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## Arid Lands Environment Centre Submission to the Northern Territory Government's Committee on the Territory's Energy Future

The Arid Lands Environment Centre (ALEC) is a community-based regional environmental organisation developing and delivering environmental and sustainability programs in Central Australia. For more than 30 years, ALEC has advocated for the conservation and responsible management of land, water and natural resources in the arid lands.

ALEC's vision is 'healthy futures for arid lands and people' and its strategic aims are to:

- Work to create more sustainable and resilient communities in Central Australia
- Promote protection of ecosystems and sustainable use of natural resources in Central Australia.

ALEC welcomes the opportunity to make a submission to the Committee on the Northern Territory's Energy Future and thanks the NT Government for the foresight to establish this important parliamentary committee.

### Introduction

The Northern Territory abounds in renewable energy resources. The Northern Territory has some of the best solar resources in the country, with Alice Springs and Central Australia having around 300 days of sunshine each year<sup>1</sup> and Darwin has the most hours of daily sunshine of any other capital city. Renewables and particularly solar energy has a large role to play in the Northern Territory's energy future. The low-population base and long distances between settlements makes widespread solar deployment into remote communities more economic than perpetuating their expensive dependence on fossil fuels.

The Northern Territory has unique opportunities to maximize renewable energy deployment. From the desert to the sea; wind, solar and tidal energy resources are in abundance. The solar resource in the Northern Territory is proportionally higher than anywhere else in Australia<sup>2</sup>. There is a huge opportunity for the Northern Territory to become a national, if not international leader in solar energy development and deployment. The success of the Australian Government funded Alice Solar City project, a potential solar research hub at the Desert Knowledge Solar Centre and the increasing uptake of rooftop solar demonstrate that Territorians are embracing solar energy. Other renewable energy options for the NT include wind power in the Barkly, small scale biogas, tidal and

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<sup>1</sup> [www.alicesolarcity.com.au/facts/solar](http://www.alicesolarcity.com.au/facts/solar)

<sup>2</sup> <http://arena.gov.au/files/2013/08/Chapter-10-Solar-Energy.pdf> pg2.

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potential waste incineration. Although electricity grids will almost always be backed up by fossil fuel-powered generators, high penetration of renewable energy and associated investment in renewable energy technology is a 'no regrets' energy policy and one that makes long-term business sense.

One of the most cost effective and immediate measures to reduce energy demand is the implementation of strong energy efficiency policies<sup>3</sup>. The Northern Territory is currently benefitting from Australian Government funded Alice Solar City and Alice Water Smart programs that are reducing energy demand. The NT Government could leverage these successes by developing and implementing a range of policies that include but are not limited to: environmental upgrade agreements and financial mechanism; energy efficiency targets for NT Government buildings and cars (rented and owned); water and energy efficiency community education and engagement programs; rebates for home energy efficiency upgrades; mandated energy efficiency targets for energy generators and distributors and the implementation of national building standards for energy efficiency design and construction. The desertSMART Roadmap 2013-18 *Electricity* (draft) section (Appendix 1) makes a number of recommendations for a solar smart Alice Springs, these could also be adapted for use across the Territory.

Currently, the Northern Territory relies almost entirely on natural gas for electricity generation and much of the economy is pegged on a global gas rush. The exploration for and the extraction of shale and tight gas in the NT is becoming increasingly prevalent and increasingly concerning. The use of hydraulic fracturing (fracking) in the process of exploration for and extraction of shale gas (primarily, methane) is fraught with controversy. The coal seam gas experience in New South Wales shows that community concerns include: threats to water, threats to agriculture and the natural environment, landowner and community rights, issues of trust, the role of the media, and human health and well-being<sup>4</sup>. Currently, the NT Government is not allaying community fears of groundwater contamination or instilling a sense of trust in policies and regulations. The 'open for business' mantra is largely seen as a fire-sale of NT gas to offshore destinations. This both reduces the energy security of the NT and in the long-term increases gas and electricity prices. The NT Government must ensure that strong water regulation and pollution controls are in place before granting exploration licenses. The current push to 'remove every molecule of gas' will lead to a momentary windfall of cash in the NT but will risk contamination of groundwater, damage to the natural environment and irreparable damage to community relations.

