Strategic options for delivering ownership and benefit sharing models for wind farms in NSW

September 2014

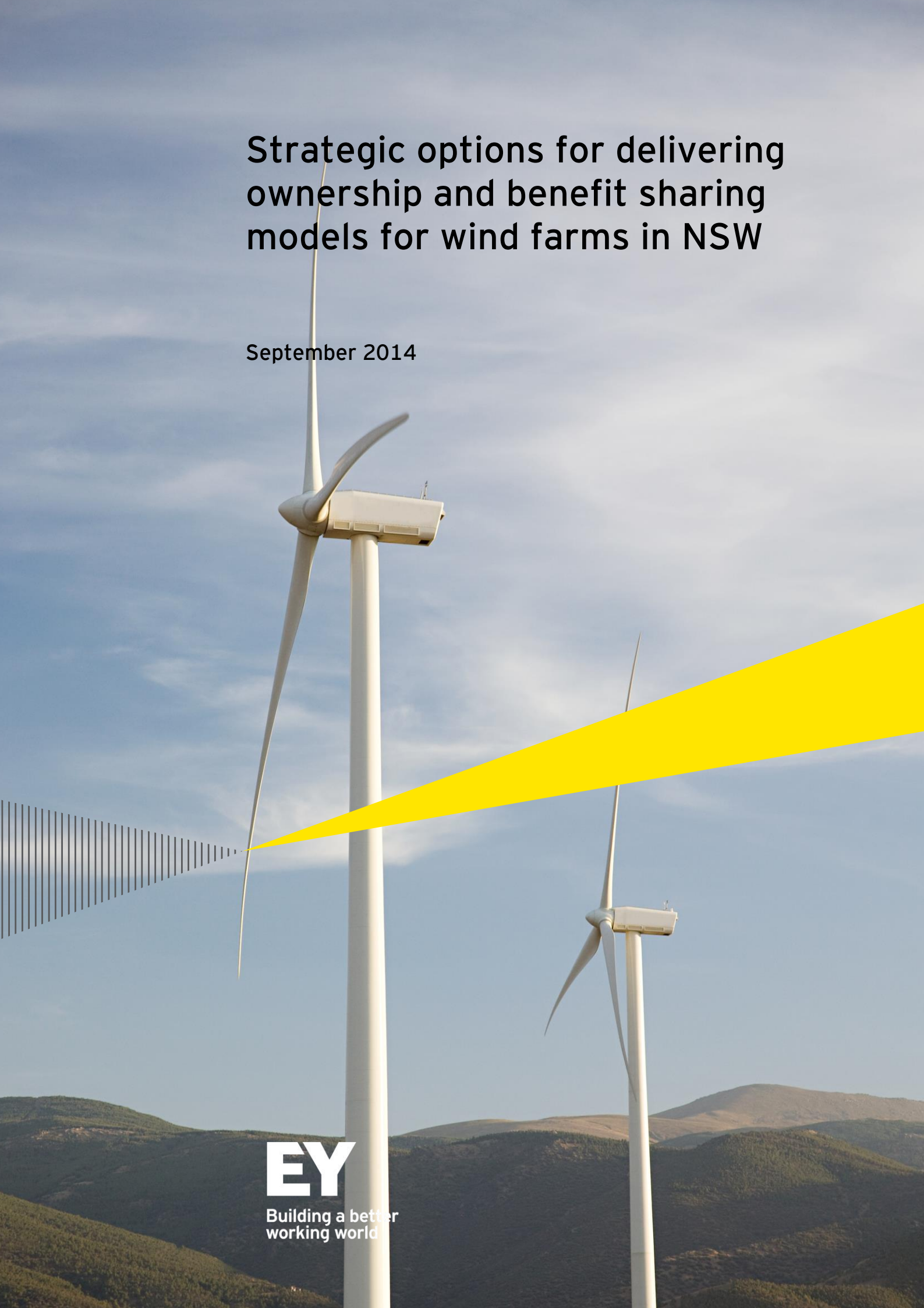

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Table of contents

Executive summary

Executive Summary

Despite the viability of wind resources in New South Wales and the potential benefits, a 'social gap' has occurred in recent years between the high level of general support for wind farms[1] and the opposition presented in the media and voiced during planning and development phases.[2] Typical concerns include potential landscape changes, impacts on visual amenity and noise, and the level of developer consultation with the community.

Concerns have also been raised about developers trying to minimise costs by not adequately sharing financial benefits of wind developments with local communities.[3] In NSW, developers do not have a regulatory obligation to provide financial payments to landowners. However, it is common practice for developers to provide voluntary payments to communities with wind farms through community enhancement funds and/or direct payments to landowners with turbines on their land. These payment mechanisms have had mixed success. In particular, direct payments to landowners, whilst well received by recipients, have been identified by opponents as inequitable because neighbours, who may still be impacted by the turbine, do not receive any payments.

The Office of Environment and Heritage commissioned Net Balance Management Group Pty Ltd (since acquired by Ernst & Young or "EY") to conduct a desktop examination of benefit sharing mechanisms (BSMs) implemented internationally, in order to better understand and identify options for NSW to bridge the likely social divide. These mechanisms may help improve community acceptance and support of wind farms and more equitably distribute the financial and non-financial benefits to communities.

A BSM is an agreement between stakeholders about the distribution of monetary benefits from a wind farm development.[4] There is a broad range of BSMs implemented internationally, which fall into three main categories:

- **Payments to communities**: voluntary payments which include community enhancement funds, discounted electricity, local employment and procurement and compensation.
- **Payments to landowners**: voluntary payments negotiated between the developer and landowners who either host turbines (landowner lease payments) or are within a set proximity of them (proximity rent model).
- **Community (co)ownership**: community members have a direct financial stake in the project as well as a seat at the table in the decision making process of the wind development, and not just how funds will be spent in the community. This helps to empower communities, build their resilience and provide an additional source of income.[5] There are various possible ownership and legal structures for this arrangement, depending on individual circumstances and preferences.

Findings

The research identifies a range of BSMs that could assist developers in building community acceptance and empowerment, as well as potentially broadening the distribution of financial and non-financial benefits to build long-term economic outcomes for the community while addressing perceived and/or real trade-offs.

There are a limited number of BSMs currently implemented in NSW, with community enhancement funds and landowner lease payments being the most commonly adopted. However, some developers

[1] AMR Interactive (2010). *Community Attitudes to Wind Farms and Renewable Energy in NSW*, written for NSW Department of Environment Climate Change and Water, Sydney
[2] Hall, P. Ashworth, N. & Shaw, H. (2012) *Exploring Community Acceptance of Rural Wind Farms in Australia: A Snapshot*, CSIRO Science into Society Group, Canberra
[3] ibid
[4] Action Renewables; Centre for Sustainable Energy & Ricardo Aea (2012). Communities and Renewable Energy: A Study. Report commissioned by DETI, DoE and DARD.
[5] Hicks, J et al (2014). *Community-owned renewable energy: a how to guid*e. Written for Community Power Agency, Sydney.

are trialling different mechanisms, such as Flyers Creek Co-op, where the local community has entered into a joint venture with the wind developer to own one wind turbine within the development.

Each BSM can be implemented on its own or in combination with a number of other BSMs. The suite of BSMs selected for a wind farm are identified as benefiting from being developed in collaboration with the local community to meet the joint needs of landowners and the community. Each community's needs and aspirations will likely be different, and communities and individuals need to consider the level of risk they wish to accept and the level of resources – financial, time and people – they can commit.

Developers can also gain valuable benefits from implementing BSMs. By broadening the distribution of financial benefits and collaborating with communities and landowners in decision making, the level of community acceptance is likely to increase. In particular, mechanisms which require co-ownership and a financial commitment from landowners and/or community have the potential to increase the sense of ownership of the wind farm. Greater community support and buy-in for the project may help to reduce the length of time required to gain planning approval. In some cases there is the potential to shorten the project planning and development consent phase, reducing the overall project costs considerably.

Inclusion in policy and planning

There is no regulatory requirement in NSW, or in other parts of Australia, for developers to provide payments or any financial consideration to communities with wind farms. BSMs are also not considered in the *Draft NSW Planning Guidelines for Wind Farms (December 2011),* which has a focus on mitigating the environmental and noise impact of developments.

To increase the range of BSMs implemented in NSW and the level of community acceptance, the Government will need to consider the costs and benefits of their inclusion in the planning regulations or *Draft Planning Guidelines for Wind Farms*. The costs and benefits of providing incentives to communities and/or developers will also need to be assessed.

Community consultation

BSMs are unlikely to achieve their full potential if they are implemented without transparent and authentic community consultation early in the planning process. In addition to trust building, communities may also require:

- **Access to information**: many communities may not be aware of the different options available to invest in local wind developments and the benefits of doing so
- **Access to knowledge and assistance**: community co-ownership options can require specialist skills such as legal, planning, governance, accounting and finance in helping to establish and operate developments
- **Access to finance**: access to capital with reasonable terms from financial institutions and government.

Financial impact

In considering the expansion of BSMs to assist community acceptance of wind farms, the potential financial impact on wind farm viability must be considered. Care must be taken to manage community expectations. BSMs may not result in larger financial benefits, but rather the broader distribution of benefits amongst the community members. In the case where individual landowners and community members invest in a wind development, the financial rewards may be more significant, but this carries a higher risk and requires a larger financial commitment as an investor.

Glossary

Term	Definition
Benefit sharing mechanism (BSM)	A model for wind farm developers to ensure that financial incentives from the development are shared equally amongst the local community. Essentially, it can be defined as an agreement between stakeholders about the distribution of monetary benefits from the wind farm development.
Clean Energy Council (CEC)	The members-based peak body representing Australia's clean energy sector.
Community Consultation Committee (CCC)	A forum for discussion between developer representatives, community, council and others. Structure is mandated by the *Draft NSW Planning Guidelines Wind Farms (December 2011)*.
Community co-ownership	Where the community owns part of a wind farm development in partnership with a developer. The community ownership can be via a cooperative, trust or community owned entity. The interest can be in a percentage of the wind farm development, ownership of an asset or an entitlement to a percentage of the revenue stream.
Community Engagement Guidelines	Designed to assist wind farm developers engage with communities. Developed by the Clean Energy Council (CEC).
Community enhancement fund (CEF)	Where a developer agrees to make an annual generosity payment to a community in which the development is located, to fund local development projects. The fund can be administered by the developer, a trust, or local council.
Community ownership	Where the community owns (and typically develops) a wind farm or turbine.
Cooperative	An enterprise or organisation jointly owned or managed by those who use its facilities or services.
Draft Guidelines	*Draft NSW Planning Guidelines Wind Farms (December 2011)*.
Renewable Energy Target (RET)	Federal legislation designed to support Australia's transition to 20 per cent renewable energy by 2020.
Social licence to operate	The approval or broad social acceptance of a project by the local community and other stakeholders.
Wind resource	The wind energy available for use based on historical wind data, topographic features, and other parameters. Not the amount of generation capacity of wind turbines.

1. Introduction

1. Introduction

New South Wales (NSW) has substantial wind resources with viable economic potential based on their proximity to existing electricity grid infrastructure (Appendix A).[6] In 2013, wind power contributed 835 GwH to NSW electricity generation, with another 7.8 gigawatts of additional wind capacity obtaining development consent or in the planning phase.[7] As a proven technology with relatively low operating costs, along with environmental and energy system resilience benefits, wind energy has the potential to be a significant renewable energy source for NSW, while also providing employment and regional development benefits.[8,9]

Despite the viability and potential benefits of wind energy, a 'social gap' has occurred in recent years between the high level of general support for wind farms[10] and the opposition presented in the media and voiced during planning and development phases.[11] Typical concerns include landscape amenity changes, impacts on visual amenity and noise, and the level of developer consultation with the community.

Concerns have also been raised about developers trying to minimise costs by not adequately sharing financial benefits of wind developments with local communities.[12] In NSW, developers do not have a regulatory obligation to provide financial payments to landowners. However, it is common practice for developers to provide voluntary payments to communities through community enhancement funds and/or direct payments to landowners with turbines on their land. These payment mechanisms have had mixed success. In particular, direct payments to landowners, whilst well-received by recipients, have been identified by opponents as inequitable because neighbours, who may be in close proximity to the turbines, do not receive any payment.

An alternative is the benefit sharing mechanism (BSM), an agreement between stakeholders about the distribution of monetary benefits from a wind farm development.[13] There is a broad range of BSMs implemented globally, but they generally fall into three categories:

1. Payments to communities
2. Payments to landowners
3. Community ownership.

The experience from countries such as Denmark and Germany, which have expansive wind industries, demonstrates a strong connection between sharing the financial benefits with communities and public acceptance of wind farms.[14] The mechanisms used in Denmark and Germany have been the subject of much research, particularly from Scotland looking to emulate their success.

