluded that a review of the ACOT payment scheme is warranted "with a view to ensuring a stronger link between ACOT payments and efficiency benefits."⁶⁷

The EA noted that the Schedule 6.4 pricing principles were carried over from the Electricity (Connection of Distributed Generation) Regulation 2007, promulgated under the previous regulatory framework, which required the regulator to actively promote environmental sustainability and distributed generation.⁶⁸ The EA noted that the policy and regulatory framework had since changed, and that its mandate is now confined to promoting competition in, reliable supply by, and the efficient operation of the electricity industry. To the extent that the benefits of DG fall outside this mandate, the EA could only provide the information it receives on the potential wider benefits of DG "to the relevant regulating authority or government department."⁶⁹

The Working Paper elicited a strong response from DG market participants. Of the 32 submitters, a majority was critical of the EA's analysis and preliminary findings. A number of submitters thought the EA had failed to take into account the impact of reducing or removing ACOT payments on regulatory certainty and investor confidence.⁷⁰ Submitters also rejected the Authority's conclusion that DG has no observed effect on transmission and distribution investments. Trustpower noted in its submission, for example, that while DG may not reduce transmission charges in any particular year, due to Transpower's regulated revenue cap (i.e. Transpower is entitled

⁶⁶ ACOT Working Paper, *supra* note 43, at iii.

⁶⁷ *Id.*, at iv.

⁶⁸ The EA referred in particular to a Government Policy Statement in 2000, requiring the Electricity Commission to "ensure the use of new electricity technologies and renewables, and distributed generation, is facilitated and that generators using these approaches do not face barriers." The EA also referred to a 2003 discussion paper identifying key potential benefits of DG, including improved economic and social outcomes through lower prices; enhanced supply security; and better environmental outcomes through increasing renewable energy supply, and contributing towards reducing greenhouse gas emissions.

⁶⁹ ACOT Working Paper, *supra* note 43, at iv.

⁷⁰ See for example, submissions from Ngawha Generation Ltd, New Zealand Wind Energy Association, Independent Electricity Generators Association, and Trustpower, available on the Electricity Authority website: <http://www.ea.govt.nz/development/work-programme/transmission-distribution/transmission-pricing-review/consultations/> (last accessed May 14, 2014).

to recoup up to its revenue cap, irrespective of how much electricity is transported over the grid), DG can reduce Transpower's revenue requirements over time.⁷¹

[T]he benefit of DG plays out over the long term, in the form of deferred transmission investment. Over time, DG reduces the need for (or urgency of) increased transmission investment into regions, resulting in transmission investments being deferred or cancelled completely. This reduction in investment reduces Transpower's revenue requirements over the long run, reducing the transmission charge for all electricity consumers in New Zealand, not just those on networks which contain DG.

Submitters also criticized mischaracterization of Transpower documents, arguing that the EA failed to acknowledge that, while Transpower notes that DG is not as reliable as transmission, it goes on to conclude that diversity of fuel source and location is nonetheless "widely accepted as increasing reliability and can be achieved via a range of DG developments".⁷²

Other submitters expressed concern that ACOT payments were an important revenue stream for DG, and in some cases were crucial to DG viability.⁷³ They noted that ACOT payments provide a level of stability to DG, which is otherwise dependent solely on wholesale electricity prices, or the contract export rate given to them by large retailers, leaving DG investors vulnerable to fluctuations in spot market prices and the potential for retailers to lower the export price at short notice. A consultant's report prepared for the purposes of the review stated:⁷⁴

An amendment to Schedule 6.4 of the Code that reduces or removes ACOT payments would have the effect of reducing the return on investments in distributed generation. Such a change would inevitably reduce the incentive for new distributed generation and, in the first instance, reduce the incentive for existing distributed generators to produce power during periods of peak demand. The effect on requirements for transmission and distribution investment could be material. The amendment would also result in a substantial transfer of wealth from existing investors in distributed generators to other industry participants.

Finally, a number of submitters argued that the EA had failed to consider, or had inadequately considered the benefits of DG. For example, the Electricity Networks Association considered that a better focus for the EA would be to consider whether DG provides benefits (including reducing distribution and transmission investment), and whether the existing ACOT payments are a reasonable proxy for the extent of those benefits. Genesis Energy, one of the large majority state-owned electricity companies, stated that the Authority's "cursory treatment of 'other benefits', particularly perceived environmental benefits of renewable generation", was inadequate.

