Muswellbrook: between eight coal mines and two power stations

PREPARING FOR THE CLOSURE OF THE LIDDELL POWER STATION AND THE TRANSITION BEYOND

RESEARCH REPORT | JULY 2018

Dr Janet Roden
Professional Officer
NSW Nurses and Midwives' Association
MUSWELLBROOK

BETWEEN EIGHT COAL MINES AND TWO POWER STATIONS:
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AND THE TRANSITION BEYOND

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EXECUTIVE SUMMARY

This research project, funded by the Climate Action Network Australia with in-kind support from the New South Wales Nurses and Midwives’ Association, aims to understand and assist Muswellbrook and nearby communities in dealing with the planned closure of the Liddell coal-fired power station. It also examines what might be done to assist these communities in dealing, in a fair and effective way, with the impacts of a general transition away from coal as the economy become de-carbonised in order to meet Australia’s Paris Agreement commitments.¹

Method

Conducted from July 2017 through till June 2018, the research combines information from a number of complementary sources – a 24-item survey distributed in paper-based and electronic formats, interviews and discussions, community meetings and focus groups. Data from these sources were analysed statistically and thematically in an effort to present a rounded picture of the communities’ perspectives on the closure of the power station and its impacts on individual and family health and well-being, wider community impacts and what assistance might be needed to ameliorate them. Views about the impact on the Upper Hunter Valley of a broader transition away from coal and about renewable energy were also explored.

Findings

The overriding finding was that respondents were divided and confused about the health impacts of coal-fired power stations, the effects on individuals and the community of the closure, whether the closure of Liddell was a forerunner of a wider transition away from coal and the adequacy and/or the reliability of renewable energy technologies. A thematic analysis further explored these very varied responses and revealed that respondents could be considered in four groupings – positives (12%), negatives (34%), neutrals (30%) and ambivalents (21%).

The only issue which received majority support (71%) was that a transition from coal would have significant effects on the Upper Hunter Valley communities. While some positive impacts were mentioned, overwhelmingly concern was expressed about the economic effects of job losses and the flow-on effects of people moving from the area, house prices falling and services deteriorating.

Assistance for closure of Liddell

A range of practical forms of assistance was identified for those affected by the closure of Liddell. Included were assistance:

- to change jobs
- to retrain
- to relocate
- to transition to retirement, and

Many of these kinds of support may well be provided through AGL's employee assistance programs.

**Broad-based collaboration**

A common feature of the main forms of assistance nominated to help deal with the major transition away from coal was the need for all the major parties to work together – the community, industry and government. Community, business and government participating together –

- to plan the transition
- to encourage the development of start-up industries
- to encourage alternative employment and renewable technology industries
- to plan for the decommissioning and rehabilitation of mines and power stations
- to develop retraining opportunities through TAFE.

**Renewable Energy Hub**

Respondents who worked in power generation were the biggest supporters of working in renewable energy and of its being a major contributor to replacing coal-based industries in the Upper Hunter Valley.

AGL has clearly stated its corporate direction to transition from thermal power generation to renewables-based power. Part of its planning is to re-purpose the Liddell site as the Upper Hunter Energy Integration Hub. In addition, it has also committed to supporting those communities who will be affected by their withdrawal from carbon-based power generation. In this connection, it has established the Hunter Energy Transition Alliance (HETA) in cooperation with the NSW Energy and Resources Knowledge Hub, hosted by the University of Newcastle. The Alliance has identified four “Action Agenda” items based around their view of the main strengths of the area:

- Water – a valuable resource for the Hunter
- New energy innovation
- Land use opportunities – AGL buffer lands
- Opportunities for agribusiness and innovation

Compatible with such work is the 2008 *Policy Report: A Just Transition to a Renewable Energy Economy in the Hunter Region, Australia*, by the Centre for Full Employment and Equity at the University of Newcastle. This report which models two different renewable energy scenarios for the region estimates that establishing a renewable energy hub would create a net gain in

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2 AGL, Upper Hunter Energy Integration Hub promotional video, at https://www.youtube.com/watch?v=_fZVmVTmW-M, accessed 1 July 2018

jobs of between 3,900 and 10,700. It is the author’s view that this is such a detailed and useful report that it should be updated and used to guide renewables development in the region.

In addition to the developments and initiatives which are occurring around the announced closure of the Liddell power station, there are wind farm developments and stored hydro power proposals being considered. The author recommends that a dedicated resource be established in order to bring together all these renewable energy initiatives to ensure minimum overlap and duplication and maximum community benefit.

Health promotion and community education about emissions

The estimated local health costs of coal, from mining and power generation, in the Hunter Valley are in the order of $700m per annum. Because the research demonstrated that there is such division and confusion about the health impacts of coal-fired power stations and coal mining, the report recommends that a broad-based health promotion and community education program be developed to address this knowledge gap with clear, factual information about the risks and what can be done to mitigate them.

Emission standards

It is also recommended that the NSW Environment Protection Authority (NSW EPA) be approached together with relevant industries in the area to strengthen and improve current emission standards.

An Energy Transition Authority

An independent Authority, as set out in the ACTU’s 2016 Policy Paper, to plan for the transition to a decarbonised economy was supported by respondents as a second order issue. Its establishment is recommended as a means of ensuring that this transition is both effective and fair, especially for power workers and miners (and their communities) who are and will be most directly affected by the changes.

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6 Climate and Health Alliance, Coal and health in the Hunter: Lessons from one valley for the world, 2015, page 4

INTRODUCTION

Coal from the Hunter Valley is Australia’s largest single source of carbon dioxide (CO\textsubscript{2}) emissions to the atmosphere\textsuperscript{8} and the estimated local health costs of coal, from mining and power generation, in the Hunter Valley are in the order of $700m per annum.\textsuperscript{9} The announcement by AGL that it would close its aging Liddell coal-fired thermal power station outside of Muswellbrook in 2022 as well as the nearby Bayswater station in 2035\textsuperscript{10} and concentrate on energy generation from renewable sources, presented an opportunity to explore how this transition from coal would impact the health, economy and social life of Muswellbrook and surrounding communities. The Liddell and Bayswater power stations, owned by the Australian energy company AGL, are located about 17 kms to south east of Muswellbrook and between them employ around 620 staff and generate about 15,000 GWh of electricity per year.\textsuperscript{11}

Such a piece of research aligned with the NSW Nurses and Midwives’ Association’s (NSWNMA) core values of “Courage – embrace challenging situations to pursue better outcomes for nurses, midwives and our communities”, and “Advocacy – actively pursue our members’ rights and influence decision makers for a fair and just society”.\textsuperscript{12} [author’s italics]

Based on these factors and a longstanding personal and professional interest in environmental sustainability, renewable energy and the need for a just transition for those most affected by the move to renewable energy sources, such as power workers and miners, the author lodged a grant application with CANA (Climate Action Network Australia).

The grant application was approved and the preliminary stages of this research commenced in July 2017. The fieldwork component of the research commenced in mid 2017, with surveys being distributed from 21 March 2018 to 21 May 2018, and the analysis and the focus groups commencing after that time.

Originally, the grant application aimed to involve local nurses and midwives in the research process and, if possible, also to encourage a small group to continue as advocates and supports for those most affected by the transition process. For this reason, ethics approval for the project was obtained from Hunter-New England Local Health District.