The most prevalent BSM is community co-ownership of wind developments, driven by strong government regulation. In Germany, community co-ownership is common, taking the form of a limited liability company. Shares in the company can be bought by members of the public. In Denmark, the *Danish Renewable Energy Act (2009)* imposes an obligation to offer a minimum of 20 per cent ownership to inhabitants within 4.5km of a wind farm. More than 75 per cent of co-ownership arrangements are in the form of co-operatives, which allow communities to invest in wind developments with profits distributed back to benefit the members. This regulation, in combination with an ambitious renewable energy target and tax incentives, has resulted in broad community acceptance of wind farms and their growth.

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[6] NSW Resources and Energy. Wind Energy in New South Wales Trade & Investment
[7] ibid
[8] Geoscience Australia and ABARE & ABARE (2010). Australian Energy Resource Assessment. Geoscience Australia, Canberra.
[9] NSW Resources and Energy op. cit.
[10] NSW Department of Environment Climate Change and Water op. cit.
[11] Hall, P. Ashworth, N. & Shaw, H. (2012), op. cit
[12] ibid
[13] World Bank/ Environment Department, op. cit.
[14] Centre for Sustainable Energy & Hassan, G. (2005a). Community Benefits from Wind Power: Policy Makers Summary.

Given the success of these international BSMs, some developers in Australia are trialling different mechanisms such as co-ownership with communities, for example Flyers Creek and Coonooer Bridge. However, co-ownership models such as co-operatives remain uncommon for wind farms in NSW, despite co-operative models being successfully implemented for other infrastructure projects such as Coleambally Irrigation.

This report investigates the BSMs implemented internationally to better understand and identify additional mechanisms that could be utilised in Australia to help bridge the social gap. These mechanisms could help improve community acceptance of wind farms and more equitably distribute the financial benefits to communities.

1.1 About this report

This report was originally prepared for the NSW Office of Environment and Heritage (OEH) in September 2014. As part of the NSW Government's stated vision for a secure, affordable and renewable energy future and to support the national target of 20% renewable energy by 2020 it released the Renewable Energy Action Plan. A key obstacle to achieving the expansion of large-scale renewable energy schemes such as wind farms was local community opposition. It was felt that if the developers and the community knew about different ownership and shared benefit models it may help to increase community support for wind farms and enable their growth.

OEH commissioned EY to examine a variety of BSMs implemented by countries with established and community supported wind developments and identify BSMs which could be trialled in NSW to help increase community support for wind farms.

Limitations

The purpose of the report is to stimulate discussion and to act as a potential starting point for BSMs. It is not exhaustive and interested parties are encouraged to seek third party advice. There are a number of limitations to the review. These include:

- The investigation is based largely on desktop research, with a small number of interviews to garner stakeholder perspectives including community, landowners with turbines, developers, government and advocates
- The investigation focuses on large utility-size developments which have capacity to generate larger benefits for communities and for NSW. For more information on community wind developments, please refer to Community Power Agency[15] report on *Community-Owned Renewable Energy: A How to Guide*, financed by the Regional Clean Energy Program of the NSW Office of Environment and Heritage.
- The investigation identifies a range of BSMs which have been successful in gaining community support in countries such as Denmark and Scotland. The BSMs will need to be trialled in NSW to determine their effectiveness in gaining community support.

This report first investigates the NSW context for wind developments, identifying their barriers and enablers and community acceptance. The report then investigates the range of BSMs used by international leaders in wind energy including: payments to communities; payments to landowners and; community (co)ownership. Each section includes case studies to help illustrate how these different BSMs have been implemented in practice. The report then identifies the policy and community consultation requirements to assist the successful implementation of different BSMs.

[15] Hicks, J et al (2014). op. cit.

1.2 NSW policy and regulation

The NSW Government's vision is for a '*secure, reliable, affordable and clean energy future for NSW*'.[16] To help achieve this vision, the Government has developed the NSW Renewable Energy Action Plan. The plan aims to efficiently increase energy from renewable sources to help minimise cost impacts on consumers and maximise economic benefits to NSW. The plan also supports the national target of 20 per cent renewable energy by 2020 (RET).[17] A key strategy to underpin the vision is to '*work closely with NSW communities and the renewable energy industry to increase renewable energy generation in NSW*'.[18]

Given the excellent wind resources in NSW, in conjunction with appropriate technology, relatively low operating costs and environmental and energy systems resilience benefits, wind energy is a key part of NSW's energy strategy, with over 40 per cent of proposed new energy to be sourced from wind.[19] To successfully develop a wind farm, there are two key regulations and guidelines that developers must consider (See Table 1):

1. Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act)

Whilst wind energy has broad Government support, wind developments, like all major developments, must be assessed under the *Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act)*. Large-scale wind farms (more than $30m) typically require development consent under the EP&A Act.

Unlike Victoria, NSW has not introduced a state-wide environmental planning instrument which imposes a separation distance requirement for wind farms. However, some local government agencies have adopted development control plans which do.

2. Draft Planning Guidelines – Wind Farms

In December 2011, the NSW Government released its *Draft Planning Guidelines – Wind Farms*, which are yet to be finalised. The purpose of the guidelines is to:

- Provide a clear and consistent regulatory framework in the assessment and determination of wind farms
- Outline clear processes for community consultation
- Provide guidance on how to measure and assess potential environmental noise impacts from wind farms.

The guidelines also outline the matters which are considered in the assessment and determination of wind farms including: landscape and visual amenity; noise impact; economic issues; ecological issues; auditing and compliance provisions; and decommissioning and rehabilitation.

To help developers effectively consult with communities, the guidelines require wind developers to establish a Community Consultative Committee (CCC) for all major developments under the Director General Requirement and Conditions of Approval. The purpose of a CCC is to open discussions between the developer, community, Council and other stakeholders on the assessment of wind farms and, if approved, the environmental performance and community relations.

Additional requirements have been placed on developers where the development is within a 2km radius of proposed hosts of turbines or non-host residences. If written consent is received by all parties within 2km, then the development may proceed to the next stage. If written consent is not granted, the developer must obtain a Site Compatibility Certificate, which must be approved before an application for development consent may be lodged.[20]

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[16] NSW Resources and Energy. Renewable Energy Actin Plan in New South Wales Trade & Investment
[17] ibid
[18] ibid
[19] NSW Resources and Energy, Wind Energy op. cit.
[20] NSW Department of Planning and Infrastructure (2011), Draft NSW Planning Guidelines – Wind Farms.

Whilst the guidelines require community consultation and approval from all residences within 2km of a turbine, there is no regulatory requirement for developers to provide financial payments to landowners or communities. Nor is it a material consideration in determining the developer's planning application. In the majority of cases, developers provide voluntary payments to communities through community enhancement funds and/or direct payments to landowners with turbines on their land.

Table 1: Summary of planning conditions and guidelines for wind farms in NSW[21]

Action	Purpose	Status	Link to development	Timing and determination
Planning conditions EP&A Act	Mitigate the impact of development	Legislated	Required	Agreed prior to approval $5–30m – Joint Regional Planning Panel >$30m Planning Assessment Commission
Draft guidelines	Mitigate the impact of development and provide guidance on community consultation	Voluntary	Determined by the developer	Agreed prior to approval

1.3 Perception of wind farms in NSW

Independent research conducted in 2010 on behalf of the Office of Environment and Heritage found strong support for wind farms in NSW.[22] Over half of farmers (57 per cent) state they would consider hosting turbines on their property, and local businesses expressed high levels of support for wind in the local region (84 per cent). Supporters of wind farms identified a reduction in air emissions (in comparison to coal-fired power stations) and increases in local employment as the key benefits of wind farms.

Despite this widespread support in NSW, there has been growing opposition to wind developments.[23] Common concerns include potential landscape amenity changes, impacts on visual amenity and noise, and the level of developer consultation with the community.[24] Research by CSIRO on community acceptance of wind farms in Australia found that opponents are usually the 'vocal minority' who are skilled at gaining media and political attention and are often representatives from lobby groups or smaller lifestyle farmers or professionals.[25]

A key finding from this research was that '*For some individuals, sufficient financial compensation will make a wind farm acceptable; this could include compensation/rental payments to all residents in a specified radius, payment of electricity bills and local government contributions*'.[26] Not only were communities open to receiving financial benefits; they also identified potential models they felt were acceptable, such as payments to host and non-host landowners within a specified radius, payments to support community infrastructure and payment of electricity bills.[27]

1.4 Benefit sharing practices in NSW

In NSW, developers commonly provide financial benefits to communities through a community enhancement fund or via direct payments to landowners who host turbines on their land. These

[21] Adapted from: NSW Department of Planning and Infrastructure (2011) op. cit.
[22] AMR Interactive (2010) op. cit.
23 Hall, P. Ashworth, N. & Shaw, H. (2012), op. cit; New South Wales Parliament (2009). Legislative Council, General Purpose Standing Committee No. 5, Rural wind farms – Report 31
[24] ibid
[25] Hall, P. Ashworth, N. & Shaw, H. (2012), op. cit
[26] Hall, P. Ashworth, N. & Shaw, H. (2012), op. cit
[27] ibid

payment mechanisms are voluntary and have had mixed success. In particular, direct payments to landowners, whilst well-received by recipients, have been identified by opponents as inequitable and unfair because neighbours, who may still be in close proximity to a turbine, do not receive any payment and therefore not being compensated for the real and/or perceived trade-off.

Select interviews conducted by EY with stakeholders from community, landowners, developers and government identified a number of additional concerns about the current approach to community consultation and sharing of benefits. These concerns are supported by a research report[28] and include:

- **There is limited consistency in the approach to engagement with communities over financial payments.** Currently, financial payments are perceived by communities to create 'winners and losers', as direct financial gains are often realised only by the landowners who host turbines, while neighbours who may be in close proximity to turbines rarely receive any payment from developers.
- **There is limited transparency in how financial payments are calculated.** In general, only the host landowner and the developer are involved in negotiating payments. These negotiations are often carried out behind closed doors and separate to the community consultation process, often being completed prior to seeking development consent. Some stakeholders feel this creates a negative sentiment towards the development and mistrust and divisiveness within the community.
- **Community lacks information and power in the decision making process.** Stakeholders feel the process for determining financial payments and community consultation is a top-down, 'tick-a-box' process, which can leave communities feeling they do not have any influence or control over the decision making process. They often feel powerless and 'done to' as opposed to being part of the solution.
- **Discussions and consultation with communities occurs late in the process.** Stakeholders observed that in many cases consultation with communities occurred once the developer had decided to seek planning approval. Often communities feel this is too late in the process and would like to be engaged earlier, for instance during wind monitoring, when developers are assessing the potential for a wind farm. However, stakeholders understand that competition for the best wind resources and 'commercial in confidence' requirements mean that developers enter into community discussions later in the process than would be optimal to gain community support.
- **Community enhancement funds are small.** Payments to communities which help fund local activities, infrastructure and sporting and social clubs are often perceived by communities as having small financial benefit and may not achieve material community benefits.

To help overcome some of these concerns, a number of developers are trialling different approaches to engaging with communities and sharing financial benefits. These projects include the Flyers Creek Co-op, where the local community has entered into a joint venture with the wind developer to own one wind turbine within the development. Table 2 provides an overview of some of the existing approaches implemented by developers in NSW. The table highlights the use of community enhancement funds and payments to landowners hosting turbines.

The research highlights that whilst globally there is an array of different mechanisms implemented by developers to share the financial benefits from wind farms, only a limited number are implemented in NSW, with a focus on community enhancement funds and land lease payments. To help overcome the concerns of communities and gain broad-scale community acceptance, new ways of engaging with the communities and building the social licence to operate are required.

These new mechanisms need to consider how to create community cohesiveness instead of divisiveness, empower communities in decision making and return financial benefits back to landowners (hosts and non-hosts of turbines) and communities, whilst enabling wind developments to remain a viable renewable energy resource.