The ACOT review is ongoing, and it remains to be seen whether the EA will revise its approach in response to the concerns expressed by submitters, to ensure that it does

⁷¹ See Trustpower submission on the ACOT Working Paper, 12.

⁷² See Mainpower submission on the ACOT Working Paper.

⁷³ See submission from Ngawha Generation Ltd. The Mainpower submission (also noting that it is unlikely to pursue storage upgrades without the certainty of ACOT payments).

⁷⁴ NERA ECON. CONSULTING, REGULATORY CHANGE MGMT.: A REPORT FOR TRUSTPOWER [3.2] (2014).

not under-estimate the dynamic efficiency and reliability benefits of ACOT payments, and distributed generation more broadly.

The following section considers the role of sustainability in electricity market regulation, particularly in the context of climate change, and considers whether environmental sustainability is adequately accounted for in New Zealand's current electricity market regulatory framework.

V. ENVIRONMENTAL SUSTAINABILITY IN ELECTRICITY MARKET REGULATION

Climate change has brought into sharp focus the connection between environmental and energy law. Klass states:⁷⁵

Any response to climate change... cannot rely on traditional environmental law tools alone but must also focus on fundamental changes to domestic and international energy systems, bringing an entirely distinct field, energy law, into the discussion.

Scholars outside of New Zealand, notably in the US, have “lamented the continuing gap between environmental law and energy law [at the federal level]... and how that divide has contributed to the inability of policymakers to address climate change”.⁷⁶ Others have suggested that debates over reform and restructuring of the electricity sector worldwide have typically focused on technical and economic concerns, and argue for a wider perspective on electricity reforms, that explicitly examines social and environmental outcomes.⁷⁷

In the electricity sector, environmental sustainability in the context of climate change has both a mitigation and adaptation component: lowering greenhouse gas emissions serves to mitigate climate change, while improving reliability and security of supply is an adaptive response to changing climatic conditions and increased uncertainty.

Discussion of the energy – environment link has been muted in New Zealand, in part due to comparatively high levels of renewable electricity generation (up to 77% in wet years). However, New Zealand's electricity system is also uniquely vulnerable to climate change, and in particular to change and uncertainty in rainfall patterns, which affect the availability of hydropower. In 2001, for example, New Zealand's renewable generation dropped to 64.7% due to a lack of rainfall.⁷⁸ New Zealand's steep topography and environmental regulation also limit the storage capacity of hydro

⁷⁵ Alexandra Klass, “Climate change and the convergence of environmental and energy law”, (2013) XXIV Forham Environmental Law Review 181,182.

⁷⁶ Klass, “Climate change and the convergence of environmental and energy law”, 183; citing Amy J. Wildermuth, *The Next Step: The Integration of Energy Law and Environmental Law*, 31 Utah Env'tl. L. Rev. 369 (2011) and Lincoln L. Davies, *Alternative Energy and the Energy-Environment Disconnect*, 46 Idaho L. Rev. 473, 475,76 (2010).

⁷⁷ Navroz Dubash, *Revisiting electricity reform: The case for a sustainable development approach*, 11 UTIL. POL'Y 143(2003).

⁷⁸ MINISTRY OF ECON. DEV., NEW ZEALAND ENERGY DATA FILE: 2011 CALENDAR YEAR EDITION 108 (2012).

dams, providing limited reliability during dry periods.⁷⁹ Where hydro capacity drops, there is a sharp increase in reliance on thermal generation.⁸⁰

New Zealand has also set a target of 90 percent of electricity generated from renewable sources by 2025 (subject to maintaining supply security).⁸¹ But commentators have argued that:⁸²

...the reluctance of the New Zealand government to tackle barriers to entry facing distributed generation and decentralized demand-side response... means that the 90 percent renewables target has to date been conceived of by policy makers almost exclusively in terms of the construction of new large-scale grid-connected generation plants.