Nuclear power as an energy supply cannot be divorced from the cycle of deleterious health, environmental, social and security issues posed by the industry from uranium mining to energy production, waste management and weapons proliferation. Six decades of uranium mining in the Northern Territory has failed to grant the industry a secure social license to operate, and public mistrust of the industry and its operators long litany of environmental contamination incidents, failed rehabilitation efforts and health and security breaches mean any current and future projects will continue to be contested by the local community. At a time when the uranium commodity price is at historic lows reflecting a lack of confidence from governments and investors worldwide, it makes little sense for the Northern Territory government to consider subsidies to prop up existing failed ventures, assist in establishing additional mines or support nuclear waste disposal in the NT.

The Territory has a unique opportunity here to learn from the challenges posed by potential pollution and long-term environmental damage resulting from the extraction of energy resources from the ground. Strong regulation is needed to ensure that our groundwater resources are protected for the long-term. The Northern Territory has the opportunity to lead by example and be a

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<sup>3</sup> <http://www.cleanenergycouncil.org.au/technologies/energyefficiency.html>

<sup>4</sup> [http://www.chiefscientist.nsw.gov.au/\\_data/assets/pdf\\_file/0010/31789/Community-Concerns-in-relation-to-Coal-Seam-Gas\\_Taylor,-Sandy-and-Raphael\\_UWS.pdf](http://www.chiefscientist.nsw.gov.au/_data/assets/pdf_file/0010/31789/Community-Concerns-in-relation-to-Coal-Seam-Gas_Taylor,-Sandy-and-Raphael_UWS.pdf)

world leader in renewable energy generation and remote energy service provision. Fossil fuels should not be seen as an end in itself, but as a means for society to move to renewables. The NT Government could at the very least ensure that it invests as much into the renewables and energy efficiency sector as it does the mining and gas sectors. The future is not something to sell, but something to invest in.

## **Solar and renewables**

The Arid Lands Environment Centre (ALEC) strongly supports the Northern Territory becoming a world leader in solar generation in both regional centres and remote communities. The Northern Territory has some of the best solar resources in Australia and as such, ALEC recommends that investment in renewable energy be prioritised as a means of economic and social development in the Territory.

### ***Alice Springs: A World class solar city?***

Alice Solar City was a highly successful program that raised the profile and uptake of rooftop solar panels in Alice Springs. The community pride and interest in the program led to over 2700 household energy surveys, 220 businesses and over 700 solar photovoltaic (PV) systems in the 5-year project period<sup>5</sup>. The program was funded by the Australian Government and delivered through a Consortium with the Alice Springs Town Council, Northern Territory Government, Power Water Corporation, Arid Lands Environment Centre, Tangentyere Council and the NT Chamber of Commerce. The success of Alice Solar City has led to many people in Alice Springs and the wider region exploring opportunities for Alice Springs to become a world leader in solar technology and penetration (see Appendix 2).

The opportunities for the NT in developing a solar region are numerous. Not only does solar PV provide an opportunity for energy independence for remote communities but also provides an opportunity for training and transferable skills development. Alice Springs could become a world renowned solar centre with a concentrated solar thermal plant, an educational institution for solar and energy technicians and the highest solar penetration in the world. This scenario is possible and it is hoped that with NT Government support, Australian Government funding through the Australian Renewable Energy Agency (ARENA) could be made available to get the ball started. Other mechanisms for support would require members of the Alice Solar City Consortium to reconvene with the intention of developing and driving a roadmap to becoming an internationally recognised solar region.

Education, community engagement and the provision of financial mechanism such as rebates and low-interest loan schemes could accelerate the uptake of renewables in the NT. Solar energy is free once it is installed, with no on-going fossil fuel charges, minimal distribution costs, and relatively little maintenance. Through empowering and educating the community, renewable energy and particularly solar could grow to become a major source of energy in the NT. Given the disproportionate impacts of electricity price rises on the Territory's poor - renewable energy for low-income households combined with energy and water efficiency training and education - could alleviate the impacts of fossil fuel derived energy poverty. Community-owned solar farms could also play a strong role in driving the change towards renewables.