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[28] Hall, P. Ashworth, N. & Shaw, H. (2012), op. cit

Table 2: The range of shared benefit mechanism implemented in wind projects in NSW

Developer	Project	Size	Cost	Shared Benefits Mechanisms
Acciona	Gunning Wind Farm (operational)	46.5MW (31)	$147M	Acciona provides: 1. Community sponsorship program 2. Annual rental payments to landowners 3. Community benefit fund
Infigen	Capital Wind Farm (operational)	140.7MW (67)	$220M	Community sponsorship funding model – governed by the Capital Community Committee Rental payments for landowners
Infigen	Flyers Creek Wind Farm, (proposed)	80-100MW (43)	$200M	Central NSW Renewable Energy Co-operative (CENREC) model of community ownership Annual payments to landowners
Union Fenosa	Crookwell 3 (proposed)	54-102MW (30)	$90-120M	Community enhancement fund – governing body Socio-economic impact assessment Rental payments to landowners
Union Fenosa	Paling Yards (proposed)	108-204MW (60)	$280M	Community enhancement fund – governing body Socio-economic impact assessment Rental payments to landowners
AGL	Silverton Wind Farm (proposed)	330MW (approx. 280-600)	$750M	Community enhancement fund – governing body mix of council representatives and community members to be administered by AGL. Special purposes lease agreements with landowners

1.5 Benefit sharing mechanisms

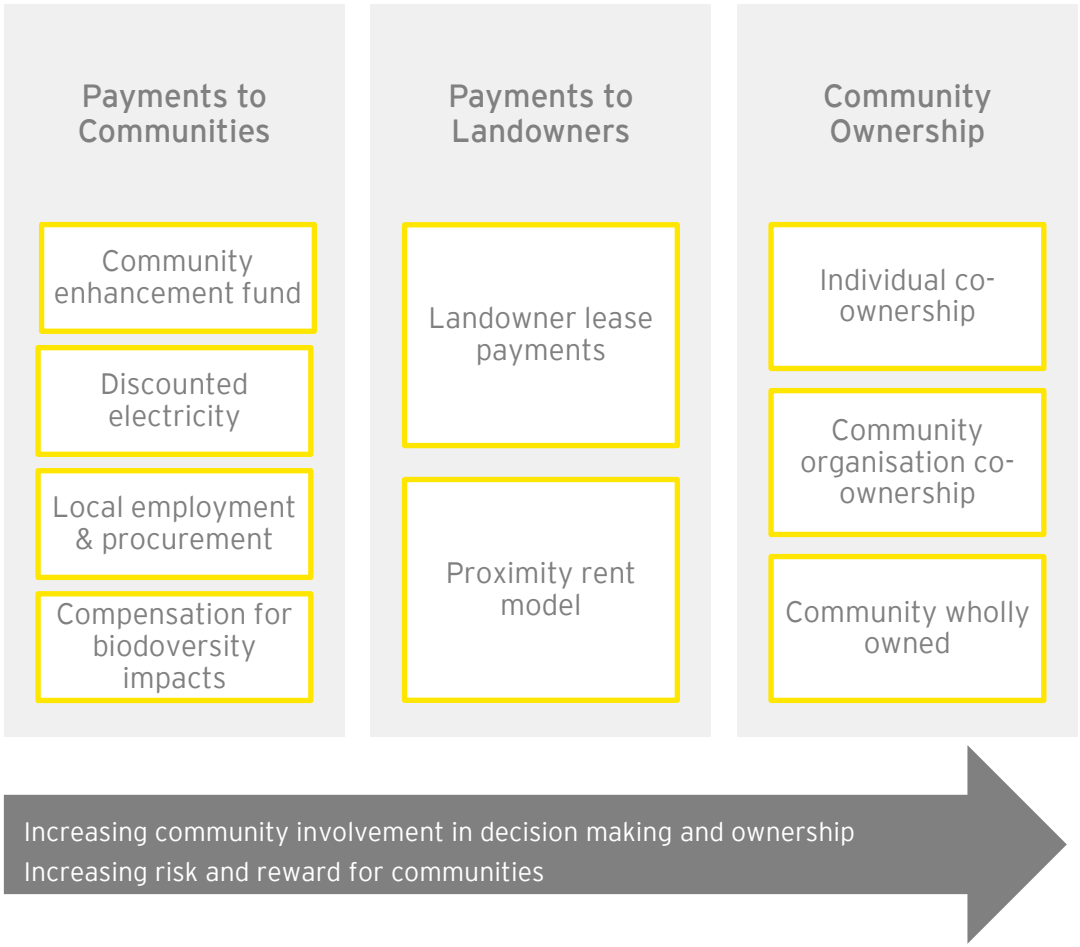
Benefit sharing mechanisms (BSMs) are voluntary agreements between stakeholders about the distribution of monetary benefits from a wind farm development.[29] Whilst there is a broad range of BSMs implemented internationally, they generally fall into three categories (Figure 1):

1. Payments to communities
2. Payments to landowners
3. Community ownership.

The range of BSMs can be placed on a scale of increasing community decision making, control, risk, and reward. Payments to communities require the least amount of community involvement in decision making and wind farm planning. The majority of time will be spent by the community on establishing a committee to manage and administer the funds received from a developer to benefit the community.

Community co-ownership mechanisms such as co-operatives and joint ventures require the community to provide financial input into the wind farm development, give them influence over decision making, and may require paid staff to help run the co-operative and administer profits to its members. This mechanism carries the highest risk and reward which comes with ownership.

Figure 1: Benefit sharing mechanisms



[29] World Bank/ Environment Department, op. cit.

2. Payments to communities

2. Payments to communities

Community payments are the most commonly observed type of BSM in Australia. They involve payments to communities to assist in building community acceptance by contributing to economic development. There a number of ways in which a developer may provide community payments including:

- Community enhancement funds
- Discounted electricity
- Local employment and procurement
- Compensation.

To be effective, community payments are best delivered as a package of mechanisms which provide community benefit. Employed on their own, they are unlikely to change a community's acceptance of a wind farm.

2.1 Community enhancements funds

Community enhancement funds (CEFs) are a payment by a developer to help fund community initiatives, and are the most common form of BSM in NSW. A CEF may be implemented in a number of different ways depending on the agreement between the developer and the community. A CEF may be controlled by a community trust organisation, the local government agency, or funds awarded annually by the developer on an ad hoc basis through a grants process. CEFs may help to fund a range of activities important to the community such as:

- Habitat enhancement
- Visitor centres
- Enhancement of community amenities such as the main street
- Sponsorship of local sporting groups
- Grants to local community groups.

In NSW, the payments provided to CEFs are at the discretion of the developer and may be awarded as a fixed amount per annum per turbine, or as a percentage of the revenue received from the wind farm. In NSW, there is no guidance currently provided to developers on the minimum or appropriate contribution each year, which means there may be differences between the financial benefit received between communities.

To ensure a more consistent approach to community benefits, the Scottish government recommends a community benefit package for onshore wind developments with a value equivalent of at least £5,000 per installed megawatt per annum, index-linked for the operational lifetime of the project.[30] A variable payment per MW or one-off payments are other options.

[30] Scottish Government (2013a). Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments.

Case Study: The Gullen Range Community Enhancement Program[31]

The Gullen Range wind farm in NSW has committed to contribute $1,666 (adjusted for CPI from September 2010) pa for each turbine of the 165MW, 73 turbine development. This equates to approximately $120,000 per annum, or $740 per MW. Funds will be distributed once the development is commissioned, due in late 2014.

The community enhancement program was negotiated as part of the consultation process, and is a component of the conditions of approval of the planning application submitted to the Department of Planning. The funds will be split equally between a community enhancement fund and a clean energy program.

The clean energy program supports energy efficiency improvements to households within 5km of the project, including energy efficiency upgrades, audits, and solar heating. The community fund supports projects that benefit the community within a 10km radius. It is governed by a committee coordinated by the local council, and will focus on projects which support community facilities, services and interest groups.

Benefits

CEFs are an easily administered and useful way to attain much-needed financial assistance for community activities and asset improvements which may otherwise not be achieved. They can also be valuable in assisting a community and developer to address concerns raised during the consultation process. For example, a key concern for the community of the Fintry development in Scotland was public transport, so the fund was used to assist in the establishment of a local car-sharing fleet.

The Scottish Community Foundation[32] found that CEFs can be an effective way of delivering benefits to communities if they:

- Are a well-informed group working to represent the different interests of all stakeholders in collaboration with the developer
- Have clear long-term outcomes to be achieved, clear criteria for assessing projects to fund and transparency in how funds are allocated
- Clarity and transparency from the developer on the size of the financial benefit and the types of projects it will support.

Criticisms

CEFs can be a valuable financial contribution to communities; however, applied in isolation of other BSMs or community consultation, CEFs are likely to have limited impact on community acceptance of wind farms. The focus on community funds could have significant disadvantages if it becomes a one-size-fit-all solution. Communities and their needs differ greatly, and may get far greater benefit from other mechanisms.[33] CEFs may also be criticised if:

- The fund is applied to the broader community rather than those members who are in close proximity to turbines The fund is managed by the local council and the level of community involvement in decision making is limited
- The fund is seen as tokenistic rather than real sharing of benefits to the broader community
- The governance structure does not allow for long-term strategic investment into the community.

[31] Gullen Range Wind Farm, Community
[32] Scottish Community Foundation (2011). A Research Report into Community Benefit Funds (Scotland) provided by major Wind Farm Developers for Vattenfall. Scottish Community Foundation: Edinburgh.
[33] Butler, J. & Doherty, P. (2012). Securing the Benefits of Wind Power in Scotland. Report for Vento Ludens and Docherty Consulting, Edinburgh.

Best practice guidelines regarding the effectiveness of CEFs can be seen in the *Scottish Government Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments*[34], which provides step-by-step guidance on establishing effective and meaningful CEFs, with examples of specific governance structures from case studies in Scotland.

In countries that have high levels of community acceptance, such as Denmark and Germany, CEFs are not common practice. The Centre for Sustainable Energy in the UK found that there is "no indication that the higher level of benefits [in Denmark & Germany] result from deliberate policy to stimulate community benefits in the narrow 'community fund' sense… instead there has been, in Germany and Denmark, deliberate intention to create simple support mechanisms which enable wide participation in development and ownership of wind power projects and, in Spain, deliberate intention to secure significant regional economic benefits."[35]

2.2 Discounted electricity and energy efficiency initiatives

Discounted electricity and energy efficiency initiatives have been applied to some developments in the UK. However, their application in NSW has been limited, in part due to the separation of the wind developer from the energy retailer. To enable communities to receive discounted electricity in NSW, the developer would be required to use the profits from the wind development to purchase electricity on behalf of the community.

RES is a renewable energy developer with a global portfolio and a large presence in the UK, accounting for approximately 10 per cent of national wind generation. They developed the Local Electricity Discount Scheme (LEDS) to facilitate local communities benefiting directly from wind developments. The program was piloted in 2012, with RES committing to apply the scheme to all new developments larger than 5MW in the UK[36]. They use a proximity model to identify eligible households. If a residence or business is within 2.7km of a turbine, they are notified of their eligibility, with the size of benefit dependent on the size of the development and number of participants.[37] Payment is a minimum of £100 per annum and is made directly to the resident's energy supplier.

Energy efficiency initiatives include improving the insulation levels and heating efficiency of local houses and public buildings as well as advice on how the community can help to reduce their energy consumption and hence energy bills. The Fintry Development Trust in Scotland financed energy savings initiatives, as energy poverty is a major issue for the small town. All buildings were eligible for free insulation, households received free energy efficiency advice, and each household was eligible to receive £500 for energy efficient heating systems. Overall, the town is saving £90,000 each year from improvements in energy efficiency.[38]

2.3 Local employment and local procurement

Procurement and employment of local contractors and resources is a key way a developer can contribute to the local economy during both the construction and operation of the wind development. As the majority of wind farm developments occur in rural and regional locations, this BSM is commonly utilised in addressing community concerns about rural decline and job creation. If the opportunities are communicated effectively and then realised, local employment and contracting can be a genuine way for the development to be seen as a positive contributor to the local community.

The Clean Energy Council estimates that a 50 megawatt (MW) development creates 48 direct local jobs during the construction phase and seven ongoing roles once the project becomes operational (Table 3).