This may be changing. The New Zealand Energy Strategy 2011 – 2021 notes that the “[g]lobal challenges of energy supply and climate change will increasingly influence the availability and cost of energy” and sets out the Government’s policy priorities in the electricity sector, which, in addition to “removing unnecessary barriers to investment in large-scale renewable electricity generation”, includes “fostering the deployment of new renewable sources” and “ensuring the electricity sector has an appropriate focus on electricity demand management tools”. The strategy goes on to states that the Government will “further consider its role” in promoting distributed generation, new renewable generation technologies, and small-scale generation.⁸³ In February 2014, the Government also announced the establishment of a Smart Grid Forum to “advance the development of smart electricity networks in New Zealand” and “ensure New Zealand is well placed to capture the benefits of solar energy, electric vehicles, and advanced meters, as well as developments in distribution automation, distributed storage, and demand response”.⁸⁴

While these are encouraging statements, this paper argues that removing environmental sustainability from electricity market regulation has had an adverse impact on New Zealand’s regulatory capacity to deal with climate change.

A. Rationale for removing environmental sustainability from electricity market regulation

This section considers the rationale for removing environmental sustainability from electricity market regulation under the EIA 2010. It asks whether there is a way to reconcile this decision with the increasingly important interconnection between environmental sustainability and electricity generation.

⁷⁹ See comparison with Norway and Iceland in Geoff Bertram & Doug Clover, *Kicking the Fossil Fuel Habit: New Zealand’s Ninety Percent Renewable Target for Electricity*, in *ELECTRICITY GENERATION IN A CARBON CONSTRAINED WORLD 383* (F.P. Sioshansi ed., Elsevier 2010) [*hereinafter Kicking the Fossil Fuel Habit*].

⁸⁰ See discussion in *Kicking the Fossil Fuel Habit*.

⁸¹ MINISTRY OF ECON. DEV., *NEW ZEALAND ENERGY STRATEGY 2011-2021: DEVELOPING OUR ENERGY POTENTIAL* 6 (2011).

⁸² *Kicking the Fossil Fuel Habit*, *supra* note 79, at 403.

⁸³ New Zealand Government *New Zealand Energy Strategy 2011 – 2021*, 26.

⁸⁴ Hon Simon Bridges, Energy and Resources Minister, “Govt to establish smart grid forum” (press release, 11 February 2014).

Legislative history does not provide much insight into Parliament's rationale for removing environmental sustainability from the Electricity Authority's mandate. However, as the Electricity Industry Bill implemented recommendations of the 2009 ministerial review into the performance of New Zealand's electricity markets, it is useful to look to this review to shed light on Parliament's intention.

The 2009 review concluded that "current governance arrangements are unsatisfactory": "The Electricity Commission (EC) has too many functions and objectives; in some instances functions could be more effectively undertaken by other bodies; and generally the EC is seen as slow in making improvements to the market."⁸⁵ The review recommended a much narrower range of functions for the EA, with the aim "to improve its focus on rule-making, reduce overlap between various bodies, and take advantage of synergies in performing closely related functions."⁸⁶

While the review states that the objectives of the EA would be narrower than the Electricity Commission, and would not include environmental sustainability as a separate objective, it is unclear whether environmental sustainability considerations were intended to: (a) be picked up by another regulatory agency; (b) continue to be considered by the Authority to the extent that they relate to efficiency and reliability; or (c) simply be removed from electricity market regulation altogether.⁸⁷

The removal of environmental sustainability from the regulator's mandate featured prominently in Parliamentary debate on the Electricity Industry Bill. Opposition Labour MPs stated:⁸⁸

Sustainability is invisible in this bill... One role the commission had was to provide coordination within the sector and to have oversight to ensure fairness and sustainability in the supply of electricity. The new authority will have no such oversight, and this too is of real concern...

In its dissenting view in the Parliamentary Select Committee report, the Labour Party stated:⁸⁹

The bill, if passed, will mean that it is no longer possible to regard electricity as anything akin to a public good in New Zealand. Instead, it becomes an entirely tradable commodity. By way of example, under existing legislation, the Electricity Commission, created by Labour to provide better coordination within the sector, has statutory objectives that include ensuring fairness and sustainability in the supply of electricity. These objectives are removed from the functions of the Electricity Authority, one of the bureaucracies proposed to replace the Commission. Domestic consumers and advocates of sustainable energy will thus be left with no option but to advance their interests by lobbying Ministers directly.