### ***Remote renewables***

The challenges facing the Northern Territory's energy future is largely related to its remoteness and its closeness to Asia. Currently the fueling of generators in remote communities across the NT forces certain sections of Power Water Corporation to consistently - and potentially always - run at

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<sup>5</sup> <http://www.alicesolarcity.com.au/progress>

a loss<sup>6</sup>. The delivery of these services are further hampered by the extremes of weather which can cut off whole communities in the wet season. Renewable energy, particularly rooftop PV with storage can provide zero-input energy. Previously available reports by the Green Energy Task Force, '*Road Map to Renewable and Low Emission Energy in Remote Communities*' and '*An evaluation of the relative merits, feasibility, and likely costs of the potentially available renewable energy technologies to be used in the NT, including geothermal, solar biomass and tidal*'<sup>7</sup> comprehensively detailed steps towards a renewable energy roll-out across the Northern Territory. ALEC recommends that the Northern Territory Government dust off these reports and seek to build on them. The work was completed by outside consultants and the information still relevant. It is a waste of taxpayers' money to throw away or conceal potentially useful information and knowledge.

### ***Knowledge, technology and development***

The development of renewable energy in the Northern Territory could provide a basis for long-lasting economic development. The development of technical skills and knowledge as a result of renewable energy development could be transferable to other remote and arid regions around the world. The export of knowledge, technological innovation and skills could provide a means of providing pathways to meaningful employment for Territorians.

The establishment of a Renewable Energy Hub at the Desert Knowledge Precinct could lead to Alice Springs becoming the 'solar mecca' for people from around the world to be inspired by the solar possibilities. As global pressure mounts on the reduction of carbon emissions and the impacts of climate change are more keenly felt, the Northern Territory could provide a working model of integrated, smart grids that rely on natural and renewable sources of energy rather than contributing disproportionately to global carbon emissions.

The Northern Territory could aim for the most diverse sources of renewable energy from tidal and biogas in the Top End, wind in the Barkly, algal biofuels in the desert and solar on every rooftop. The future is a choice...ALEC hopes that the Northern Territory Government will choose to reduce its environmental impact and make renewable energy as much of a priority as the extraction of shale gas currently appears to be.

**Recommendation: That the Northern Territory Government phase in renewables as the source for 20% of power generation by 2018, ahead of the mandatory Renewable Energy Target.**

**Recommendation: That the Northern Territory Government work with partners to implement the recommended actions of the desertSMART Roadmap 2013-18 *Electricity* section (Appendix 1).**

**Recommendation: That the Northern Territory Government work with partners to adapt the recommended actions detailed in the desertSMART Roadmap 2013-18 *Electricity* section (Appendix 1) for use across the Territory.**

**Recommendation: That the Northern Territory Government takes actions based on previous research to support the development of Alice Springs as a world renowned solar centre (see *Appendix 2*).**

**Recommendation: That the Northern Territory Government continue to support the roll-out of renewable energy in remote communities with a 50% target by 2020.**

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<sup>6</sup> verbal

<sup>7</sup> <http://www.ret.gov.au/energy/Documents/ewp/draft-ewp-2011/submissions/146.Northern-Territory-Government-Attachments.pdf>

**Recommendation: That the Northern Territory Government support the development of renewable energy in other regions beyond the Alice Springs and Darwin electricity grids.**

**Recommendation: That the Northern Territory Government ensure all of its operations are utilising 'green power'**

## **Energy Productivity**

Increasing the productivity of energy within the NT should be a key goal for the NT's energy future. Demand management and energy efficiency measures are the cheapest and most efficient means of reducing energy costs and consumer prices, and so increasing energy productivity. The Northern Territory's energy demand (outside of Darwin) is closely linked to groundwater extraction. Therefore water efficiency is essentially tied to energy efficiency. Save water, save power, save money. ALEC recommends that the NT Government vastly increase its efforts to increase the productivity of energy by investing in energy efficiency measures and setting targets both for its own operations and that of all buildings in the NT. The development of Territory-based financial mechanisms will quicken the journey and assist all Territorians to use energy more wisely.

### ***Financial mechanisms***

#### ***Environmental Upgrade Agreements (EUAs)***

EUAs are innovative financing mechanisms that provide a low risk option for financing upgrades and retrofits for energy productivity. EUAs are financial agreements between building owners, financial institutions and local councils to fund environmental upgrades to existing buildings<sup>8</sup>. This is of particular importance for the Northern Territory Government as it leases approximately 65% of all commercial buildings in the NT<sup>9</sup>. EUAs provide a mechanism to overcome one of the largest barriers to investment in energy efficiency upgrades – up-front costs to the building owner and split incentives for owners and tenants.