Table 3: Direct employment resulting from a 50MW wind farm development[39]

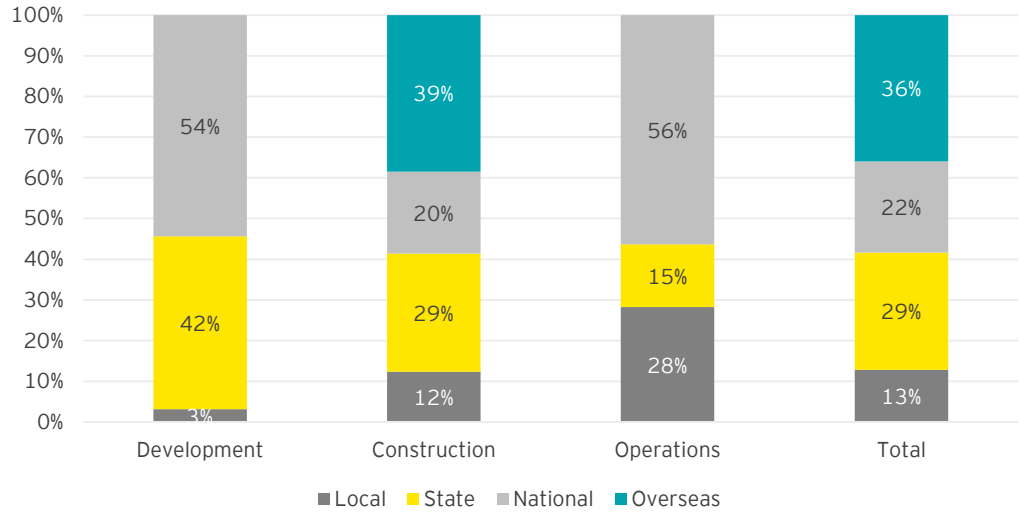
[34] Scottish Government (2013a). op.cit.
[35] Centre for Sustainable Energy & Hassan, G. (2005b). Community Benefits from Wind Power: Report to the Renewable Advisory Board.
[36] RES. FAQ in Local Energy Discount Scheme
[37] BBC (2013). RES offers compensation for building wind farms in BBC News Northern Ireland
[38] Fintry Development Trust (2011). Wind of Change – Fintry community renewable energy film
[39] Clean Energy Council (2012). Wind Farm Investment, Employment and Carbon Abatement in Australia.

Direct Employment per 50MW	Construction Phase	Operational Phase
Local/Regional	48	4.63
State	147	7.16
National	238	16.41

An economic impact assessment of the Hallett Wind Farms in South Australia, conducted in 2010, found that $110 million, or 12.4 per cent of the $894 million development, would be spent in the local region[40]. The economic impact assessment reviewed the 200-turbine development with a capacity of 410MW.

The study was based on the first phase, Hallett 1, comprising 45 turbines with a capacity of 95MW. It found that an average of 66 jobs were created during the construction phase, and nine full-time positions during the operation phase. The following graph outlines the allocation of expenditure during the construction and operation of Hallett 1. The study found that of the $243 million, approximately $31 million was spent in the local region, representing 13 per cent of expenditure. This was primarily on landowner payments, local employment, and local procurement of services, including accommodation.

Figure 2: Hallett 1 project expenditure by location[41]



[40] Sinclair Knight Merz (2010). Economic Impact Assessment of the Hallett Wind Farm, Written for AGL Energy Ltd.
[41] ibid

Competition from large-scale infrastructure firms has been recognised as a problem by the South East Region of Renewable Energy Excellence (SERREE), an initiative that brings together a diverse and collaborative network of renewable energy stakeholders representing the south-east NSW-ACT region[42]. They support initiatives that retain economic value of developments in the region, and address local contractor competitiveness by bringing together local contractors to speak with the developer to assist in understanding and bridging gaps.

SERREE found that the major value-add and wider economic benefits in the wind industry comes from the manufacturing of turbines and their components. However, there is little capacity in Australia for these benefits to be realised, so they have historically been exported. That said, there are opportunities for benefits to be captured in construction, operation and maintenance.[43] The construction of wind farms typically involves a separate head contractor for both civil and electrical works. SERREE believes that neither of these prime contractor roles has been awarded to local firms. However, some local firms have been involved in the civil works in sub-contractor arrangements. They also found a reported shortage of local capability on the electrical side, and expertise in the construction of substations and high-voltage works is currently sought from outside the region.

Once a wind farm is operational, there are operating and maintenance roles available and employment is generally sought from within the local community as the resident base '*provides a more stable, committed employee to fill these positions. A combination of electrical and mechanical skills, preferably with industrial experience, constitutes the main technical roles at a rate of around one technician per 10 turbines, with larger facilities additionally employing a store person and/or administrator*'.[44]

2.4 Compensation for biodiversity impacts

Biodiversity offsetting is used predominantly by planning authorities and developers to compensate for biodiversity impacts associated with a development such as wind farms. They work by '*protecting and managing biodiversity values in one area in exchange for impacts on biodiversity values in another*'.[45]

Bonds may also be used to mitigate the impact of wind farms on biodiversity such as native birds. The bonds provide financial assurance that biodiversity offsets strategies are implemented and maintained. For example, environmental impact was of significant concern in the Cruach Mhor wind farm development in Scotland. The wind developer, Scottish Power, created an innovative habitat management program for the benefit of hen harriers, short-eared owls and black grouse. During the construction phase, a nesting pair of hen harriers was identified, initiating the habitat creation and conservation program.[46] Almost 300ha of commercial forestry was felled with the aim of regenerating grassland and heathland habitats suitable for the birds.[47] Scottish Power were required to set up a bond of £115,000 (2003 level) prior to any work, to ensure that when the 26-year life span is reached, there are sufficient funds for land restoration works.[48]

[42] South East Region of Renewable Energy Excellence, Arena support for the SERREE industry Cluster
[43] South East Region of Renewable Energy Excellence (2013), SEREE Progress Report, June 2013.
[44] Ibid
[45] NSW Office of Environment and Heritage website.
[46] ScottishPower Renewables, n.d., 'Review of Hen Harrier breeding and flight activity near a windfarm in Argyll', ScottishPower Renewables
[47] ibid
[48] Dunoon Observer, 2002, 'Wind Farm gets go-ahead', Dunoon Observer

3. Payments to landowners

3. Payments to landowners

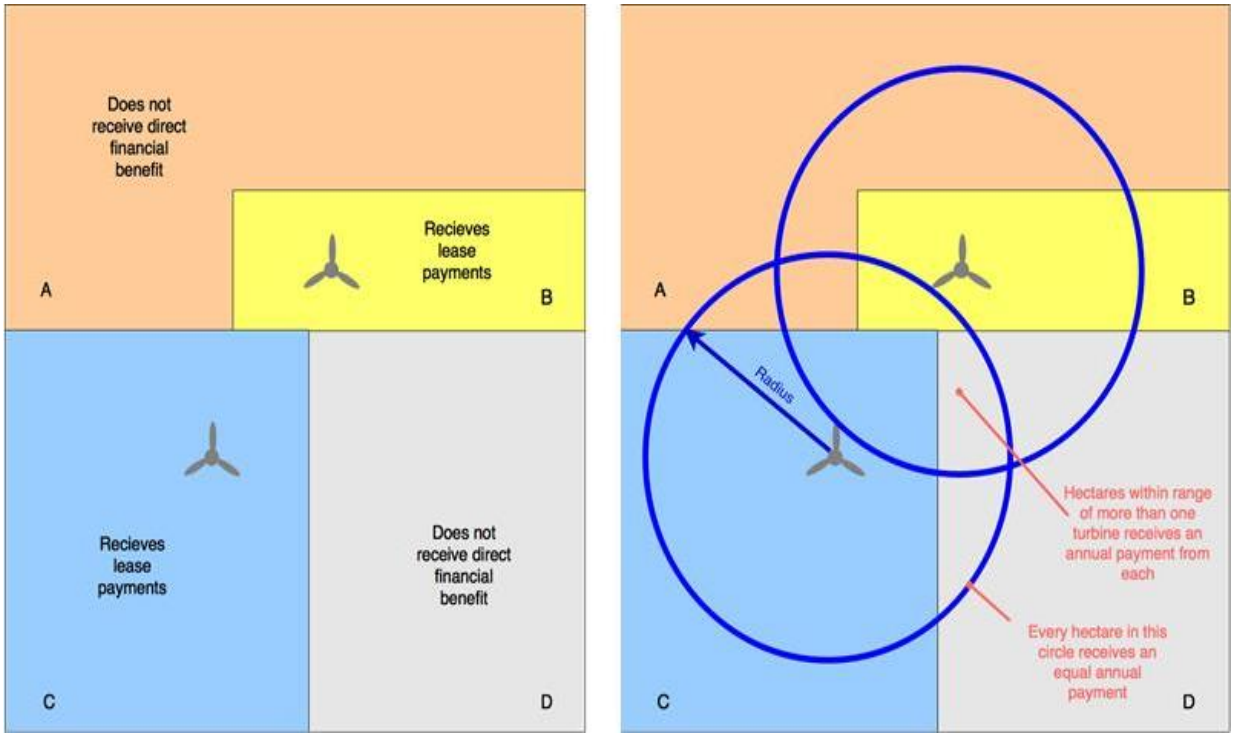
Voluntary payments to landholders are one of the most common forms of BSMs implemented in Australia.

Payments are negotiated between the developer and landowners who either host or are within a set radius of a turbine. There are two main ways of distributing the payments to landowners from wind developments:

1. Landowner lease payments (most common)
2. Proximity rent payments.

The main difference between the two is how the financial benefits are calculated and distributed (Figure 2). Landowner lease payments involve landowners leasing their land to developers in return for payment to host a turbine. Proximity rent payments provides payments to all landowners within a specific distance from turbines including landowners which host turbines and their neighbours. It is not about increasing the amount of money, but distributing a similar amount of money amongst a potentially larger number of people. These two mechanisms are described in more detail in the next section.

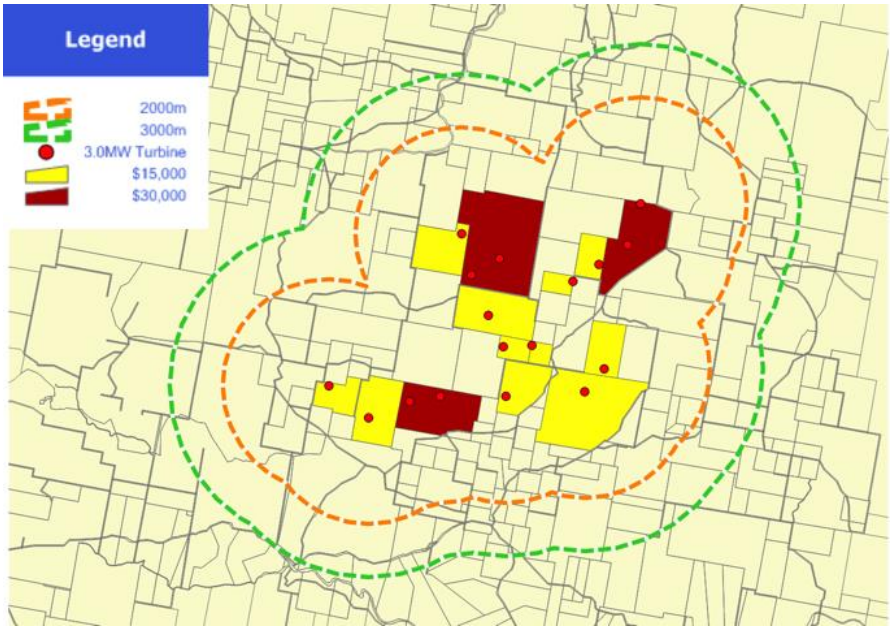
Figure 3: The difference between landowner lease payments (left) and proximity rent payments (right).



3.1 Landowner lease payments

Landowners lease their land to developers in return for payment to host a turbine on their land. The approximate market rate is $5,000 per MW, equating to $15,000 per 3MW turbine in the form of a lease payment. Figure 4 shows how land titles hosting one turbine in this scenario will receive $15,000 per year, while titles hosting two turbines receive $30,000 per year.

Figure 4: Fictitious wind farm site showing layout of turbines and boundaries of 2km (orange) and 3km (green) from turbines by title. The red and yellow properties shows the unequal distribution of benefits.



In general, landowner lease payments are negotiated one-on-one between wind developers and individual landowners. The key benefits of landowner lease payments are their simplicity and ease to administer, and they overcome some landowner opposition. However, this approach can also cause elements of distrust and divisiveness within communities. The closed-door negotiations which often occur can result in individual landowners with turbines receiving substantial financial benefits, whilst their neighbours and the broader community, miss out.

3.2 Proximity rent

The proximity rent model[49] provides rent on a per-hectare basis to landowners who host turbines, and neighbours who own land close to wind turbines, according to the amount of their land that is within a certain distance from a wind turbine. It seeks to be fair with the community by sharing the financial benefits to landowners who host turbines or are in close proximity to the turbines The proximity rent model contains two parameters, proximity radius and proximity rent, whose values are dependent on the circumstances of actual projects (such as number of turbines, number of landowners and budget).

The proximity rent model contains two parameters, proximity radius and proximity rent, whose values are dependent on the circumstances of actual projects (such as number of turbines, number of landowners and budget).

- **Proximity radius**: the circle around a turbine within which landowners are paid proximity rent. The minimum circle radius is not defined, but it is noted that governments in both NSW and Victoria have used 2km as a threshold in the past and there is therefore a precedent for this figure. Proximity circles with a radius greater than 3km are likely to be less viable due to the total rent being unaffordable.
- **Proximity rent:** the rent paid per hectare within the proximity circle for each turbine. This should be negotiated between the developer and the landowners (preferably as a group). It should be a constant and transparent value for all landowners so that the arrangements are fair. The value of rent per hectare per year is very dependent on wind farm size and development budget.