As it turned out, numerous nurses, midwives and health workers completed surveys and some assisted with the distribution of surveys, but none volunteered to assist in this ongoing advocacy support role. Consequently, this aspect of the original proposal was not pursued.

\textsuperscript{8} Climate and Health Alliance, Coal and health in the Hunter: Lessons from one valley for the world, February 2015, page 1 at http://d3n8a8pro7vhmx.cloudfront.net/caha/legacy_url/53/Climate-and-Health-Alliance_Report_InitiativePRINT.pdf?1439938112, accessed 25 June 2018
\textsuperscript{9} Climate and Health Alliance, Coal and health in the Hunter: Lessons from one valley for the world, 2015, pg 4
\textsuperscript{10} AGL, Pathway for the gradual decarbonisation of our generation portfolio, at https://www.agl.com.au/about-agl/how-we-source-energy/agl-macquarie, accessed on 1 July 2018
\textsuperscript{11} AGL, Pathway for the gradual decarbonisation of our generation portfolio, as cited above
\textsuperscript{12} NSWNMA Strategic Plan, 2015-2020, page 9
Research aims

1. Gain an understanding of what the closure of the Liddell power station and the coming energy transition/transformation means for Muswellbrook and surrounding communities
2. Assist the communities to develop a positive outlook towards successfully managing these transitions
3. Explore the need for retraining and related preparations,
4. Encourage the development of ideas about alternative employment in renewable energy and allied innovative technologies areas; and
5. Encouraging nurses and midwives to take on on-going advocacy and support roles for these communities.
METHODOLOGY AND DATA COLLECTION

The research approach was both quantitative and qualitative and comprised four main parts:

- Interviews and discussions with many of the key players
- Distribution of a 24-item survey in both paper and electronic form
- Meetings with community members in Muswellbrook on 21st and 22nd March 2018, and
- Focus group meetings in Muswellbrook on 14th and 20th June 2018 to test the preliminary findings against the groups’ understanding of the issues.

Interviews and discussions

In order to understand the Upper Hunter Valley (UHV) situation and to inform the researcher about the important issues in relation to the closure of Liddell and the role of coal and mining in the Upper Hunter valley communities, the researcher attended community meetings and interviewed and had discussions with a number of the key players in the area. Interviewees included the Mayor of Muswellbrook Shire Council, officials from the main trade unions covering power workers and miners – the Electrical Trades Union (ETU) and the Construction, Forestry, Mining and Energy Union (CFMEU) – a representative of AGL, a Newcastle TAFE staff member and discussions with two local Councillors and a number of community and health activists (see Appendix 1).

The survey

Taking into account the above interviews and discussions, the author developed a survey during February 2018 and included questions dealing with:

- Individual and family health and well-being
- Kinds of assistance which might be required by those affected by the closure of Liddell
- Community impacts of the Liddell closure
- Whether the closure of Liddell was the beginning of a transition away from coal
- Whether a transition away from reliance on coal in the UHV would have a significant impact on the life of our communities
- Kinds of assistance which might be required if the transition from coal was occurring in the UHV
- Whether people were interested in working with renewables, and
- A series of demographic questions including type of work done by individuals and their spouses/partners.

Ten (10) of the questions involved a 5-point Likert scale – strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree; 5 open-ended questions; and 9 closed questions. After a draft of the survey was sent to a number of people for review and comment, distribution of the final survey in paper form commenced in March and in electronic form from the beginning of April closing in late May 2018 (see Appendix 2 for final survey).

Surveys were distributed in several ways with a view to involving as wide a cross-section of the local communities as possible. They were distributed at the two advertised community meetings, through street stalls in the main street, through a local pharmacy in Muswellbrook.
and through the personal involvement of a number of interested locals. The electronic version of the form was completed mostly by people working for AGL after the company approved its distribution and announced it to staff by email on 8th May 2018. In all 98 surveys were returned – 60 in paper form and 38 in electronic form. Of the total, five were incomplete, but the information they provided was included.

Community meetings in Muswellbrook

Two community meetings were scheduled to be held in Muswellbrook on 21st and 22nd March 2018. Invitations were produced in both electronic and paper form (see Appendix 3) and distributed widely to individuals and groups, including: Co-ordinator of Lock the Gate, Convenor of the Hunter Central River Alliance, NSWNMA Muswellbrook Branch and Upper Hunter Valley Branch members, community services and retirement homes and schools and preschools in the Upper Hunter Valley area, Councillors and Mayors from Singleton, Muswellbrook and Scone, and paid advertisements in the Muswellbrook Chronicle and the Hunter Valley News. Notwithstanding the number of invitations issued, only eight people attended the first workshop and two the second.

The first workshop was jointly led by Dr James Whelan, researcher and community organiser with Environmental Justice Australia, and the author. Respondents explored the issues relating to:

- expected community impacts following the announced closure of Liddell
- the likely impacts on Muswellbrook and surrounding communities of a wider transition from coal to renewables; and
- elements of a transition policy for those individuals, communities and businesses most affected.

Notes of these discussions were taken at the time and later transcribed for use in the overall analysis of community responses and survey data.

Given the small numbers at the second workshop, both of whom were from the health sector, the author was able to explore their perceptions of the issues in relation to the closure of Liddell and the prospect of a wider transition from coal. In addition, they were able to provide their comments on many of the points raised at the workshop on the previous day.

Focus group meetings

Once all the surveys had been collected, the data was analysed in two different ways. The quantitative data was analysed statistically and the qualitative data examined in terms of the themes it contained. The themes were separately identified by the researcher and the research assistant and then agreed. Based on these analyses a set of preliminary findings were developed for discussion with the two focus groups.

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13 In publishing the link to staff AGL Macquarie Generation stated clearly that “The research is designed to promote community contribution into future regional decision making and planning …and … This is not an AGL activity – we are distributing at the request of the New South Wales Nurses and Midwives’ Association”
Five people attended the focus group meetings which were held in Muswellbrook on 14th and 20th June 2018. The preliminary findings were discussed with and reviewed by the two groups as a means of validation.

Essentially, the two groups agreed with the preliminary findings as presented, while at the same time adding to the understanding behind them. The groups were surprised that so many respondents across numerous survey items were in the “neither agree not disagree” category. They were also surprised that more respondents did not see the health benefits associated with the closure of the Liddell power station. Again, notes were taken of these meetings and used to refine the research findings.
FINDINGS

The following findings are based on quantitative and qualitative analyses of the surveys, the combined comments and discussions from the original community meetings and the subsequent focus groups, as well as the interviews and discussions throughout the course of this project.

Demographics

Altogether there were 60 paper and 38 on-line surveys, totalling 98 surveys returned for this research, of which 54% were from women and 46% from men. The age range of respondents ranged from under 20 to over 70 years (see graph below).

82% of respondents stated they were working, while 11% were retired and 5% not working. A very small number, 2%, said they were “concerned about losing my job” or someone close to them losing their job.

Respondents shared a wide range of areas of employment, as did their spouses or partners, with the two biggest combined groups being power workers and nursing-/health workers (see graph below).
The majority of respondents (58%) stated they lived in Muswellbrook with the remainder evenly split across nearby locations including Denman, Scone and Singleton.