In Parliamentary debate, Green MPs stated:⁹⁰

⁸⁵ OFFICE OF THE MINISTER OF ENERGY AND RESOURCES, MINISTERIAL REVIEW OF THE ELECTRICITY MARKET 2 [undated].

⁸⁶ *Id.* at 29.

⁸⁷ There is also no indication in related Cabinet documents.

⁸⁸ Chris Hipkins, First reading on the Electricity Industry Bill, 659 NZPD 8568 (Dec. 15, 2009).

⁸⁹ FIN. & EXPENDITURE COMM., REPORT ON THE ELECTRICITY INDUSTRY BILL 17 (June 9, 2010).

⁹⁰ David Clendon, First reading of the Electricity Industry Bill, 659 NZPD 8574 (Dec. 15, 2009).

The proposal that generic environmental policy and law, notably the Resource Management Act, should be relied upon to ensure the environmental sustainability of the sector, is a remarkably disingenuous approach, which denies the value of a national strategy for a sustainable supply that could help to future-proof the industry and protect its consumers.

Maori Party MPs stated:⁹¹

The bigger picture, however, is energy conservation and investing in sustainable energy – two objectives of the Electricity Commission that will not be transferred to the Electricity Authority. In many ways, then, the amendments the bill makes to the energy sector as a whole could be said to be in the wrong direction.

Given the lack of clarity in the legislative history surrounding the 2010 Act, the following section considers whether environmental sustainability is adequately accounted for by other agencies or generic environmental legislation.

B. Role of other agencies in promoting environmental sustainability in the electricity sector

Parliamentary debate on the Electricity Industry Bill suggests that generic environmental regulation, and perhaps the NZ ETS, was considered sufficient to address environmental sustainability in the electricity sector. However, there is a strong counterargument that general environmental laws are not sufficient to address environmental sustainability in electricity markets.

The Resource Management Act 1991 (RMA) is the primary piece of environmental legislation in New Zealand. It governs regional environmental planning, and the granting of resource consents for the use of, and discharge into, land and water. Under section 7 of the RMA, persons exercising functions and powers under the Act must “have particular regard” to, among other things, the efficiency of the end use of energy, the effects of climate change, and the benefits to be derived from the use and development of renewable energy. However, the RMA specifically prohibits local authorities from considering the effects of greenhouse gas emissions on climate change when assessing discharge applications, “except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases”. This means that while the benefits of renewable energy and resulting greenhouse gas emissions reductions are factors to be considered in applications involving renewable energy projects, the “dis-benefits” of greenhouse gas emissions cannot be considered in discharge applications for non-renewable energy projects (i.e. thermal power plants).⁹² Similar statutory language applies to regional council planning functions, indicating that councils may only have regard to the effects on climate change when making a rule which controls renewable energy use and development, and not in rules concerning thermal electricity generation.

⁹¹ Hon Dr Pita Sharples, First reading of the Electricity Industry Bill, 659 NZPD 8578 (Dec. 15, 2009).

⁹² *Greenpeace New Zealand Inc v Genesis Power Ltd* (2008) NZSC 112; RMA, 104E, 104F, 70A, 70B. Following a recent Supreme Court decision, consenting authorities are also prohibited from considering the effect of greenhouse gas emissions on climate change in assessing land use resource consent applications in relation to mining projects. *West Coast ENT Inc v Buller Coal Ltd.* (2013) NZSC 87.

These provisions indicate that there is a clear legislative policy in New Zealand that the emission of greenhouse gases under the RMA should be dealt with at a national, rather than regional, level. Indeed, section 3(b) of the 2004 Resource Management Amendment Act states that an objective of the amendments is:

To require local authorities –

- i to plan for the effects of climate change; but
- ii not to consider the effect on climate change of discharges into air of greenhouse gases.

A National Policy Statement on Renewable Electricity Generation (“NPS”), released in 2011, directs regional policy statements and regional and district plans to include provisions for renewable electricity generation where these are not already in place. While consenting authorities must “have regard to” the NPS in consent decisions, it does not effect the prohibition on considering the effect of greenhouse gas emissions on climate change in applications for non-renewable energy projects.