[49] The proximity concept was first proposed by Luke Osborne who led the development phase of the Coonooer Bridge Wind Farm

Landowners who directly host turbines would most likely also receive an additional payment per turbine (known as 'foundation' rent, referring to the fact that these landholders have turbine foundations on their land). Foundation rent would be negotiated directly between each landowner and the developer and form the rental component of a lease in the same form as 'business-as-usual'.

The following scenarios outline how the proximity rent model could be implemented in practice, using the same hypothetical example from Figure4. The financial implications of each scenario are presented in Appendix B.

Scenario 1: 2km proximity radius

This scenario calculates the distribution of proximity rent paid to landowners who own land within 2km of turbines. There are two steps:

Step 1: The number of turbines within 2km for each hectare of land is calculated. This is shown in Figure 4. The map reveals that some hectares of land have 12 turbines within 2km (depicted in red shading), whereas some hectares of land have only one turbine within 2km (depicted in purple shading).

Step 2: The total proximity payment for each title is calculated. This is done by adding together the payments for each of the hectares in the title. The payment for each hectare is the number of turbines within 2km (from step 1) multiplied by the (assumed) rate of $12 per hectare per turbine within 2Km. The result is shown in Figure 5.

The large title shaded red, with many hectares in close proximity to several turbines, receives a large proximity payment, in excess of $15,000 per year. This particular title would also receive additional 'foundation payments' via a lease. Titles on the fringe of the wind farm do not have as many hectares in close proximity to a turbine and receive, in this example, $100–$500 per year.

Note that large titles with only a small portion of land within the 2km circle can still attract proximity payments in the vicinity of $1000–$1500 per year. Very small titles near the boundary can attract very small rents (below $100). There may need to be a minimum payment to account for this.

Figure 5: Scenario 1 (Hypothetical) - The number of turbines within 2km with a resolution of 1 hectare. Hectares in the centre of the project have many turbines within 2km.

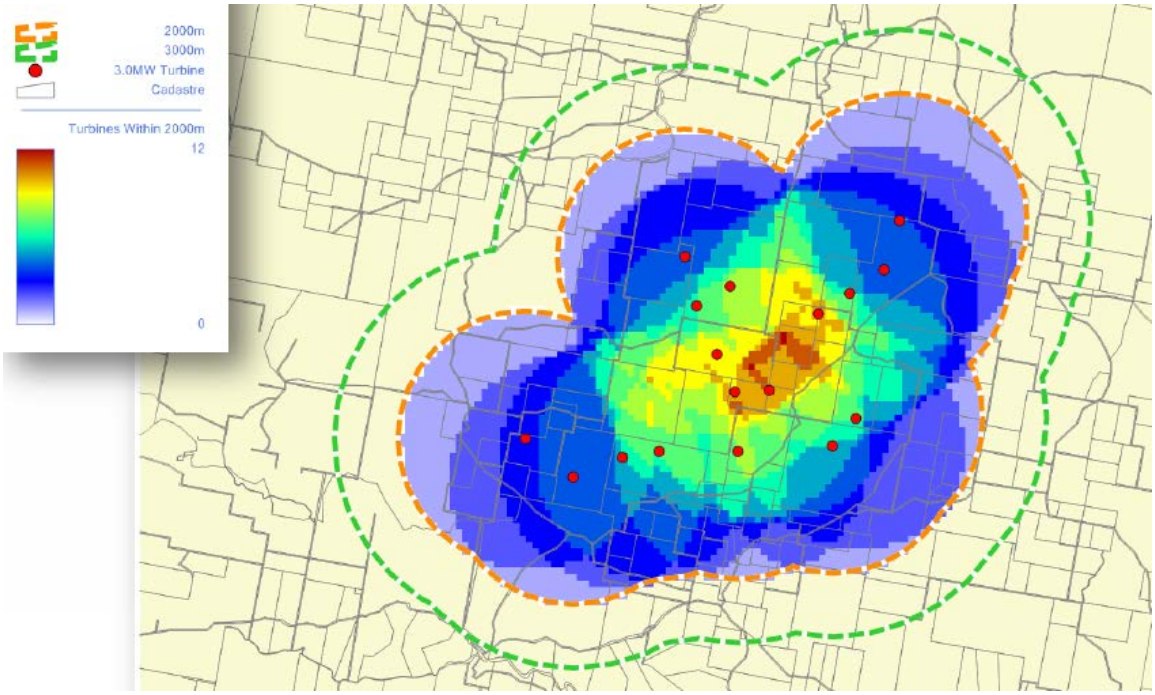
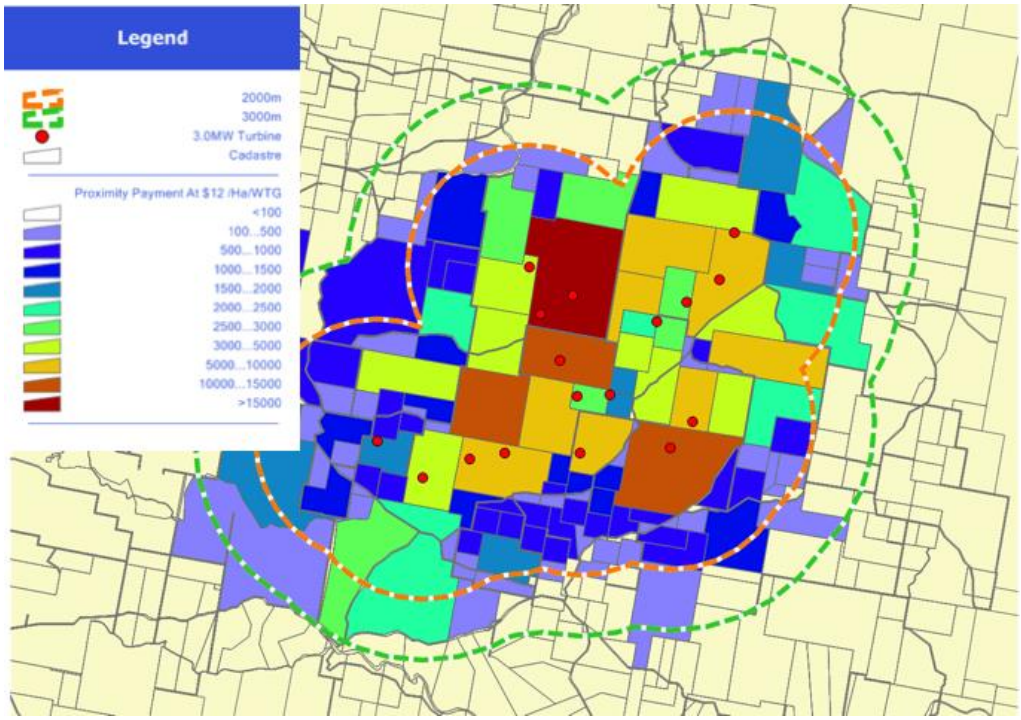


Figure 6: Scenario 1 (Hypothetical), proximity payments for 2km radius by title. Note that foundation rent is not included and would add to the total rent for those titles with turbines



Scenario 2: 3km proximity radius payment

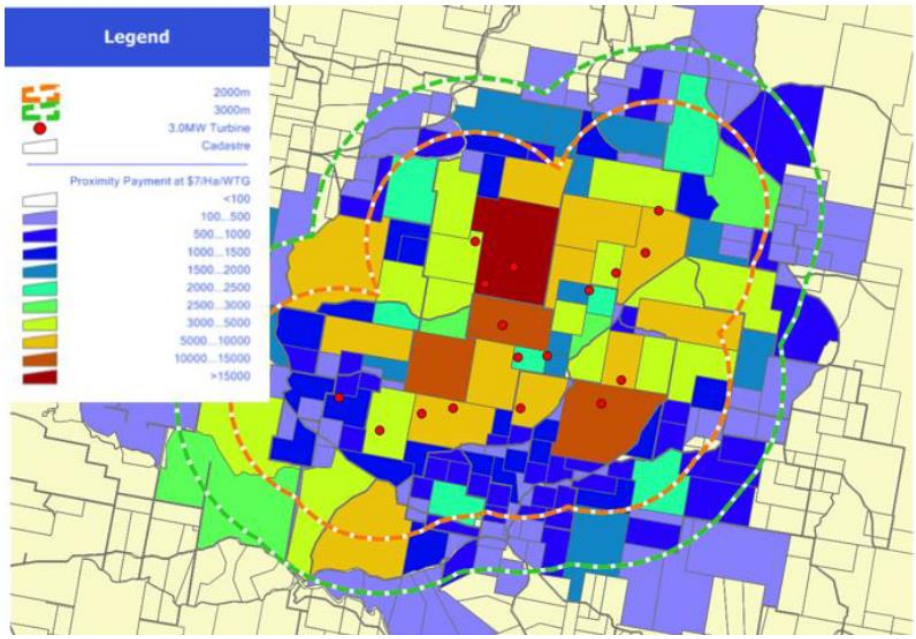
This scenario calculates the distribution of rent paid to landowners who own land within 3km of turbines. Again, following the two steps:

Step 1: The number of turbines within 3km for each hectare of land is calculated. This is shown in Figure 6. The map reveals that some hectares of land have up to 15 turbines within 3km (depicted in red shading), whereas some hectares of land have only one turbine within 3km (depicted in light purple shading).

Step 2: The total proximity payment for each title is calculated. This is done by adding together the payments for each of the hectares in the title. The payment for each hectare is the number of turbines within 3km (from step 1) multiplied by the (assumed) rate of $7 per Ha per turbine within 3Km.

Note that, for a proximity circle of 2km, the total area eligible for proximity payments is 1,257Ha, whilst a circle of 3km generates over double the area, at 2,827Ha. This either dilutes the rents or pushes up the cost of the scheme, or both. Even though the rate per turbine/hectare/year was reduced from $12 to $7 to help take this into account, it still results in a far more expensive scheme.

Figure 6: Scenario 2 (Hypothetical), 3km proximity radius, by title. Note that foundation rent is not included and would add to the total rent for those titles with turbines.



The proximity rent model generally has the following strengths:

- Conceptually simple and expressed in common terminology ($ per hectare). It is therefore easy to communicate to stakeholders
- Has low administrative overheads when compared to other schemes
- Money is distributed according to a profile that benefits those closest to turbines
- Asks for no financial contribution from the community
- The model scales well and is equally effective for larger and smaller wind farms
- There is potential to enhance land values of properties neighbouring turbines
- The 'foundation rent' is a bilateral contract and it is reasonable that this be a confidential lease. However, the proximity rent applies to all landholders, including those with turbines, with a known formula that is negotiated with the eligible landholders (preferably as a group). This minimises community division, which is a particularly negative side effect of landowner lease payments.

Possible weaknesses of the proximity rent model include:

- Despite being based on a very simple concept, the actual calculation of proximity rent requires a geographical information services (GIS) package and a team member who can run the GIS model.
- Can be incorrectly interpreted as being compensation. However, the model simply aims to distribute the available rent in a manner that is fairer than the situation presented in Figure 3. It does not validate claims of excessive impact, nor does it attempt to equate rent to real or perceived impacts.
- Those outside the radius may feel disappointed.

4. Community co-ownership

4. Community co-ownership

Community ownership of renewable energy schemes such as wind farms is prevalent in many European countries such as Denmark, Germany and to a lesser extent the United Kingdom. Denmark, a world leader in wind energy, has broad community support, as evidenced by the 175,000 households (as of 2001) who are members of wind co-operatives and over 80 per cent of all turbines that are owned by co-operatives.[50] The story is similar in Germany, where 51 per cent of renewable energy generation was owned by communities as at 2012.[51]

Despite its prevalence in Europe, community co-ownership of wind farms is not common in Australia, with only three local examples: Hepburn Wind (Victoria); Coonooer Bridge (Victoria); and Denmark (a town in Western Australia). Whilst there is no stated reason for the low uptake of community co-ownership in Australia, studies from Scotland suggest political, cultural and financial factors are often barriers to widespread adoption. In Australia this includes:[52,53]

- Limited or no regulatory requirements on wind developers to include community ownership in projects
- Less cultural familiarity with community ownership models by developers
- Availability of skills and resources to empower communities to act
- Higher entry costs for establishing wind developments
- Fewer options for accessing alternative financiers such as co-operative banks.

The key feature of community co-ownership is that community members have a significant, direct financial stake in the project as well as a seat at the table in the decision making process about the wind farm, not just how funds will be spent in the community. This helps to empower communities, build their resilience and provide an additional source of income.[54]

In considering community co-ownership there are two key factors to consider:

1. Ownership – including individual landowner or community organisation in partnership with developer or wholly community owned
2. Legal structure – including a trust, co-operative or company.