In Australia, EUAs exist in the City of Melbourne and at least four Sydney Councils. The South Australian Government is currently assessing opportunities for environmental upgrade finance. EUAs are currently only available with non-residential buildings. EUAs are derived from a residential scheme in the United States called Property Assessed Clean Energy (PACE) financing.

EUAs differ from the conventional financial products in that they are tied to the property rather than the property-owner. EUAs require the loan to be repaid as an environmental charge added to the quarterly rates and paid to the local council. The local council then pays this to the finance institution. Given the trajectory of increased electricity charges, the economics of energy efficiency has never been clearer in the Northern Territory. EUAs provide an innovative solution to reducing rising energy costs, improving building performance and reducing carbon emissions of the building sector.

#### ***Providing rebates***

Currently, there are few opportunities for householders to access rebates for investment in energy efficiency. Power Water Corporation currently offer the *Solar Hot Water Rebate*<sup>10</sup> and *ecoBiz NT* provides matched funding for participating businesses<sup>11</sup> and the *Central Australia Waterwise Rebate Scheme* provide limited support for householders investing in water efficiency. The experience from the Alice Solar City and Alice Water Smart programs is that people respond and

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<sup>8</sup> [http://www.sustainablemelbournefund.com.au/sites/default/files/TFE\\_eBOOK\\_FINAL%5B1%5D.pdf](http://www.sustainablemelbournefund.com.au/sites/default/files/TFE_eBOOK_FINAL%5B1%5D.pdf)

<sup>9</sup> <https://www.propertyoz.com.au/library/PCA%20Submission%20GLA%20standards%20Feb09.pdf>

<sup>10</sup> [http://www.powerwater.com.au/customers/save/renewable\\_products\\_and\\_rebates/solar\\_hot\\_water\\_retrofit\\_rebate](http://www.powerwater.com.au/customers/save/renewable_products_and_rebates/solar_hot_water_retrofit_rebate)

<sup>11</sup> <http://www.dob.nt.gov.au/business/starting-business/ecobiz/Pages/default.aspx>

take up the opportunities when they are 1) made aware of the opportunity and 2) the rebate is fit for purpose. The NT Government can increase the uptake of energy efficient appliances by encouraging people to invest in them. The closure of the Energy Smart Rebates NT is a step backwards and it is hoped that the program is being reviewed to ensure a more effective program replaces it.

Rebates need to be advertised to maximise uptake. This requires dialogue between the departments administering them and the community. Promotion of programs can also become part of the work of non-government organisations - through their memberships and client base they can encourage people to participate in the schemes. The Northern Territory Government can reduce its overheads and debt burden by supporting Territorians to save energy. ALEC recommends the NT Government review the operation of its rebates schemes and set efficiency targets for the scheme. Although rebates are limited in their scope on their own, they can play a much stronger role when part of an integrated approach of external financing, setting high performance targets and fees for non-compliance.

### ***Energy efficiency targets***

As one of the largest entities functioning in the NT, The Northern Territory Government can play a strong role in setting energy efficiency targets for all of its operations particularly building performance and vehicle fuel efficiency. Not only do these measures reduce the impact of the governments operations on the environment, but can also save money in the long run too. ALEC recommends that the NT Government build on the positive example provided by the Green Well building in Bath St Alice Springs and work to ensure that building procurement strategies are consistent with world's best practice for energy efficiency. The International Energy Agency outlines 25 Energy Efficiency Policy Recommendations across sectors, buildings, appliances and equipment, lighting, transport, industry and energy utilities<sup>12</sup>. Based on this, ALEC recommends that the NT Government establish an Energy Productivity unit within the Department of Chief Minister to work across all sectors to rapidly improve energy efficiency in the Northern Territory.

### ***Support the community***

No government can solve all the problems, nor can business provide all the solutions - the community sector has historically and continues to play a strong role in educating the public on energy efficiency and wise energy use.