In addition, local authorities are limited in what they can do under local and regional plans to promote renewable or distributed energy. They cannot, for example, establish market-based incentives to promote the development of distributed electricity generation capacity. This is properly the function of the Electricity Authority, as recognized in its own “Decision-making and economic framework”, noted above, which states that its objective of promoting efficiency and reliability in the electricity industry involves facilitating “efficient investment in the electricity industry through providing incentives so that the right investments of the right amount occur at the right time, are in the right place and use the right technology”.

There is also a strong argument that the NZ ETS, on its own, will not be sufficient to ensure environmental sustainability in the electricity sector: First, given that electricity prices are highly variable, thermal plants are likely to be built even at high carbon prices. Moreover, given the other barriers to entry facing independent distributed generation, discussed above, renewable DG assets are unlikely to come into the market in significant quantities under current conditions.

It is also unlikely that the Commerce Commission would be able to fully account for environmental sustainability under its section 54Q mandate, which, as discussed above, relates only to transmission and distribution pricing.

An argument could be made that promotion of environmental sustainability in the electricity industry is adequately captured under the mandate of the Energy Efficiency and Conservation Authority (EECA). Recall that the energy efficiency functions of the former Electricity Commission were ostensibly transferred to the EECA, although the Electricity Industry Bill made no amendment to the EECA’s governing legislation. Under the Energy Efficiency and Conservation Act 2000, the EECA’s statutory function is to “encourage, promote, and support energy efficiency, energy conservation, and the use of renewable sources of energy” by: providing advice to the Minister; assisting in the preparation of an energy efficiency and conservation plan; promoting public awareness about the importance of energy efficiency and conservation, and renewable generation; promoting practices and technologies to further energy efficiency and conservation, and the use of renewables; facilitating

research, assessments, demonstrations and studies; monitoring and reviewing the use of energy in New Zealand; and publishing relevant information.⁹³

The Authority also has the power to make grants, awards, or loans of money, and enter into agreements for the administration of grants.⁹⁴ The EECA does not, however, have the power to make or administer regulations or market-based rules and incentives to promote energy efficiency, or the use of renewables or distributed generation.⁹⁵ While government grant programs can spur research and development in renewable energy, which aides competitiveness, the push of technology policy also requires the pull of markets and regulation:⁹⁶

the well-worn yet still correct observation that innovation will require both the pull of market forces as well as the push of active technology policies... Technology policy helps push new technologies into use, but the push must be married to a pull from the market and regulation. Pushing without a pull raises the odds that technology policy will lead to wrongheaded priorities, waste, and distraction. Over history, the worst examples of technology policy in practice nearly always arose because policy makers tried to push new technologies into service in the absence of a market pull.

This is an important warning in the context of New Zealand electricity market regulation.

On the basis of this analysis, this paper argues that environmental sustainability in the electricity sector is not adequately accounted for under generic environmental legislation, the NZ ETS, or by other agencies. This is having an adverse effect on the development of distributed generation in New Zealand, and New Zealand's capacity to respond to climate change.

VI. PROPOSAL FOR REFORM

In this concluding section, the paper makes two arguments: first, that the EA should adopt an interpretation of its mandate that takes environmental sustainability into account to the extent that it is tied to efficiency and reliability; and second, if such an interpretation is not adopted, or in practice is insufficient to ensure sustainability is adequately taken into account in electricity market regulation, environmental sustainability objectives should be inserted into the EA's mandate through an amendment to the primary legislation.

A. Environmental sustainability tied to efficiency and reliability

The Electricity Industry Act 2010 (the EIA 2010 or 2010 Act) explicitly removed "environmental sustainability" as a separate and distinct objective of the Electricity

⁹³ Energy Efficiency and Conservation Act 2000, § 21 (N.Z.).

⁹⁴ *Id.*, § 22.