4.1 Ownership models

There are three main community ownership models implemented globally:

1. Individual landowner co-investment in partnership with developer
2. Community organisation co-investment in partnership with developer
3. Wholly community owned.

[50] M Mendonca et al, "Stability, participation and transparency in renewable energy policy: Lessons from Denmark and the United States, *Policy and Society* 27, 2009
[51] A Schreuer, "Energy Cooperatives and local ownership in the field of renewable energy: Country Cases Austria and Germany", RiCC Research report 2012
[52] J Butler & P Doherty op. cit.
[53] Centre for Sustainable Energy & Garrad Hassan, Community Benefits from Wind Power: Report to the Renewable Advisory Board, 2005b
[54] J Hicks et al, op. cit.

4.1.1 Individual co-investment

Individual co-investment is a common BSM implemented in the UK. Typically, the project is operated by a large commercial wind developer and individuals buy shares in the project. Shareholders are paid an annual dividend from the profits of selling electricity, usually a percentage of the installed capacity of the wind development or sometimes an equity share in the wind developer. Depending on the legal structure (section 5.2), shares may be offered to landowners within proximity to the wind development or it can be opened up to the broader community. Coonooer Bridge is an Australian example which incorporated an individual co-investment model.

Individual co-investment case study: Coonooer Bridge Wind Farm

Coonooer Bridge Wind Farm is a small energy project that has been approved north-west of Bendigo, Victoria. The development is co-owned by Windlab Systems, an Australian-owned renewable energy company, and the local community, with approximately 30 landowners involved. The development consists of five turbines with a total generating capacity of 18MW. It was approved in June 2013.

Windlab used the principles of building a social licence to operate to inform the consultation and planning process at Coonooer, believing that building trust and a shared understanding of community benefits would result in a better outcome for both the planning process and community cohesion.

The Coonooer Bridge wind farm combines community co-ownership with a rent proximity model. Landowners within a 3km radius of a turbine receive an equity share per hectare based on the distance to a turbine. To fund this equity, landowners agreed to take smaller lease payments and the developer agreed to smaller profits.

In addition to community ownership, there is a small community enhancement fund available, providing up to $15,000 each year for suitable community projects.

From the outset, the consultation process was an open and transparent discussion about calculating payments for landowners within the 3km proximity, rather than a closed door negation with landowners who host turbines. As a result, the final arrangement was seen to be a fair outcome. Even landowners who didn't want the development agree that the process of planning and consultation was done well[55]. Not only do landowners receive a dividend, they also have ownership and a seat at the table in the decision making process about the wind farm.

4.1.2 Community organisation co-investment

In this instance the project is operated by a large commercial wind developer and a community organisation buys shares in the project. They may own a specific turbine, whereby all the profits from the turbine are provided to the community owners, or the community may own shares in the whole project and receive a dividend based on the performance of the wind development each year.

Alternatively, the community-owned organisation may invest in and operate an individual turbine that is part of a broader wind farm development. The community organisation provides funding for the capital costs of a specific turbine and the wind developer includes the turbine in the planning and construction of a larger project, and will typically operate the turbine on behalf of the community organisation.

An example of this in a utility-scale development is the Middelgrunden wind farm, a near-shore development in Denmark. The planning and construction phase of the farm was led by the developer, and upon commission, the community organisation took control of ten turbines which are operated and maintained independently of the ten turbines retained by the developer[56]. In Australia, this

[55] Green, M. (2013). Wind Farms may be more acceptable in Victoria in Sydney Morning Herald, December 19 2013
[56] Middelgrunden Wind Cooperative, *About the Wind Farm*

ownership model can be complicated for communities due to the significant administrative resources required.

To overcome this challenge, a community co-operative may choose to own a percentage of the revenue stream. This can be seen in the case study of Flyers Creek in NSW and the Fintry Wind Farm, where the Fintry Community Trust is entitled to 1/15th of the revenue stream from the development after contributing the capital costs for one of the 15 turbines (see the case study for further details).

This model is seen as beneficial for several reasons. First, the complicated legal implications of turbine ownership are negated. Second, it distributes the risks and benefits of individual turbine performance evenly between the community and the developer. Further, while a small risk, it negates the possibility of the community-owned turbine underperforming due to manufacturing faults. Third, it fosters amongst the community a broader appreciation of the development as a whole.

4.1.3 Wholly community owned

A wind farm wholly owned by a community provides the community with full control over the planning, construction and operation of the wind farm as well as the profits. However, full ownership can be difficult for communities to achieve, given the significant financial resources required to fund the project. Finding a financial institution willing to provide debt finance to sometimes ill-equipped and inexperienced communities can be problematic, as can the level of community input required at all stages of the project from planning to decommissioning. The higher risk of the project is offset by the potentially higher returns to the community, which contribute to the socio- economic development of the local area.

These challenges are significant barriers to entry for many communities and mean many wholly owned community wind farms are small (one to ten turbines). Hepburn Wind[57] in Central Victoria is Australia's first community-owned wind farm to overcome these challenges, with nearly two thousand co-operative members raising almost $10 million in capital. With the help of Bendigo & Adelaide Bank and a grant from Sustainability Victoria Regional Development, the community of Hepburn was able to raise enough capital to establish a co-operative business – wholly owned by the community for the benefit of the community through dividends and a community fund. However, the project comprises only two turbines.

[57] Hepburn Wind, About Hepburn Wind

Community co-ownership case study: Fintry development Trust

Fintry is a small rural community in Scotland of just over 300 households, experiencing rural decline due to a lack of employment opportunities and high costs of living. In 2003, a community organisation called Fintry Renewable Energy Enterprise (FREE) had been tasked with alleviating the fuel poverty, which was experienced by at least half of the community. They were in the process of investigating different renewable options, when Falck Renewables Designs (builder and operates of wind farms in the UK, France and Italy) approached the community about a potential 14-turbine development. After consultation with the community, Falck and FREE proposed building an additional turbine through which the community could enter into a co-ownership structure.

Ownership

During consultation with Falck, the community explored various benefit sharing options, and concluded that community ownership offered the best opportunity for the community. They developed a proposal with Falck to expand the development to include an additional turbine, to be owned by the community through the Fintry Development Trust (FDT), who would provide the capital for the additional turbine.

Funding

After exploring various funding options, the developer offered to provide FDT with the capital under a mortgage-like loan arrangement. The capital cost of the turbine was £2,536,000, with a repayment period of 15 years. After further consultation it was agreed that, rather than owning the individual turbine, the capital investment by FDT would be used to purchase a share of the revenue stream, representing 1/15th of the development. This income, minus the loan repayment, goes directly to the trust. Currently the trust's annual income, once the loan and maintenance costs have been paid, is around £50K. This will rise to £400K once the loan has been paid off.

The onus of gaining planning permission for the additional turbine was on FDT, and the costs for the project for FDT were in the region of £15,000, covering the legal, financial and contractual costs. Finance to cover this cost was sourced from the Lottery's 'Awards for All' programme, as well as a grant from the Energy Savings Trust.

Benefits to the local community

The FDT has used the income stream to address issues of fuel poverty in the village, and has run specific projects such as:

- Providing free insulation for all homes that are structurally suitable, with 50 per cent of structures upgraded in the first year
- Providing free energy consultation – the FDT provides advice to residents and assists them with financial modelling to assess alternative heating options
- Subsidising energy efficient heating systems to the amount of £500 per household
- Establishment of local car-share fleet (including an electric vehicle) as the village has no access to public transport

This has resulted in an annual savings of £90,000 from energy efficiency projects and jobs for local tradesmen for installations and commissioning.

4.2 Legal structure

There are four main legal structures most suitable to community-owned renewable energy projects in Australia[58], briefly described below. Professional legal advice is required to further identify the most appropriate legal structure for co-ownership of wind farms. The Community Power Agency also provides a high-level analysis of legal models for community ownership of wind farms.[59]

- **Partnership**: An association of no more than 20 people or entities running a business together, but not as a profit-oriented company.
- **Trust**: Unlike a company, a trust is not a separate legal entity. Trusts are often used in connection with running a business for the benefit of others. A trust is a structure where a trustee (an individual or company) carries out the business on behalf of the members (or beneficiaries) of the trust.
- **Company:** A legal entity separate from its shareholders. A company is a separate legal entity capable of holding assets in its own name and conducting business in its own right. A company can also sue and be sued. Shareholders own the company while directors run the company. In many cases company directors are also shareholders, along with company employees.
- **Co-operative**: A member-owned business organisation with at least five shareholders, all of whom have equal voting rights regardless of their level of involvement or investment, although every member is expected to help run the co-operative. This option is explored in further detail below.

4.2.1 Co-operatives

In Denmark, Scotland and Germany the co-operative structure has proven successful in generating community ownership and improving the distribution of benefits.

A co-operative is '*an organisation which wholly or in part delivers public services through a cooperative or mutual governance structure, whereby members of the organisation are able to be involved in decision-making, and benefit from its activities, including benefits emanating from the reinvestment of surpluses*.'[60]

There are three types of co-operatives:

1. **Consumer or community owned**: Consumer- or community-owned co-operatives work best where people with a common sense of purpose collaborate towards agreed goals. Consumer co-operatives can be ideal for disadvantaged groups where there is the energy, commitment and expertise in their community to tackle problems.
2. **Employee owned**: These co-operatives work best with employees who share a common goal and have the skills to co-operate. They provide staff with autonomy and the ability to make judgements as to how to provide the best service at the local level. They free staff to act entrepreneurially and to innovate.
3. **Enterprise owned**: Enterprise co-operatives can support smaller local providers to compete by enabling them to share corporate functions including bulk purchasing, accounting, HR, marketing, client software and OH&S services. Enterprise co-operatives can assist smaller and specialist organisations to increase productivity and market power whilst retaining local input and local jobs.

The type of co-operative structure will depend on who the members are. In the case of developing wind farms, all three co-operative structures can be adopted depending on whether the members are the community, employees or landowners. Whilst consumer- or community-owned co-operative structures are most commonly used in Denmark, in Scotland innovative enterprise co-operatives are also common.

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[58] Hicks, J et al (2014). Op. cit
[59] ibid
[60] EY Management Group (2014) *Public Service Mutuals: The case for a Third-way for delivering public services in Australia*. Report for the Business Council of Co-operatives and Mutuals and the Australian Public Service Mutual Task Force Green Paper

The benefits of a co-operative structure

There are three key aspects of a community-owned co-operative which set them apart from not-for-profit or for-profit organisations and enable them to deliver benefits for members and the community:

- **Member engagement**: A key principle for a co-operative is member engagement and autonomy, which is achieved through member ownership and involvement in decision making and results in high levels of engagement and satisfaction. A co-operative requires that members actively participate in or support the primary activity of the co-operative, which can means attending annual general meetings, procuring generated electricity, subscribing to member newsletters, or participating in energy savings programs.[61]
- **Re-invest profit:** As a member-owned organisation, profits are re-invested back into the business to improve operations, dividends may be provided to members, or profits are saved to fund future growth and expenses. In the case of a community-owned co-operative, this means that profits are re-invested back into the local community for community benefit. This creates a local multiplier effect, helping to improve the economic development and resilience of the local community. Less money leaves the community to pay for corporate shareholder dividends.
- **The** Co-operative Principles: Co-operatives must be registered under the Co-operatives Act in each state and abide by the International Co-operative Principles such as economic member participation, democratic member control, concern for the community and education and training. These principles provide robust building blocks for establishing and operating a community-owned co-operative wind farm.

While less common in Australia than Europe, there are some case studies of co-operative ownership of wind farms. The Hepburn Wind project in Victoria is an example of a community co-operative ownership structure for a wind farm in operation, with 100 per cent ownership of the two turbines. There are over 1900 members of the co-operative, each with an equal vote. To ensure that the co-operative represents the interests of the local community, majority ownership is maintained by members who identify as local.[62]

Another example is the Central NSW Renewable Energy Cooperative Ltd. (CENREC), which was created in 2012 to facilitate a community purchase of one of 40 wind turbines in the proposed Flyers Creek Wind Farm.

Co-operative structures are common in Denmark, with over 75 per cent of all turbines owned by co-operatives.[63] There is a long history of co-operatives in Denmark from agriculture to retail to infrastructure. The support for co-operative involvement in wind farms dates back to the 1980s when investment subsidies were provided to local co-operatives.[64]

After trialling a community trust ownership model at one of their first development sites in Fintry, Scotland, Falck Renewables committed to supporting community co-ownership in all future developments. Since Fintry, the preferred form of ownership structure has been a co-operative structure whereby the community co-invests with Falck Renewables and other investors to develop a wind farm.