Confused and divided

The research shows that respondents are divided about the health, social and economic impacts of the closure of Liddell. They are confused about what is happening at Liddell. This is in spite of the fact that AGL gave seven years notice of the closure and have been consistent in their messages about how existing workers will be treated and about their overall transition to power generation from renewable sources.\textsuperscript{14} They are also confused about whether or not they and their families will be personally affected by the closure.

From the discussions and comments, it seems clear that, to some extent at least, these views have been influenced by the highly charged and long-running political controversy around the closure of Liddell, the place of coal-fired power stations in Australia’s energy mix and coal itself.

About the only matter on which there is clear agreement in this research is that nearly three quarters of respondents (71%) consider that the transition away from coal will significantly impact the economic and social life of Upper Hunter Valley communities. That having been said, however, the remainder either disagreed with this view (12%) or could not make up their minds either way (“neither agree nor disagree” – 17%).

Four groupings

From the thematic analysis the confusion and dividedness of the data can be viewed in more detail. There were those who perceived the changes positively, and there were others who

were negative in their views, while there were two remaining groups who were neutral and ambivalent.

*The “Positives”*

Approximately 12% of respondents perceived that there would be a positive impact on the social life of the Upper Hunter Valley area. They felt confident that life and health would improve through better air quality, less traffic, and the development of new renewable industry jobs, which have the potential to create new community groups. Two examples are indicative of this positive perspective:

“The air pollution will be reduced which must be an overall improvement for people with respiratory conditions” and “Without being subjected to pollution, things will have to improve in relation to air quality in the valley; stop housing prices falling with the power station converted to renewables; there will be less animosity and maybe more community cohesion. Lack of certainty for the future is a concern and once fears are allayed perhaps community life will resume.”

*The “Negatives”*

This grouping of approximately 34% of respondents focused strongly on economic factors such as loss of jobs, associated closure of local businesses and falling house prices. This group, not counting power generation workers, is also the only group to express concern around renewables – and their viability in terms of being able to power the town, as well as their cost to the individual consumer. This group demonstrated very minimal concerns about health or the environment; contained the most people who do not believe that the Liddell closure is the beginning of the transition away from coal; and were mistrustful and fearing about the announced closure. For example: “I have a number of family members who work at Liddell – could mean loss of jobs!” and: “Less people working in Muswellbrook, leading to closure of many businesses and families moving away, social life will suffer.”

*The “Neutrals”*

About 30% of respondents could be categorised as neutral. They were sure that the Liddell closure would not affect them but they realised that it would impact others. For example, “It
will not necessarily impact us as we have no stake in the plant." But there were also different responses like, "the closure will affect people’s lives who work at Liddell." In addition this group was unwilling to commit either positively or negatively to the impact of the closure, or to the beginning transition and the transition away, on the social life of the UHV communities. There were many respondents who were categorised as 'sitting on the fence,' who may have been conflicted and confused. Two thirds of these respondents provided neither/nor responses to several questions. Perhaps it was due to their inability to think that anything could ‘rock’ coal. As one focus group respondent said: “they were living in a bubble.”

The “Ambivalents”
The final grouping consisted of 21% respondents who were ambivalent. From their comments and question responses it was clear that they had conflicting ideas and were uncertain as to whether they really agreed with the possible community impact caused by the closure of Liddell. Some people would say they were realists, as they could see benefits like the improved air quality and less asthma resulting, but they could also see that loss of community members would impact on people who were available to staff community roles, for example, shop attendants, nursing roles, teachers etc. Another respondent in this group felt positive about the Liddell closure in regard to health but was concerned about job losses and the economic downturn which could follow the Liddell closure.

Well-being and health
The first seven items of the survey aimed to explore how the well-being and health of respondents and their families might be affected by the closure of the Liddell power station.

Affected by the closure of Liddell power station
A majority of respondents (55%) saw themselves and their families as being affected by the announced closure of the Liddell power station. Respondents in the 51-60 age group were most affected (chi square=129.994, p<0.00). A sizeable 22% disagreed that they would be affected and 24% neither agreed nor disagreed that they or their families would be affected. Unsurprisingly, 72% of power workers agreed they would be affected (chi square 106.44, p<0.00); the nursing-health group saw themselves as being least affected at 42%. Power workers were also more uncertain than the nursing-health group.

In giving seven years notice of its intention to close its Liddell power station, AGL announced that there would be no forced redundancies of the 200 or so staff employed at the plant; redeployment at the nearby Bayswater station, natural attrition and normal retirements would ensure minimal staffing disruption. Although such statements had been made publicly and to staff, comments and discussions agreed that workers needed certainty about their jobs and that the continuing politicking around the closure of Liddell, its possible sale to Alinta and/or purchase by government were very unsettling to workers and to the community at large.

Uncertain and worried
With these two items there was a wide spread of results, with more than 40% stating that they were not feeling uncertain about their situation, 34% saying they were and 25% neither agreeing or disagreeing. The results for the items “sometimes I feel tense and worried” were similar. Perhaps understandably, men 72% of whom were power workers, felt somewhat less
certain than women. Again, power workers were more uncertain than the nursing-health group or than the other occupational groups.

In the circumstances, 25% of respondents said they “felt tense and worried” rising to 47% of power workers but only a small proportion (6%) answered that they had “had to go to the doctor more often”.

In accepting this finding, the comments and discussions emphasised the importance of consistent information for both power workers and the community at large about Liddell and the role of coal and renewables in power production, as was the fact that both of these had been hotly contested topics in Australian politics for more than ten years.

Our groups considered that by giving seven years notice of the closure of Liddell, AGL had laid the ground work for a gradual, planned transition. They considered that there was still time for this to occur if the controversy died down and with AGL’s commitments to staff (and to developing additional coal-fired and renewable energy sources), the transition should be fairly uneventful for all concerned.

**Confident about the future**

As with the previous well-being items, there was a wide spread of results with responses being almost evenly split between disagreeing (34%), neither agreeing nor disagreeing (37%) and agreeing (31%) that they felt “quite confident about the future”. Women were a little more confident than men and the nurses-health group (32%) somewhat more confident about the future than power workers (21%).

![Feeling quite confident about the future](image)

**Health and Liddell closure**

The majority (46%) of respondents in the survey were undecided about the question “My health will not improve when the Liddell power station closes”. The remainder were fairly equally divided between those who disagreed (28%) and those who agreed (26%) that their health would *not* improve. The spread was much the same for power workers, the nurse-health group and others (see graph below). The results were similar for the allied question about “My family’s health” not improving with a 98% correlation.
Although around half of the respondents were undecided about the health consequences of the closure of the power station, it should be noted that the other half held opposing views: almost equal numbers saying there would be no health benefits versus those who said there would be clear benefits. It may be that the fact that the questions were in the negative confused some respondents, though the following open-ended question indicated that some people were aware of the negative effects particularly on respiratory health of power station emissions. This question will be discussed further in a later part of this report.

**Assistance with the Liddell closure**

Nearly half of the survey respondents (46%) answered that some form of assistance would help them to deal with the closure. As might be expected, the most sought-after help was assistance to change jobs (20%). The other forms of assistance seen as useful, were:

<table>
<thead>
<tr>
<th>Assistance</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>To retrain</td>
<td>14%</td>
</tr>
<tr>
<td>To relocate</td>
<td>14%</td>
</tr>
<tr>
<td>Financial planning</td>
<td>13%</td>
</tr>
<tr>
<td>Living on a lower income</td>
<td>12%</td>
</tr>
<tr>
<td>Transition to retirement</td>
<td>11%</td>
</tr>
<tr>
<td>Mental health</td>
<td>8%</td>
</tr>
</tbody>
</table>

Comments and discussions were consistent with these findings, though the focus groups were somewhat surprised by the low figure for mental health assistance, as some considered that there was a shortage of mental health workers in the community. The view was also expressed that, as AGL had given so much notice of the closure and the guarantee of no forced redundancies, the transition would be gradual thus minimising any negative effects on the community.