⁹⁵ Note that the EECA does administer two energy efficiency labeling programs under the Energy Efficiency (Energy Using Products) Regulations 2002 and the Energy Efficiency (Vehicle Fuel Economy Labeling) Regulations 2007. Regulation making is governed by section 36 of the Energy Efficiency and Conservation Act, which provides for the making of regulations for certain prescribed purposes, which include minimum energy performance standards, labeling of products, and information gathering.

⁹⁶ DAVID VICTOR GLOBAL WARMING GRIDLOCK: CREATING MORE EFFECTIVE STRATEGIES FOR PROTECTING THE PLANET 163, 118-19 (Cambridge Univ. Press 2011).

Authority. However, it also transferred the former Electricity Commission's functions and powers to the new Authority "to the extent that those functions and powers are consistent with the functions and powers of the Authority".⁹⁷ Environmental sustainability is intimately tied to efficiency (particularly dynamic efficiency) and reliability. Environmental sustainability is also arguably linked to the Authority's mandate to regulate for the "long term benefit of consumers".⁹⁸ This paper argues that a proper reading of the EIA 2010 provides that the environmental sustainability objectives of the former Electricity Commission were transferred to the Authority, to the extent that they relate to efficiency and reliability.

However, the Authority has adopted a narrower interpretation of its statutory mandate.⁹⁹

It is important to note that the Authority does not consider the promotion of efficiency for the long-term benefit of consumers to cover all matters that may deliver long-term benefits to consumers. In particular, the Authority believes that policies to address externalities arising generally from industry and consumer activity that is broader than electricity industry-related activity do not fall within the scope of the Authority's functions. For example, carbon emissions arise from many sources of human activity, not just electricity-related activity, and are being addressed by the Government's environmental policies, including its emissions trading scheme... Consistent with the narrower focus Parliament adopted for the Authority (relative to the Electricity Commission), the Authority interprets its interest in externalities as limited to externalities specific to the electricity industry. For example, the imposition of additional system costs, or degradation of power quality, due to continued investment in intermittent generation would be matters within the scope of the Authority...

There are several problems with this interpretation.

The first is that, as the paper argues above, generic environmental legislation and existing mechanisms like the NZ ETS do not adequately account for environmental sustainability in New Zealand's electricity market.

Secondly, the question of whether or not the electricity sector operates in a way that is environmentally sustainable is a matter "specific to the electricity industry". While it is true that environmental degradation is an externality "arising generally from industry and consumer activity", it is unclear how this can stand as a reason to exclude sustainability considerations from the regulation of a particular industry, where such considerations are reasonably tied to the regulator's statutory mandate.

Thirdly, the EA's approach to environmental sustainability is inconsistent with its approach to the incorporation of "fairness" concerns within its current statutory mandate. The 2010 Act also removed the objective of promoting "fairness" in the electricity sector from the Authority's mandate. This objective, like environmental sustainability, was not transferred to any other agency. However, in its decision-making framework, the Authority states that while its statutory objective takes a "net-benefits approach to determining efficiency gains", it accepts that "efficiency effects

⁹⁷ Electricity Industry Act 2010, § 134 (N.Z.).

⁹⁸ *Id.*, § 15.

⁹⁹ EA, Interpretation of the Authority's statutory objectives, A.60-62.

arising from wealth transfers should be considered.”¹⁰⁰ For example, “if wealth transfers seriously undermine confidence in the pricing process or in the electricity industry more generally, then that can inhibit efficient entry and investment decisions and these dynamic efficiency effects should be taken into account when evaluating proposals.”¹⁰¹ This indicates that the Authority is taking fairness concerns into account, to the extent that they relate to its efficiency objective. It is unclear why a similar approach could not be taken with respect to environmental sustainability objectives.

Finally, the Authority’s current interpretation creates a risk that its cost-benefit analyses will systematically over-estimate the costs and under-estimate the benefits of renewables and distributed generation, given that the costs (i.e. dealing with intermittency) arise in the short-term and are “specific to the electricity sector”, while the benefits in large part accrue over the longer term and are perceived as addressing “externalities arising generally from industry and consumer activity”. As noted by Navroz Dubash, if we accept that a goal of public policy is the improvement of environmental quality, the separation of economic and environmental regulation does not withstand scrutiny. In Dubash’ words:¹⁰²

Economic regulation can affect technology choice and can shape the transactions costs of different ways of supplying energy services. Economic regulators de facto make environmental decisions on a regular basis. Given this reality, is it not better that regulators are aware of and actively consider the environmental impact of their decisions? At minimum, economic regulation should not discriminate against cleaner technologies.