The benefit of a co-operative ownership structure is that the community is able to invest as much as they are able to fund, but still retain a level of ownership and role in decision making. For Falck Renewables, the co-operative co-ownership structure enables them to have open and trusted discussion with the community, as co-owners of the development, and in the process build local support and fast-track planning approvals. It also contributes to improving their social licence to grow – an important consideration for the future value of the company to shareholders.

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[61] Hicks, J. (2014) et al, Op. cit
[62] Hepburn Wind, op. cit
[63] Loring, J. (2006). Wind energy planning in England, Wales and Denmark: Factors influencing project success, Energy Policy, 35.
[64] Buen, J. (2005). Danish and Norwegian wind industry: The relationship between policy instruments, innovation and diffusion, Energy Policy, Volume 34, Issue 18

Co-operative case study: Falck Renewables and co-operative ownership

Active across Europe and the UK with approximately 620MW installed capacity from wind turbines, Falck Renewables designs, builds and operates farms in the UK, France and Italy.

In the European wind industry, Falck has taken a leadership role in engaging communities in development projects, and consulting with stakeholders to develop new models of benefit sharing. To achieve this on a broad scale, Falck has engaged with not-for-profit organisation Energy4All who assists communities at each Falck development to invest in the wind farms. Falck are the only developer in the UK to adopt this approach systematically across their portfolio.[65]

Working with Energy4All, Falck has committed to establishing community co-operatives at each new development in Scotland. The co-operatives give local people the opportunity to own a stake in the turbines from as little as £250. The returns on investment are attractive and the initial investment is repaid in full. The first co-operative was at Boyndie in Aberdeenshire, and is considered the first wind co-operative in Scotland. The same model was followed for the wind farms at Kilbraur in Sutherland, Ben Aketil on Skye and Millennium near Inverness. There are currently 2,500 investors in the four co-operatives who have invested over £5 million in total. Further co-operatives have been established and are in the process of fundraising to invest in Falck developments that are in the planning or construction phases[66].

Following the success of the Fintry development, the co-operative owns a stake in the net income rather than equity in the wind farm. The projected average return over the life of the projects is 10.25 per cent per annum, with a minimum return of 6.5 per cent guaranteed by Falck. For example, the Boyndie Wind Farm Co-operative made a payment of 10.3 per cent to members in 2008, and the Skye Co-op made its first annual payment of 9.2 per cent in 2009. [67] The Kilbraur Wind Energy Co-operative made payments of 6.7 per cent in 2010, and in 2011 there were two payments of 9.1 per cent and 13.9 per cent before any after-extension payments[68]. After the extension, they made payments of 8.6 per cent and 9.5 per cent in 2012 and 2013 respectively[69].

The ability to trade and sell shares is limited, so capital is relatively tied up until the end of the project life (25 years), when the capital is returned.

Appendix C, provides an outline of the wind farms Falck Renewables is involved in.

[65] Falck Renewables (2013), FKR Community relationships in the UK
[66] ibid
[67] Energy4All, Clean, green energy – let's cooperate
[68] Kilbraur Energy Co-operative Ltd (2012). Annual Report, AGM notification and Summary Financial Statements for year ended 31st December 2011
[69] Kilbraur Energy Co-operative Ltd (2014). Annual Report, AGM notification and Summary Financial Statements for year ended 31st December 2013

Co-operative case study: Allt Dearg and Srondoire community wind farms

The Allt Dearg Community Wind Farm in Scotland is a 12-turbine development with a generation capacity of 10.2MW and features local and community ownership, through a partnership with an energy developer and commercial equity partners.

In 2007, a developer proposed a large-scale wind development on the two estates near the community of Allt Dearg. However, planning permission was denied, partially on the grounds of community opposition.[70]

Ownership

The two major landowners, Ormsary Estate and Stronachullin Estate, partnered with Lomond Energy to identify a suitable site on their estates and develop a proposal that was acceptable to the local community. To engage the community in the development, the Ardrishaig Community Trust was invited to buy into the ownership structure. Two equity partners were also invited into the ownership structure to invest and provide commercial management (Figure 8).

Funding

The Ardrishaig Community Trust's trading subsidiary – Ardrishaig Renewable Energies Ltd (ARE Ltd – received £300,000 in loans from the Co-Operative Bank, which they invested in the project to secure a 1/12th equity share. The share was costed at 1/12th of the projected build price, which was a significant discount from the market value. The non-recourse loan is fully secured against the wind farm, and there is limited risk to the Trust.

'One individual within the Trust was the agreed point of contact for the community and the existing organisation was an excellent vehicle to progress initial discussions. The enthusiasm and resolve within the community was essential to the project's success, and the amount of hard work and time required should not be underestimated. Having a passionate and committed volunteer resource allowed the group to become an active partner in the project rather than a passive beneficiary of community benefit payments'[71].

Benefits to the local community

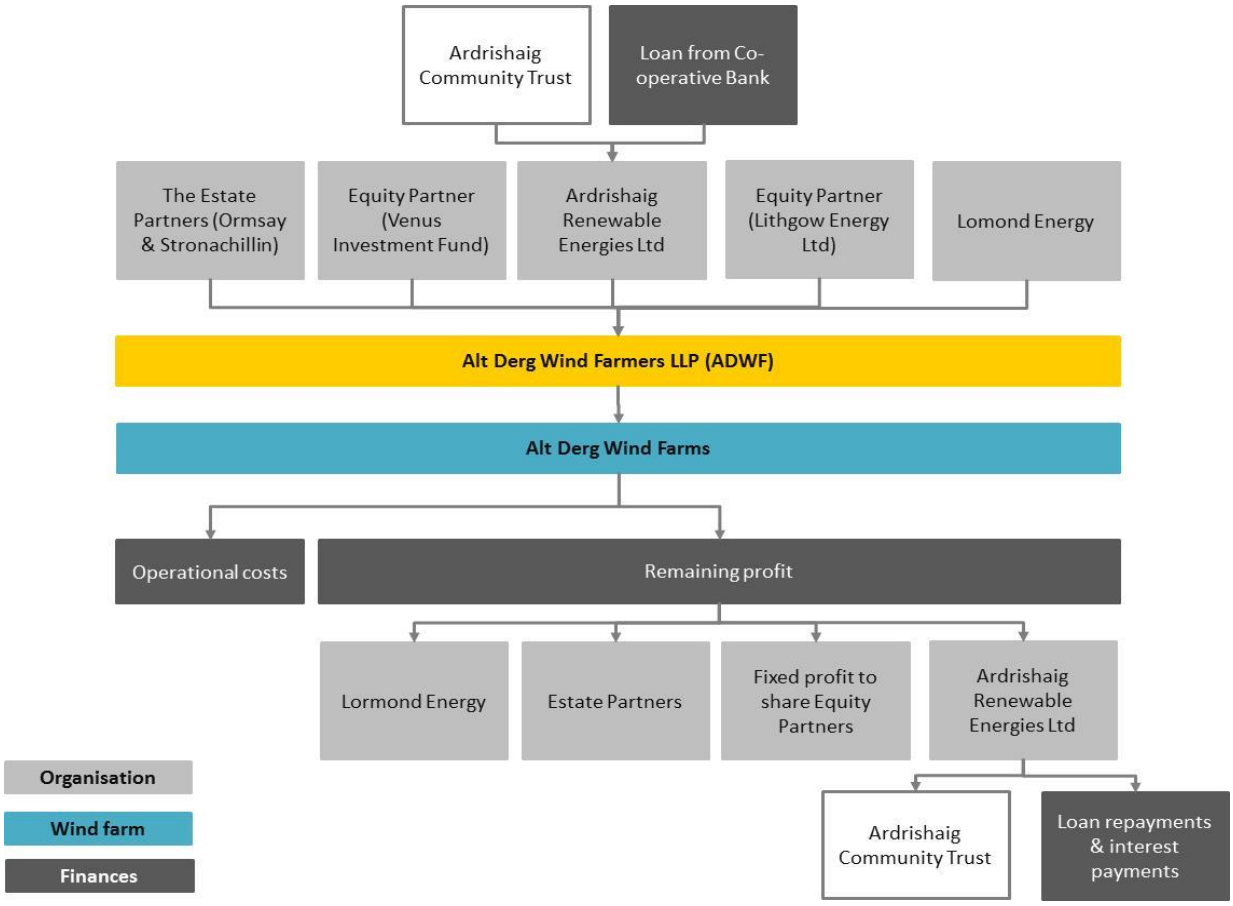
Allt Dearg Community Wind Farm now underpins a sustainable future for this rural community and also delivers a wider local benefit to the Ardrishaig Community through its share of the project.

- The wind farm sells £4 million in electricity per year, with approximately 85 per cent of economic benefit retained in the local economy. In 2013 the trust received an income of £130,000, which is approximately £13,000 per MW. This is in contrast to community enhancement, which generally delivers £2,000–£5,000 per MW in Scotland.
- The wind farm contributes £30,000 each year to the Allt Dearg Educational Trust, which will support higher education for young people in the area.

Local control meant that local jobs were maximised through the construction phase and ongoing operational support, with approximately £3 million spent in the local economy during the construction phase.[72]

[70] Lomond Energy, 'Allt Dearg Community Wind Farm', viewed August 2014, http://www.lomondenergy.co.uk/projects/projects-overview/allt-dearg.html
[71] Local Energy Scotland, op. cit.
[72] Scottish Land & Estates (2014). *Spring Conference 2014: Presentation by James Lithgow*, uploaded May 7 2014

Figure 7: Ownership structure of Allt Dearg Community Wind Farm[73]



[73] Scottish Land & Estates (2014). *Spring Conference 2014: Presentation by James Lithgow*, uploaded May 7 2014

5. Potential application of benefit sharing mechanisms in NSW

5. Potential application of benefit sharing mechanisms in NSW

Benefit sharing mechanisms (BSMs) are a key way to build a positive relationship with communities, gain acceptance of wind farms and provide financial benefits. NSW currently has a limited number of different BSMs implemented, with community enhancement funds and landowner lease payments the most common. However, a small number of developers are trialling different mechanisms, such as Flyers Creek Co-op, where the local community has entered into a joint venture with the wind developer to own one wind turbine within the development.

This report demonstrates that there are a number of other BSM alternatives available for developers to potentially use in building community acceptance and empowerment, as well as the broader distribution of the financial benefits to build longer-term economic outcomes for the community.

Each BSM can be implemented on its own or in combination with a number of other BSMs. The suite of BSMs implemented in wind farms is best developed in collaboration with the local community to meet the needs of landowners and the community. Each community's needs and aspirations will be different.

In selecting the right suite of BSMs, communities and individuals need to consider the level of risk they wish to accept and the level of resources – financial, time and people – they can commit. Mechanisms which require co-ownership and a financial commitment from landowners and/or community have the potential to increase the acceptance, 'buy-in' and sense of ownership of the wind farm.

There are also valuable benefits to developers from implementing BSMs. By increasing the distribution of financial benefits to communities in close proximity to wind farms and collaborating with communities and landowners in decision making, the level of community acceptance is likely to increase. By gaining more community support and buy-in for the project, this may help to reduce the length of time required to gain planning approval. In some cases this may potentially shorten the project planning and development consent phase, reducing the overall project costs..

To implement BSMs in NSW there is a range of potential enablers that need to be considered by government and developers. These are discussed below.

5.1 Inclusion in policy and planning

There is no regulatory requirement in NSW, or in other parts of Australia, for developers to provide payments or financial considerations to communities with wind farms. BSMs are also not included in the *Draft Planning Guidelines for Wind Farms,* which focus on mitigating the environmental and noise impact of developments.

This position is similar to Scotland. The UK planning system mandates that applications be considered on an individual basis, with no consideration given to community benefit. The key advantage of this approach is the flexibility it enables developers and communities to co-create BSMs to meet their joint needs.

In Denmark, there is no separation between planning regulations and BSMs. Historically, BSMs have been built into the development process through the *Danish Renewables Energy Act (2009),* which requires developers to offer a minimum of 20 per cent ownership to local communities within 4.5km of the development. To overcome the large capital outlay by communities, Denmark also provides tax incentives and feed-in tariffs which help further support community ownership.

To increase the range of BSMs implemented in NSW and the level of community acceptance, the Government would need to consider the costs and benefits of including BSMs within the planning regulations or *Draft Planning Guidelines for Wind Farms.* The costs and benefits of providing incentives to communities and/or developers will also need to be assessed.