**A transition away from reliance on coal in the Upper Hunter Valley**
This section comprised a series of four questions covering the announced closure of the Liddell power station, a broader transition from coal and its likely social and economic impacts, kinds of assistance which might be required to help manage such a wider transition and interest in working with renewable energy and associated technologies.

**Liddell closure ... beginning of a transition from coal**

A majority of respondents (60%) agreed that the closure of the Liddell power station was the beginning of a transition away from the Upper Hunter Valley's reliance on coal, while 26% disagreed with that view. Unsurprisingly, electricity generation workers – those most affected by the closure – held that view most strongly (71%, Kendall tau-b = 0.248, p<0.005). It was noted in discussion that this view was consistent with AGL’s clearly expressed direction towards renewable energy. The nurses-health workers had the lowest acceptance of this proposition at 40% and by far the biggest neither agree nor disagree response at 28%. Women and men’s responses were very similar with a low level 93% correlation.

Comments differentiated between the relatively small amount of thermal coal used for power stations and the much larger amounts mined in the Hunter which went to export. That fact seemed to be behind the view that the closure was not the beginning of a wider transition and also behind the neither agree nor disagree position.

**Impact on the Upper Hunter Valley of a transition from coal**

This question was the one issue that gained the most consistent response, with 71% of respondents agreeing that such a transition would “have a significant impact on the life of our communities”. In comparison with other questions, there was also a smaller neither agree nor disagree group at 18% and disagree at 11%. There were no significant differences between the occupational groups or between men and women.

![Graph showing transition from coal and impact on the Upper Hunter Valley](image)

Comments amplified these expressed concerns focusing on the potential impact of the loss of generally high-paying jobs in mining and associated heavy industries and the domino effect on house prices, other local businesses and services and the social fabric of the communities, especially if families had to move to find alternative employment.
Types of transition assistance

The question asked “if the transition away from reliance on coal is taking place what assistance might be necessary to better prepare yourself and the community to deal with the transition?” Nine types of assistance were presented as options, together with an “other” option. There was a cluster of six options which received between 14% and 10% of responses, as follows:

- encouraging emerging and alternative employment such as renewable energy
- actively involving the community, government and industry in this planning
- through community participation and negotiation with key players, ensuring that new start-up industry opportunities are available
- planning for the decommissioning and rehabilitation of mines and power stations
- through community participation and negotiation with key players, ensuring that re-training opportunities are available through TAFE, and
- talking to other community members about the transition.

Establishing an authority to plan for the transition and re-training assistance and opportunities each received 8% of the responses.

Comments and discussions considered that the options listed were the most obvious ones and at the same time emphasised the need for overall direction and planning involving all community respondents – business, government and community – if major dislocations and disadvantage were to be avoided. In discussing the issue of decommissioning and rehabilitating power station and mine sites and the amount and type of work involved, the focus and discussion groups considered that it would be instructive to look at what was happening with the other stations which had been closed down in recent years, including Munmorah, Vales Point A, Wallerawang and Hazelwood.

Interest in working with renewables

A very high and statistically significant proportion of power workers (79%, chi square = 29.273, p<0.05) indicated that they would be “interested in working in the renewable energy / technology sectors if these industries develop in the Upper Hunter Valley”. The “no” response to this question was linked to respondents’ type of employment and, perhaps, the transferability of their skills.
About one third of those respondents who answered “no” to this question also expressed doubts in their survey comments about the adequacy and/or reliability of renewable sources to generate sufficient electricity at a reasonable price.

In discussing this finding, the focus groups reiterated the difficulty in getting accurate information about coal and its associated health hazards and about the capacities of renewables. There was also a view that denial could form part of this response (and others) as coal was currently such an important economic factor in the community and that some people would not want to be seen as “biting the hand that feeds them”.
DISCUSSION

Health

As previously referred to in this report, the estimated local health costs of coal, from mining and power generation, in the Hunter Valley are in the order of $700m per annum. As Dr James Whelan said:

“Every time an old coal-fired power station closes to be replaced by renewable energy, there’s an immediate health benefit to communities within 100 kilometres of the facility.”

AGL’s self-reported pollution data states that for 2016-17 the Liddell power station emitted 8,855,569 tonnes of carbon dioxide and 28 kinds of pollutants, including:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide</td>
<td>1,146</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>33,490</td>
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<tr>
<td>Oxides of nitrogen</td>
<td>18,627</td>
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<td>Hydrochloric acid</td>
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<td>Particulate Matter 10.0 um</td>
<td>48.5</td>
</tr>
<tr>
<td>Particulate Matter 2.5 um</td>
<td>18.3</td>
</tr>
</tbody>
</table>

In this context, focus group members were surprised that so many respondents consider that their health would not improve (26%) or were undecided about any health improvement (46%) with the closure of the power station. Survey comments seemed to suggest some reasons contributing to these views, ranging from: “as far as I am aware only steam is emitted [from Liddell power station]”, “there are so many mines around us that one more source [of pollution] won’t make any difference”, “diesel exhausts from the mines and power stations is the worst” to “dust [from mining] is a bigger problem”.

As Fiona Plesman, Muswellbrook Shire Council’s then acting general manager, stated that fine particle dust from nearby coal mines was the primary worry for many residents, but the levels of NOx emissions would be a community concern. She went on to say that: “The community does have a concern around its air quality and a good reason to be concerned...”


being an area with eight coal mines and two power stations, air quality needs to be a concern for regulators and it certainly is a concern for council.”

In discussing the expressed doubts and confusion about the health benefits of closing the Liddell power station, the focus groups suggested that there was a degree of ignorance and perhaps denial about pollution generally in the community because the mines and the power stations were such large sources of employment and economic activity in the local communities. It was especially difficult in the current politically charged environment about power generation generally and the closure of the Liddell power plant in particular to obtain clear, factual and reliable information about these topics. This led to discussion about the need for community education programs, which will be discussed later in this report.

There is no doubt that Muswellbrook is ringed by numerous sources of pollution as illustrated in the map below. There is also no doubt that dust is a problem – one focus group participant showed photographs of dust clouds hanging over the town early in the morning, others talked about the hazards of hanging washing outside on certain days or regularly having to hose down outdoor furniture before using them for barbecues. According to these participants, the problem of dust seems to have been exacerbated recently with the opening up of the Mount Pleasant open-cut thermal coal mine (not shown on the map below) on the Denman Road, adjacent to the Bengalla mine, 4 kms west of Muswellbrook.

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Managing the transitions

This research demonstrates that in the Muswellbrook and surrounding communities there is considerable confusion and division about what is likely to occur as a result of the closing down of the Liddell power station. This concern is greater with the power worker group, the group most directly affected by the change, and it is shared more widely in the community. Part of the AGL’s expressed rationale for giving seven years notice was to facilitate an orderly and planned transition. In its own words: “... and to provide time for our people and local community to prepare for the transition”. Although the political discourse over the past 12 months has been anything but orderly, this transition still needs to be managed. Managed for the sake of the workers and their families directly affected. Managed for the Upper Hunter Valley communities in terms of local social and economic impacts and flow-on effects and managed for the broader Australian community in terms of energy supply and security.