This paper argues that there is nothing in the EIA 2010, its legislative history or elsewhere that prohibits environmental sustainability from being taken into account, to the extent that it relates to reliability and efficiency in the electricity sector. In fact, the EIA specifically states that the Electricity Commission’s functions (which include the promotion of environmental sustainability) transfer to the Authority to the extent they are consistent with its mandate to promote competition, efficiency and reliability in the electricity sector.

Fundamentally, however, any change in approach under the current legislation will depend upon the Authority adopting a broader view of reliability and efficiency, which takes into account the importance to the electricity system of mitigating and preparing for the effects of climate change.

B. Amending the Electricity Industry Act 2010

Environmental sustainability objectives should be inserted into the EA’s mandate through an amendment to the primary legislation if: (a) the Authority does not adopt a broader interpretation of its mandate, or (b) in practice such an interpretation is insufficient to ensure sustainability is adequately taken into account in electricity market regulation (i.e. because sustainability issues not related to efficiency or reliability continue to be excluded).

¹⁰⁰ DECISION-MAKING AND ECONOMIC FRAMEWORK, *supra* note 59, at 6.

¹⁰¹ INTERPRETATION, *supra* note 56, [31.b].

¹⁰² Navroz Dubash, *Revisiting electricity reform: The case for a sustainable development approach* 11 UTIL. POL’Y 143, 152 (2003).

C. Managing difficult trade-offs

There are difficulties associated with incorporating environmental sustainability objectives into electricity market regulation. A key issue is ensuring that there is a clear and transparent framework in place for making trade-offs between environmental sustainability and other electricity sector objectives where they come into conflict. This issue was highlighted in the 2009 ministerial review, discussed above.

However, there are tools available to regulators to manage difficult trade offs that fall short of excluding objectives like environmental sustainability from the regulatory process altogether. The EA has utilized tools, such as the formulation of a “Statement on the interpretation of the Authority’s statutory mandate”, a “Decision-making and economic framework”, and a “Consultation charter”, to guide the exercise of its functions and powers and increase transparency in its decision-making process. Similar tools can be employed to balance environmental sustainability objectives.

Further, issues with transparency and efficiency of decision-making have also been addressed through the transfer of responsibility for price regulation to the Commerce Commission, and the separation of a Rulings Panel to deal with disputes arising from application of the Code.

It is also worth noting that, internationally, it is common for public utility commissions to have an environmental sustainability mandate, either explicitly, or as part of a broader mandate to protect the “public interest”. In the US context, for example, Dworkin notes:¹⁰³

A common misconception is that public utility commissions are solely economic regulators, and have neither the authority nor the obligations to evaluate the environmental impacts of the entities they supervise or to make decisions on the basis of environmental considerations. Under this view, environmental protection agencies have the sole authority to address the environmental and public health implications of electric utility service... [But a review of state statutes and decisions demonstrates that] utility commissions in many states have the explicit authority to consider... diverse and environmentally significant issues... It also demonstrates the utility commissions’ implicit authority to consider environmental issues through their general charge that regulation of public utilities furthers the public interest.

This paper has argued that severing the energy-environment connection by removing “environmental sustainability” from electricity market regulation has had an adverse impact on New Zealand’s capacity to address climate change, from both a mitigation and an adaptation perspective. While incorporating environmental sustainability into electricity market regulation will involve a balancing of potentially competing objectives, there are regulatory tools available to assist the Electricity Authority in making these difficult trade-offs. The Authority should reconsider its approach to environmental sustainability in the exercise of its statutory mandate. If adequate progress is not made, Parliament should consider amending the EIA 2010 to specifically require the Authority to facilitate and promote environmental sustainability in the electricity sector.

¹⁰³ Michael Dworkin, David Farnsworth, Jason Rich & Jason Salmi Klotz, *Revisiting the Environmental Duties of Public Utility Commissions*, 7 VT. J. ENVTL. L. 1, 1 (2005-2006).