5.2 Community consultation

BSMs implemented on their own without transparent and genuine community consultation early in the planning process, are unlikely to achieve their full potential. Research by CSIRO demonstrates that the social licence to operate granted by communities to wind farm developers is dependent on two key requirements: trust building, and positive benefit through sharing of financial benefits.[74] Trust is developed between a developer and a community through an open and authentic process, which demonstrates understanding and provides communities with a role in making decisions which affect their lives. Trust needs to be continually nurtured and earned throughout the project lifecycle to maintain community acceptance.

For community ownership mechanisms, communities may also require:

- **Access to information**: many communities may not be aware of the different options available to invest in local wind developments and the benefits of doing so
- **Access to knowledge and assistance**: community co-ownership options can require specialist skills such as legal, planning, governance, accounting and finance in helping to establish and operate developments
- **Access to finance**: access to capital with reasonable terms from financial institutions and government.

5.3 Financial impact

In considering the expansion of BSMs to assist community acceptance of wind farms, the potential financial impact on wind farm viability must be considered. Care must be taken to manage community expectations. BSMs may not result in larger financial benefits, but rather the broader distribution of benefits amongst the community members. In the case where individual landowners and community members invest in a wind development, the financial rewards may be more significant, but this carries a higher risk and requires a larger financial commitment as an investor.

[74] Hall, P. Ashworth, N. & Shaw, H. (2012, op. cit

6. References

6. References

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Appendices

Appendix A – Proposed wind developments in NSW

Appendix A presents the proposed wind developments in NSW[75]. As of September 2014, there are 27 wind developments either proposed or in construction for NSW larger than 30MW installed capacity with a combined minimum installed capacity of 7228 MW.

Table 4: proposed wind development in NSW

Wind Farm	Location	Owner	Capacity MW (low)	Capacity MW (High)
Boco Rock (under construction)	Monaro	Wind Prospect CWP	270	270
Bodangora Wind Farm	Wellington	Bodangora Wind Farm Pty Ltd	60	110
Capital II Wind Farm	Tarago	Capital II Wind	60	80
Conroy's Gap Wind Farm	Yass	Epuron	30	30
Crookwell II (under construction)	Southern Highlands	Union Fenosa	92	92
Flyers Creek	Orange	Infigen Energy	80	100
Glen Innes	Glen Innes	Babcock & Brown / National Power	81	81
Gullen Range (under construction)	Goulburn	Epuron subsidiary	241	241
Kyoto Energy Park	Upper Hunter	Pamada	102	102
Sapphire Wind Farm	Glen Innes/Inverell	Wind Prospect CWP	319	319
Silverton Wind Farm	Broken Hill	Epuron	1000	1000
Taralga Wind Farm (under construction)	Taralga	RES Southern Cross	183	183
White Rock Wind Farm	Glen Innes	Epuron	120	340
Bango Wind Farm	Yass/Boorowa	Wind Prospect CWP	340	340
Bialla Wind Farm	Crookwell	Newtricity	160	160

[75] NSW Trade and Investment, *Electricity Generation*.

Wind Farm	Location	Owner	Capacity MW (low)	Capacity MW (High)
Collector Wind Farm	Collector	Transfield Services	120	160
Crookwell 3	Southern Highlands	Union Fenosa	45	116
Crudine Ridge Wind Farm	Bathurst	Crudine Ridge Wind Farm Pty Ltd	105	374
Jupiter Wind Farm	Tarago	EPYC	250	250
Liverpool Range Wind Farm	New England	Epuron	1800	1800
Paling Yards Wind Farm	Arkstone	Union Fenosa	100	180
Rugby Wind Farm	Yass	Suzlon Energy and Wind Lab Dev	290	290
Rye Park Wind Farm	Yass	Epuron	120	374
Uungula Wind farm	Wellington	Wind Prospect CWP	800	800
Woolbrook Wind Farm	Tamworth	Newtricity	80	80
Yass	Yass	Epuron	380	380
Total Capacity			17539	18724
Total Wind			7228	8252
Percentage of Total Energy Dev.			**41%**	**44%**

Appendix B – Impact of Proximity Rent Model on Energy Costs

In this section, the impacts that the proximity rent model has on the cost of energy is illustrated using a typical Australian 3MW turbine producing 11,000 MWh of energy per year.

The first scenario is business as usual, with an assumed rent of $15,000 per turbine paid to the landlord. The second scenario assumes a foundation rent of $7,000 per turbine and a proximity rent of $12/Ha paid within a 2000m radius, which gives a total rent of $22,000 per turbine. The third scenario (C) is $7/Ha paid within a 3,000m radius, which gives a total rent of $27,000 per turbine. Table 1 sets out the cost per MWh of each of these three scenarios.

Table 5: Incremental cost of Proximity Rent model

Scenario	Business as Usual	Rent Proximity 2km radius	Rent Proximity 3km radius
Rent Costs per turbine	$15,000	$22,000	$27,000
Typical production per annum (MWh)	11,000	11,000	11,000
Cost of Energy $/MWh contribution	$1.36	$2.00	$2.45
Cost of Energy $/MWh increment over business as usual		$0.64	$1.09

A typical wind farm will have a cost of energy in the range of $70-80 MWh. The RET is a highly competitive 'market mechanism' and this causes resistance to measures which increase the cost of energy. However it can be seen that the economics are not highly sensitive to the increased rents. Moving to a proximity rent model costs between $0.64 - $1.09 /MWh for the scenarios discussed here, or around 1%.

It is conceivable that some or all of this cost can be recovered by reductions in the length and complexity of the planning process. A strongly contested development inevitably takes longer and the buyers of the renewable energy may value the association with a more positive development and be prepared to pay a small premium for this.

Appendix C – Falck Renewables co-operative wind investments

Falck has committed to establishing co-operatives in all new developments. Some co-operatives have been established but are either in the process of raising capital or the wind farm development is not yet operational. Below is an outline of the co-operatives tied to wind farms that are already operational.[76]

Table 6: Wind Farm Co-operatives with interest in Falck Developmentsas at July 2014

Development	Year	Size	Cooperative	Membership size	Other community benefits
Boyndie	2006	8 Turbines 16.5 MW	Boyndie Wind Farm Co-operative	722 members invested £750.000	► £14,000pa for community enhancement ► Habitat enhancement
Millennium	2008	26 Turbines 65 MW	Great Glen Energy Co-op	673 members initially invested £1,288,270	► £100,000pa for community enhancement ► Environmental Protection
Ben Aketil Wind Farm	2007	12 Turbines 27.5MW	Isle of Skye Renewables Co-operative	584 members initially invested £812,137	► £35,000pa for community enhancement ► Ongoing bird monitoring in consultation with Scottish Natural Heritage.
Kilbraur	2008	27 Turbines 67.5MW	Kilbraur Wind Energy Co-op	Unknown number invested an initial £1,043,900	► £95,000pa for community enhancement ► Conservation management plan of 8,000ha area with habitat enhancement and restoration

[76] http://www.energy4all.co.uk, http://www.boyndie.coop , http://www.greatglen.coop , http://www.skye.coop, http://www.kilbraur.coop/

Appendix D – Summary of the PESTAL conditions for wind developments globally

Appendix D provides a high level summary of the political, economic, social, environmental and technological conditions for developments in Denmark, USA and Scotland, which each have significant wind developments and different benefit sharing mechanisms in place.

Table 7: An overview of the wind development context in Denmark

Denmark

Policy & Legislation	► Long history of government support for development – e.g. committing to 100mw of installed capacity by 1992[77] ► *Danish Renewable Energy Act (2009)* imposes an obligation to offer a minimum of 20 per cent ownership to local inhabitants (defined as within 4.5km)[78] ► Government plans to have 50 per cent of energy supply from wind by 2020[79] (At 33 per cent in 2012) ► Significant government investment in renewables and decentralised energy[80] – e.g. sponsoring Sanso island to become energy independent
Economic	► Tax incentives – Individual owners receive up to 7,000 kwh tax free[81] ► Feed-in tariff structure heavily subsidises[82] ► Long-term energy-environmental objectives, with focus on energy (in)dependence[83] ► Wind industry is major component of Denmark's exports
Social	► Broad social acceptance ► A large proportion of the public are members of wind turbine co-ops, owning approx. 80 per cent of national installation. (175,000 households in 2001)[84] ► Cultural familiarity with co-operatives ► Community support for climate change action and renewable energy
Technology	► *Denmark* has played a pioneering role in wind energy and technology[85] ► Home to two of the world's largest producers of technology – Vestas and Siemens Wind Power
Environment	► Modest/average wind speeds onshore ► Very good near shore wind resources at shallow water depth

[77] J Buen, "Danish and Norwegian wind industry: The relationship between policy instruments, innovation and diffusion" 2005
[78] Rebel Group Advisory, 2011 op. cit.
[79] Danish Wind Industry Association, "Wind Energy", in *The official site of Denmark*, viewed October 2014
[80] J Lipp, "Lessons for effective renewable electricity policy from Denmark, Germany and the United Kingdom", *Energy Policy* 35, 2007
[81] ibid
[82] J Buen op. cit.
[83] ibid
[84] M Mendonca et al, "Stability, participation and transparency in renewable energy policy: Lessons from Denmark and the United States, *Policy and Society* 27, 2009
[85] J Lipp Op. Cit.

Table 8: An overview of the wind development context in Scotland, UK.

Scotland

Policy & Legislation	► UK – Renewable Obligation implemented in 2002 – similar to RET. Current policy is 15 per cent renewable energy by 2020. Proposed market reform on the table [86] ► Scottish Executive – introduced a target to deliver 100 per cent renewable electricity by 2020 with 500 MW community and locally-owned renewable energy[87]
Economic	► Renewable obligations subject to market reform. Proposed to be replaced with a feed-in tariff system ► Renewable Obligations Certificates act as subsidies to wind farms ► Capital input has increased significantly in past years due to an increase in the cost of raw materials and a poor exchange rate
Social	► High level of community support for renewable energy and wind farms BUT strong localised community opposition to developments ► Broad social support for action on climate change
Technology	► Major grid constraints – significant investment required into infrastructure and regulation to enable achieving renewable energy target ► Fastest growing renewable energy technology in Scotland
Environment	► UK – 7,534 megawatts of onshore capacity and 3,653 megawatts of offshore capacity (as at October 2014)[88] ► Scotland has the best offshore wind resources in Europe ► Much of Scotland's wind resources are in rural/remote areas

[86] Department of Energy & Climate, "Policy: Increasing the use of low-carbon technology" in *gov.uk*, 3 October 2014, viewed 15th October 2015 https://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/the-renewables-obligation-ro

[87] The Scottish Government, "Action on energy in Scotland", in The Scottish Government, December 30 2013, viewed October 201, http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Action

[88] Renewables UK, "UK Wind Energy Database (UKWED)" in RenerableUK: The voice of wind & marine energy, viewed 15th October 2014, http://www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/index.cfm

Table 9: An overview of the wind development context in Texas, USA.

USA – Texas

Policy & Legislation	► National goal of 20 per cent wind energy by 2030[89] ► The individual State RPS or Renewable Electricity Standards have been developed by 30 States. The average of these State RPS targets is to supply up to about 20 per cent of total power consumed from renewable power by 2020[90] ► Texas RPS established 1999, extended in 2006 to 5,880 MW of electricity from renewable energy sources by 2015 and goal of 10,000 MW by 2025[91]
Economic	► Renewable power generation capacity has been supported by a number of Government policies and subsidies ► Federal Renewable Energy Production Tax Credit (PTC) and State Renewable Portfolio Standards (RPS) ► Lack of trained workforce ► Concept of "Owning the wind" – land lease payments ► Uncertainty of extension to the Production Tax Credit (PTC) Renewable Power subsidies (was scheduled to expire Dec. 31, 2013)
Social	► Cultural familiarity with electric co-operatives ► Organised pushback in some states ► Low levels of public acceptance in some states ► Pro-wind environmentalists in some states ► Public issues with wildlife i.e. bats and birds and siting
Technology	► Interstate barriers such as transmission ► Maintaining an adequate supply chain ► Utility integration
Environment	► Offshore wind industry has enormous potential but faces significant permitting and financial challenges ► Siting problems such as zoning, permitting and environmental issues

[89] U.S Department of Energy, "20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply" in *Office of Energy Efficiency & Renewable Energy*, viewed 15th October 2014, http://energy.gov/eere/wind/20-wind-energy-2030-increasing-wind-energys-contribution-us-electricity-supply

[90] "DSIRE RPS Data Spreadsheet" Downloaded from:, DSIRE "Current RPS Data" *Database of State Incentive for Renewables & Efficiency*, viewed on October 15th 2014, http://www.dsireusa.org/rpsdata/index.cfm

[91] S Combs, "State Policies and Programs" in *Window on State Government*, viewed on 15th October 2014, http://www.window.state.tx.us/finances/captrade/txpolicies_programs/

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