Sixty percent of respondents were of the view that the closure of the Liddell power station was the beginning of a second, larger transition: a transition away from such reliance on coal in the Upper Hunter Valley. Power workers held this view even more strongly, reflecting not only


AGL’s expressed direction to move to power generation from renewable sources but also the view that moving towards a decarbonised economy is necessary if the country is to achieve our commitments in terms of the Paris Agreement.22

**Assisting power workers in their transition**

As previously discussed survey respondents were very practical in the kinds of assistance they saw as being useful for those individuals and families having to deal with the transition resulting from the announced closure of Liddell power station. Many of the kinds of assistance mentioned are those which are often delivered as part of employee assistance packages when businesses face major changes, restructures, down-sizing and the like. While AGL has not yet detailed what forms of assistance it might offer to its affected employees, it does not seem unlikely that assistance might be provided with: retraining, job seeking skills, financial and retirement planning, as well as personal advice and support.

On top of the respondents’ list of assistance was “help to change jobs” and “help to retrain”. To provide such assistance, of course, requires there to be other jobs for people to go to, preferably for many people, jobs where people’s existing skills are transferrable. Or, as one respondent said: “how many skilled power workers are going to want to become aged care workers?”

Power workers were the group with the highest interest in working with the renewable energy and technology sectors. Encouraging emerging and alternative employment such as renewable energy, encouraging the development of new start-up industries and the decommissioning of power stations and mines were all high on the list of assistance required to help manage a major transition from coal. They are also the kinds of employment where power workers would find many of their skills to be transferrable.

**Place of renewables – an Upper Hunter Valley renewable energy hub**

AGL has clearly stated its corporate direction is towards phasing out its thermal energy assets in favour of developing renewable energy sources, including some on the existing Liddell site.23 There are also other renewable energy projects afoot in the Upper Hunter Valley.24 In June 2008, the Centre of Full Employment and Equity, from the University of Newcastle, published their Policy Report: A Just Transition to a Renewable Energy Economy in the Hunter Region, Australia.25 This Report, which models and analyses two different renewable energy scenarios for the Hunter and Wyong regions, demonstrates that:

“... there can be major benefits to the Hunter and adjacent Wyong region if there is a shift from coal-fired power generation to a renewable energy economy. These benefits include the creation of thousands of new secure, well-paid jobs in the research, design,

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23 Skye Laris, *AGM outlines plans for Liddell*, 28 September 2017, cited previously

24 Sophie Vorrath, *Work begins on NSW solar, wind and hydro ‘energy park’,* 3 February 2015, cited previously, and Mike Carabott, *NSW signs off on Australia’s largest wind farm,* 5 April 2018, cited previously

manufacture, installation, maintenance and export of energy efficiency and renewable energy technologies.

This Report estimates that a shift to a renewable energy economy in the Hunter / Wyong region would create between 7,500 and 14,300 new jobs – a net gain in jobs of between 3,900 and 10,700 jobs.\textsuperscript{26}

Although the report is now 10 years old, in the researcher’s view it still provides a very detailed and useful model for considering the development of a renewable energy hub in the Hunter Valley. Such a hub seems quite consistent with AGL’s proposed Upper Hunter Valley Energy Integration Hub. It may be that funds from AGL’s “Powering Australian Renewables Fund” (PARF)\textsuperscript{27} and a grant from the State Government’s “Resources for Regions” program\textsuperscript{28} or other sources, could be combined to develop further such a project.

More recently in July 2016, the Hunter Energy Transition Alliance (HETA) published its \textit{Blueprint Report}. “The Alliance was established as a partnership between AGL and the NSW Energy and Resources Knowledge Hub, which in turn was established as a NSW Government initiative to capture opportunities for growth, collaboration and innovation and is hosted by the University of Newcastle”.\textsuperscript{29} The \textit{Blueprint Report} which was developed through a series of broad-based workshops, produced four “Action Agenda” items based around what the groups saw as the main strengths of the area:

- Water – a valuable resource for the Hunter
- New energy innovation
- Land use opportunities – AGL buffer lands
- Opportunities for agribusiness and innovation

One of the advantages of such an approach is that by focusing on a number of land and water uses, as well as new energy technologies, the risk of being so heavily dependent on one industry – the coal industry – is reduced. In recent times the communities have already experienced the negative effects of a downturn in the price of coal and do not want that to recur.

\textit{Muswellbrook: between eight coal mines and two power stations}

Another advantage of a multi-pronged approach to managing the transition, and one that was referred to during the focus groups, is that there is a greater chance of returning the communities to a more balanced, more healthy economic and social lifestyle. A number of participants said they remembered Muswellbrook as a rural town with a couple of mines, whereas now it was ringed with mines and dominated by heavy industry and just a bit of agriculture. They said they felt solastalgia. This term was coined following work in the Upper Hunter Valley (and drought-stricken areas of rural NSW) to describe the depressed feelings produced by environmental change, especially where people’s environment has become

\textsuperscript{26} Bill, A, Mitchell, W and Welters, R, June 2008, cited above page 5


\textsuperscript{28} NSW Government, Resources for Regions, 30 June 2017 at \url{https://www.nsw.gov.au/improving-nsw/regional-nsw/regional-growth-fund/resources-for-regions/}, accessed 1 July 2018

\textsuperscript{29} Energy and Resources Hub, \textit{Hunter Energy Transition Alliance Blueprint Report}, July 2016, cited previously
chaotic in appearance through the impact of large-scale open-cut coal mining (or persistent drought).\textsuperscript{30}

\textbf{Planning for the future}

In order to progress its Action Agenda, the HETA made it clear that a combined, cooperative approach was required.

“Success for the Alliance will demand collaborative effort. The Alliance recommends a joint agreement between AGL, the University of Newcastle’s Institute for Energy and Resources, the Hunter Energy Transition Alliance, the NSW Government and the Commonwealth.”\textsuperscript{31}

This researcher is of the view that collaboration and cooperation have to be even wider and more inclusive. Local government was involved in the HETA’s workshops as were representatives of chambers of commerce and some major industry bodies. Clearly, they too will need to be involved in subsequent Alliance activities.

A notable absence at the round tables were any representatives of the workers, those who are most likely to be affected by the coming changes and who will bear the brunt of those changes and the need to adapt, retrain and refocus their lives. Unions and community groups all need to be involved in such discussions and planning.

\textbf{Establishing an Authority to plan for the transition}

Respondents rated highly the kinds of transition assistance which included community participation in the necessary planning and development processes – “involving community, government and industry in this planning”, “through community participation and negotiation with key players ensuring that new start-up industry opportunities are available and re-training opportunities are available through TAFE”. These support the need for a broad-based and inclusive approach to planning and delivery of the needed changes and development.

In recognition of the social and economic importance of this transition and the fact that Australia does not have an especially good track record in dealing with such major changes,\textsuperscript{32} the Australian Council of Trade Unions (ACTU) released its \textit{Policy Discussion paper – A Just Transition for coal-fired electricity sector workers and their communities} in November 2016. Among other recommendations, it outlined the case for “Creating a new independent statutory authority, Energy Transition Australia (ETA), that would sit within the Environment and Energy portfolio and be responsible for navigating and managing Australia’s transition to a clean energy economy.”\textsuperscript{33}

\textsuperscript{31} Energy and Resources Hub, Hunter Energy Transition Alliance Blueprint Report, July 2016, cited previously, page 14
\textsuperscript{32} Armstrong, K et al., 2008, Auto plant closures, policy responses and labour market outcomes : a comparison of MG Rover in the UK and Mitsubishi in Australia, Policy Studies, volume 29 (3): pp 343-355 at: https://curve.coventry.ac.uk/open/file/5a2392e0-57aa-73a6-6bb9-a0a2b872af6f/1/Auto%20plant%20closures.pdf, page 10, accessed 25 June 2018
\textsuperscript{33} The Australian Council of Trade Union’s Policy Discussion paper- \textit{A Just Transition for coal-fired electricity sector workers and their communities}, 9 November 2016, cited previously
Support for establishing such an Authority gained the second level of support from respondents, after the more immediate and concrete options discussed above.

It is also worth noting that when discussing the impacts of the transition from coal on the Upper Hunter community, respondents painted a grim picture defined by job losses, economic downturn, businesses closing, relocations and a general unravelling of community life. These and other forms of social and economic dislocation are some of the risks of not managing the transition well; a further reason for setting up a body with clear responsibilities for ensuring a planned, effective and fair transition for this and other similar coal communities in Australia.

**Communication and education**

One of the problems that discussion and focus group participants identified was the difficulty in obtaining clear, accurate and consistent information about the health impacts of coal and the features of the various kinds of renewable energy technologies. Providing such information and community education, for example by way of video presentations, pamphlets, demonstrations, and fact sheets, would fit within the communications function of an Authority. A key aspect of any change management program is communication aimed at ensuring that all parties are aware of the overall direction and impacts of change.

Other parties involved in the transition would have education and communication roles as well as an Authority. TAFE NSW, for example, commenced its Associate Degree in Applied Engineering (Renewable Energy Technologies) in early 2018, which will assist in building a firm base of renewable knowledge and, of course, equipping those who want to train or retrain in the field. It would be especially helpful to the area if courses could be conducted locally in Muswellbrook, Scone and/or Singleton as well as Newcastle. Support for this and similar courses with scholarships from AGL would assist those workers keen to be upskilled in these developing technologies.

It is clear from the author’s meetings and discussions and the focus groups that Muswellbrook Municipal Shire Council is well aware of the need to build a sustainable community and the part that renewable energy and innovation will play in doing so. It has recently announced it is seeking expressions of interest to develop pumped hydro energy storage facilities in the area. It runs a Sustainability Hub, Landcare activities, recycling and waste management programs and offers teachers opportunities to teach sustainability to their students and is actively involved in the HETA programs.

Consistent with these activities, Council might take the lead in working with relevant bodies, including state education and health departments, to develop a suite of health promotion and community education programs. Topics might cover the health impacts of mine and power station emissions, what can be done to minimise their negative impacts and coping with change and resilience. A bus like the Healthy Harold campaign might be appropriate for school aged participants. Some funding for such an initiative might be available from AGL in

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accordance with their commitment to support the surrounding community, their educational needs and business enterprises.\textsuperscript{36} …

RECOMMENDATIONS

Health

Two concerns to do with the health of the people in and around Muswellbrook have been highlighted in this research. The first is that there is a real, known issue with pollutants – emissions from the Liddell and Bayswater power stations and dust and particulate matter from the eight surrounding mines. In the medium term the problem of the power station emissions will be addressed by the closure of Liddell (and in the even longer run, in 2035, of Bayswater). In the meanwhile, it is simply unacceptable that approval has been given by the NSW Environment Protection Authority (NSW EPA) to allow Liddell power station to emit nitrogen oxides at a rate three times more than the global standard.37

According to discussion and focus group participants only one mine in the region, the Bengalla mine, is required by its licence to cease work if dust levels are too high. A similar requirement should apply to all mines in the area. In addition, the cumulative effect of dust and other emissions on the town and its surrounding areas need to be tackled.

The second concern is that there is a real absence of awareness and understanding of the deleterious health effects of the emissions from the power stations and the mines: nearly 75% said their health and their family’s health would not improve or were undecided about the health effects of the Liddell closure. This knowledge gap needs to be addressed with a factual, consistent program that deals both with the health impacts of mine and power station emissions and what can be done to minimise the negative impacts.

Recommendations

- Approach NSW EPA and other relevant authorities and the companies involved to develop strengthened and improved standards and means of meeting them; and
- The Muswellbrook Shire Council take the lead in working with relevant bodies, including the NSW Department of Education and the NSW Ministry of Health, to develop a suite of health promotion and community education programs

Support for Liddell workers and their families

Survey respondents were very practical in the types of assistance workers and their families could require: help to find other jobs, to retrain, financial and retirement planning and personal and family advice-counselling. These kinds of supports are often part of company-provided employee assistance programs, which AGL may have instituted already.

Recommendations

- AGL clarify to its workers what kinds of assistance it will provide as part of the close down of the Liddell power station; and
- As part of its employee and community assistance efforts, AGL consider funding scholarships for the TAFE Associate Degree in Applied Engineering (Renewable Energy Technologies) or similar courses

37 Ben Millington, (22May 2018) Liddell coal plant emitting nitrogen oxide at three times rate of global standard, ABC News, previously cited.
As an important source of training and a reliable source of information TAFE should review the range of courses it conducts in Muswellbrook, Scone and Singleton in particular, with a view to teaching more courses which will aid the transition to renewable energy and related upgrading of skills.

Support for Muswellbrook and surrounding communities

AGL has already announced through its Financial Inclusion Action Plan that it will “contribute to the sustainability of the local economy” and “support and identify the local businesses likely to be impacted by AGL transitioning away from the community.”

It has also announced that it intends to convert the Liddell power plant site into the Upper Hunter Valley Energy Integration Hub and through the Hunter Energy Transition Alliance to explore opportunities for using the buffer lands around the Liddell site. These initiatives together with decommissioning and necessary re-purposing-rehabilitation works at the site and developing the additional capacity at the nearby Bayswater plant, will no doubt provide additional employment to the area during the Liddell transition period and to some extent beyond the closure date.

In the longer term, the author considers that the plans for the creation of a Renewable Energy Hub as detailed in the Policy Report by Bill should be explored. It would fit with AGL’s already announced plans and the proposed Action Agenda items listed by the HETA. A first step in this process might be for the HETA to apply for funds to refresh and update the 2008 study in the context of developments over the past ten years and the announcements in connection with the closure of the Liddell power station.

Diversifying the economy while developing a major renewable energy and innovation hub as envisaged in the Hunter Energy Transition Alliance Blueprint report and the Bill Policy Report would have both shorter and longer-term benefits for the wider community. As well as providing significant employment opportunities, it could assist in restoring some of the rural and regional character the area formerly possessed and relieving some of the solastalgia felt by residents.

There are two keys to the success of these plans and developments. The first is that they are based on broad-based and inclusive consultation, collaboration and cooperation between business, community, unions, academia and all three levels of government. The second is that a project resource with appropriate support be engaged and dedicated to further these ends.

**Recommendations**

- AGL continue to develop in a collaborative way and publicise the community and business support strategies outlined in its Financial Inclusion Action Plan.
- In exploring the development of a Renewable Energy Hub in the Hunter Valley, a grant application be developed by the HETA to update and refresh the model for a

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39 AGL, *Upper Hunter Energy Integration Hub promotional video*, at [https://www.youtube.com/watch?v= fzVmVTmW-M](https://www.youtube.com/watch?v=fzVmVTmW-M), accessed 1 July 2018
Planning and preparing for the transition from coal

Respondents in this research were strongly of the view that a transition away from coal in the Upper Hunter Valley would have a significant impact on these communities. Although some recognised the health benefits which would accrue from this transition, many painted a picture of substantial social and economic dislocation and disadvantage. If these views are even only partially accurate, the risks and costs of not managing the transition effectively and fairly will be high.

Already planning and development for the Liddell transition has recognised the need for multiple parties to be involved in the process through different mechanisms. The number of organisations represented at the Hunter Energy Transition Alliance is indicative of the need for broad-based, inclusive planning and development. AGL, a key player in the Liddell transition and the HETA, sees what it is doing as a model for other localities where similar transitions will occur.41

In view of all these factors it seems highly desirable to establish an independent Authority to plan and manage the transition away from coal towards a decarbonised energy future.

**Recommendation**

- Establish an independent statutory Authority to plan and manage the transition away from coal towards a decarbonised energy future.42

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ACKNOWLEDGEMENTS

The author wishes to acknowledge the assistance and support from Climate Action Network Australia (CANA) which provided the grant for this research, and the NSWNMA which enabled the author to work on this project, as well as providing in kind support and assistance.

She would like to thank her research assistants Dr Phoebe Everingham and Ms Georgia Brown.

She would also like to acknowledge the support provided by Dr James Whelan, Community Organiser & Researcher for Environmental Justice Australia, in assisting her with initiating this project. Those people whom the author interviewed, with whom she had discussions, undertook surveys and consulted, especially Rob Cooper, Communications Manager, AGL Macquarie, also played a valuable role in supporting her. Last but by no means least, the author wishes to acknowledge Wendy Wales, Community Activist, who was always ready to stand by her and provide assistance of all kinds and without whom this project would not have been undertaken.
APPENDIX 1 – KEY INTERVIEWS AND DISCUSSIONS

Graeme Kelly, Secretary of CFMEU in the Upper Hunter when interviewed, now with the CFMEU National Office

Justin Page, Assistant Secretary, ETU, Liddell

Rob Cooper, Communications Manager, AGL Macquarie

Tony Maher, CFMEU, Mining & Energy Division, National Office.

Matt Fairbairn, Course Coordinator for the Associate Degree of Applied Engineering and Renewable Energy Technology, TAFE Newcastle, and also associated with Newcastle University.

Martin Rush, Mayor Muswellbrook Shire Council

Sue Abbott, Councillor Upper Hunter Shire Council

Graeme McNeill, Councillor Muswellbrook Shire Council

James Whelan, Researcher and community organiser, Environmental Justice Australia

Wendy Wales, Climate activist

Useful information and discussions were also obtained from two community meetings:

“In the shadow of Australia’s largest coal-fired power stations” Environmental Justice Australia with Doctors for the Environment Australia, Wyee Community Hall, 19 April 2017, and

“Life after the Closure of Liddell in 2022” meeting conducted by Greens parliamentarians Adam Brandt and Jeremy Buckingham, Muswellbrook Workers Club 1 August 2017
APPENDIX 2 – FINAL SURVEY

SURVEY FOR COMMUNITY MEMBERS OF THE UPPER HUNTER VALLEY NEAR MUSWELLBROOK

This survey gives you the opportunity to share your views on life in the Hunter Valley both now and with the closing of the Liddell power station in 2022. Please provide your views about how the closure of Liddell may impact on your community and what you believe should be done to prepare for this shut-down process.

Dr Janet Roden works at the New South Wales Nursing & Midwives’ Association (NSWNMA) which is also the NSW Branch of the Australian Nursing & Midwifery Federation (ANMF). She is planning to report on this research so as to raise awareness. By completing this survey you are agreeing to have your views and comments included in a report, or a published document. Your personal information, including where you work, will NOT be identified.

Please complete this survey if you and your family live in the Hunter Valley near Muswellbrook. Please only complete one survey per family.

You and your Family’s Health & Well-being

For the questions below circle the response that best describes how you feel about the statement. 1 = strongly disagree, 2 = disagree 3 = neither agree nor disagree (neutral), 4 = agree, 5 = strongly agree

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I will be affected by the closure of the Liddell power station</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. My family will be affected by the closure of the Liddell power station</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Can you provide further comment on how the closure of Liddell Power station will impact you or your family:

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4. Since I heard about the closure I am feeling uncertain about my situation and what may happen
   | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
   | 1               | 2        | 3                          | 4     | 5              |

5. Sometimes I feel tense and worried
   | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
   | 1               | 2        | 3                          | 4     | 5              |

6. I have had to go to the Doctor more than usual
   | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
   | 1               | 2        | 3                          | 4     | 5              |

7. I feel quite confident about the future
   | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
   | 1               | 2        | 3                          | 4     | 5              |

8. Can you provide further comment on how the closure of Liddell Power station is affecting you now:
   -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
   -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

9. My health will not improve when the Liddell Power station closes
   | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
   | 1               | 2        | 3                          | 4     | 5              |

10. My family’s health will not improve when the Liddell Power station closes
    | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
    | 1               | 2        | 3                          | 4     | 5              |

11. Can you provide further comment on how the closure of Liddell Power station will or will not affect you or your family’s health:
    -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
    -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
    -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
    -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
    -----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
12. Is there any assistance which would help you to deal with the announced closure of the Liddell power station? If yes, would any of the following be useful - please tick as many boxes as are relevant to your situation:

☐ 1 Assistance to change jobs
☐ 2 Assistance to retrain
☐ 3 Financial planning assistance
☐ 4 Assistance to relocate
☐ 5 Mental health assistance
☐ 6 Assistance to transition to retirement
☐ 7 Assistance to adjust to living on a lower income
☐ 8 Other (please describe) .................................................................

Community impacts of Liddell’s closure

13. Do you think that the closure of Liddell power station will impact on the social life of Muswellbrook and surrounding communities? If so, how?

A transition away from reliance on coal in the Upper Hunter Valley?

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. The closure of Liddell power station is just the beginning of a transition away from reliance on coal in the Upper Hunter Valley</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. A transition away from reliance on coal in the Upper Hunter Valley will have a significant impact on the life of our communities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>
16. If this transition away from reliance on coal is taking place, how do you think it might impact yourself, your family and your community? Please describe:

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17. If this transition away from reliance on coal is taking place, what assistance do you think might be necessary to better prepare yourself and the community to deal with this transition? Please tick any of the boxes you think are relevant.

☐ 1 Establishing an authority to plan for the transition
☐ 2 Actively involving the community, government, and industry in this planning
☐ 3 Encouraging emerging and alternative employment such as renewable energy
☐ 4 Planning for the decommissioning and rehabilitation of mines and power stations
☐ 5 Talking to other community members about the transition
☐ 6 Through community participation and negotiation with the key players, ensuring that new start-up industry opportunities are available
☐ 7 Through community participation and negotiation with key players, ensuring that re-training opportunities are available through TAFE
☐ 8 Working out what kind of re-training you want to do
☐ 10 Trying to seek out re-training opportunities
☐ 11 Other (please describe)  

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----------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------

My situation

18. At present I am:

☐ 1 Working
☐ 2 Not working
☐ 3 Retired
☐ 4 Concerned about losing my job
19. If you are currently working please indicate which area you are working in:
   ☐ 1 Mining
   ☐ 2 Electricity generation (Liddell and/or Bayswater)
   ☐ 3 Retail
   ☐ 4 Agriculture
   ☐ 5 The wine industry
   ☐ 6 Nursing/Midwifery and/or other health related job
   ☐ 7 Education (primary/secondary/tertiary)
   ☐ 8 Administration
   ☐ 9 Other (please describe)  

20. If your partner/spouse is currently working please indicate which area they are working in:
   ☐ 1 Mining
   ☐ 2 Electricity generation (Liddell and/or Bayswater)
   ☐ 3 Retail
   ☐ 4 Agriculture
   ☐ 5 The wine industry
   ☐ 6 Nursing/Midwifery and/or other health related job
   ☐ 7 Education (primary/secondary/tertiary)
   ☐ 8 Administration
   ☐ 9 Other (please describe)  

21. Would you be interested in working in the renewable energy / technology sectors if these industries develop in the Upper Hunter valley?
   ☐ 1 Yes
   ☐ 2 No
   ☐ 3 Not sure
22. Where do you live?

☐ 1 Muswellbrook
☐ 2 Denman
☐ 3 Singleton
☐ 4 Other

23. Your Age Group

Please indicate which age group you are in below:

☐ 1 Up to 20 years
☐ 2 21-30 years
☐ 3 31-40 years
☐ 4 41-50 years
☐ 5 51-60 years
☐ 6 61-70 years
☐ 7 Over 70 years

24. Please indicate your gender

☐ 1 Female
☐ 2 Male
☐ 3 Non-Binary
☐ 4 Prefer not to say

Thank you for taking part in this survey which is designed to understand yours and the community’s response to the forthcoming changes that are happening in your community area. As soon as the survey results are available you will be able to obtain a copy of the findings.

If you are upset through thinking about the changes that might take place after undertaking this survey you can contact Lifeline on 13 11 14.

If you are interested in taking part in the Focus Group Sessions which will follow the survey please let our Community Support Nurses or Health Workers know. You can also contact Dr Janet Roden on jroden@nswnma.asn.au or phone: 0447472154.
APPENDIX 3 – INVITATIONS TO COMMUNITY MEETINGS

PREPARING FOR THE ENERGY TRANSITION IN MUSWELLBROOK AND THE HUNTER

Community Perspectives

By Dr Janet Roden (NSW NURSES & MIDWIVES ASSOCIATION) & Dr James Whelan (ENVIRONMENTAL JUSTICE AUSTRALIA)

WEDNESDAY
21 MARCH 2018
Uniting Church Hall
108 Bridge Street, Muswellbrook
2.30 – 5.30pm: for supportive nurses, midwives and health workers
6 – 8pm: for general community

THURSDAY
22 MARCH 2018
Muswellbrook RSL
113 Bridge Street, Muswellbrook
2.30 – 5.30pm: for supportive nurses, midwives and health workers
6 – 8pm: for general community

GET INVOLVED!
We’re seeking volunteers to help administer a survey to learn how community members feel they will be affected by the energy transition, and how they will adjust economically, socially and emotionally. Nurses, midwives and health workers are especially invited to actively participate.

There will be a workshop for volunteers during the afternoon (2.30-5.30pm) on both Wednesday and Thursday. Then during the community workshop, volunteers will help attendees to complete the questionnaires. We also hope volunteers will continue their involvement throughout the project to help with focus groups and other activities. What a great way to learn about and support your community!

REGISTER NOW
https://hunter_energy_transition.eventbrite.com.au

Refreshments will be held at both venues.

CONTACT
Janet Roden
Email: jroden@nswnma.asn.au
Phone 0447 472 154
Invitation [by email]

Supporting the energy transition in Muswellbrook and surrounds: Learning about community views

6pm Wednesday 21 March 2018 / 6pm Thursday 22 March 2018

Uniting Church RSL ADD ADDRESS DETAILS HERE

Around Australia, coal-fired power stations are closing. Hazelwood in Victoria, Munmorah, Redbank and Munmorah in the Hunter region. And the planned 2022 closure of the Liddell power station. With each closure, the renewable energy transition moves a step closer. A planned transition allows a community to develop new industries, training courses and other support services. This hasn’t always happened when other Australian industries have transitioned, resulting in poor outcomes for communities and workers.

Please join us to discuss how Muswellbrook can benefit from a planned energy transition. What are your visions and ideas? What opportunities and obstacles do you see?

The workshop and survey will be summarised and communicated to state and Federal governments, and to the media, and help inform grants to fund community projects.

Get involved!

Nurses and midwives are especially invited to actively participate in this project. We’re seeking volunteers to help administer a survey to learn how community members feel they will be affected by the energy transition, and how they will adjust economically, socially and emotionally.

There will be a workshop for volunteers during the afternoon (2:30-5:30pm). Then during the evening workshop, volunteers will help people complete questionnaires. We also hope volunteers will continue their involvement throughout the project to help with focus groups and other activities. What a great way to learn about and support your community!

Convened by

* Dr Janet Roden, Chief researcher and professional officer with the New South Wales Nurses and Midwives’ Association

* Dr James Whelan, researcher and community organiser with Environmental Justice Australia
Register now

Name

Organisation (if applicable) ..............................................................................................................................................

Position (if applicable) ...................................................................................................................................................

Are you a nurse or midwife? Yes/No

Do you work in another health profession? Yes/No

Please tell us a little about your interest in the topic of Muswellbrook’s energy transition ..............
...................................................................................................................................................................................

Email address ....................................................................................................................................................................

Mobile ..................................................

Yes, I will attend the evening workshop 6pm Wednesday 21 March

Yes, I will attend the evening workshop 6pm Thursday 22 March

Yes, I would like to volunteer and will attend the afternoon training session from 2:30-5:30
REFERENCES


3. Climate and Health Alliance, Coal and health in the Hunter: Lessons from one valley for the world, 2015, pg 4


5. AGL, Pathway for the gradual decarbonisation of our generation portfolio, as cited above

6. NSWNMA Strategic Plan, 2015-2020, page 9


16. Skye Laris, AGM outlines plans for Liddell, 28 September 2017, cited previously


32. AGL, Upper Hunter Energy Integration Hub promotional video, at https://www.youtube.com/watch?v=fZVmVTmW-M, accessed 1 July 2018


Muswellbrook: between eight coal mines and two power stations
PREPARING FOR THE CLOSURE OF THE LIDDELL POWER STATION AND THE TRANSITION BEYOND

NSW Nurses and Midwives’ Association
Australian Nursing and Midwifery Federation NSW Branch

50 O’Dea Avenue
Waterloo NSW 2017

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This research report was written by Dr Janet Roden, Professional Officer, NSWNMA
Issued July 2018

Authorised by Brett Holmes, General Secretary, NSWNMA and Branch Secretary, ANMF NSW Branch, July 2018