In the Northern Territory, both the Top End COOLmob and desertSMART COOLmob continue to play important roles in bridging the gap between the government, community and sustainability sectors. Funded through a combination of NT Government grant funding and Power Water Corporation sponsorship - both COOLmobs have provided this important role for more than a decade. The presence of desertSMART COOLmob prior to the scaled up Alice Solar City and Alice Water Smart projects provided a solid foundation upon which to build these projects. desertSMART COOLmob continues to promote opportunities for the wider community to be engaged in energy (and water) efficiency activities. This important role is currently uncertain as funding is not assured beyond June 2014.

In 2012, desertSMART COOLmob staff secured both an Environment grant and a Community Climate Change grant to review the desertSMART Roadmap - a 2005 blueprint for Alice Springs to be a sustainable desert town and to develop a new one, the *desertSMART Roadmap 2013-2018*<sup>13</sup>. The Draft summary can be downloaded<sup>14</sup> with the final report planned for release in early

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<sup>12</sup> [http://www.iea.org/publications/freepublications/publication/25recom\\_2011.pdf](http://www.iea.org/publications/freepublications/publication/25recom_2011.pdf)

<sup>13</sup> <http://desertsmartcoolmob.org/current-projects/roadmap-to-a-desertsmart-town/>

<sup>14</sup> [http://desertsmartcoolmob.org/wp-content/uploads/2013/08/130807\\_Roadmap\\_summary\\_report\\_web.pdf](http://desertsmartcoolmob.org/wp-content/uploads/2013/08/130807_Roadmap_summary_report_web.pdf)

December. However, the current draft of the *Electricity* section is attached in Appendix 2. The importance of these projects and the organisations that support them is their ability to connect diverse members of the community to produce works that no other entity's could develop. The importance of continued government support for these programs is the connections formed between departments, organisations and the wider community. The targeted use of grant programs by government departments can elicit creativity and vision that can make the impossible seem possible. ALEC recommends that the NT Government continue to support both COOLmobs and their supporting organisations in continuing to work collaboratively to reduce the energy footprint in the NT.

**Recommendation: That the NT Government establish an Energy Productivity unit within the Department of Chief Minister to work across all sectors and departments to rapidly improve energy efficiency.**

**Recommendation: That the NT Government explore opportunities for developing a Territory-based model providing for environmental upgrade agreements/financing.**

**Recommendation: That the NT Government provide rebates for home energy and water efficiency upgrades.**

**Recommendation: That the NT Government mandate energy efficiency target for energy generators and retailers.**

**Recommendation: That the NT Government set energy efficiency targets for NT Government buildings and cars (rented and owned).**

**Recommendation: That the NT Government enforce national building standards for energy efficient design and construction.**

**Recommendation: That the Northern Territory Government promotes PWC rebates for solar hot water systems for homes and businesses.**

**Recommendation: That the NT Government review all current energy efficiency rebate schemes to increase uptake and effectiveness of investment.**

**Recommendation: That the NT Government continues to fund both desertSMART and Top End COOLmob programs to inform and engage the community in water and energy efficiency actions.**

## **Petroleum, gas and the impacts on water**

ALEC is deeply concerned about the NT Government-led expansion of the shale and unconventional gas exploration industry in the NT. The main concerns are related to the potential impacts of hydraulic fracturing on groundwater supplies and the environmental consequences of petroleum and gas exploration activities and extraction.

### ***Environmental damage***

Hydraulic fracturing (fracking) has been shown to have impacts on groundwater quality and quantity. The large volumes (~5-20ML per frack) of groundwater, the resulting contamination and

the continued interactions between fracking fluid and rock layers below the surface are the source of much speculation and concern.

Environmental risks from fracking include:

- groundwater contamination
- groundwater depletion
- wastewater management
- earth subsidence
- earthquakes and tremors
- methane leaks and fugitive emissions
- radon emissions
- failed casings and;
- legacy issues

The impact of shale and coal seam gas are evident from the industry's expansion on the east coast of Australia<sup>15</sup> and the Marcellus Shale Basin in the United States<sup>16</sup>. The significant challenge for the Northern Territory is getting the industry under a suitable regulatory framework that ensures the protection of our precious groundwater supplies and the wider environment. The current regulatory regime is inadequate and fails to protect Territorians and their livelihoods from the risks the industry poses. The current exemptions of the mining, gas and petroleum industries from the *Water Act* and *Waste Management and Pollution Control Act* are unacceptable. ALEC understands that the Acts are currently under review and initial indications suggest that the exemptions may be lifted. ALEC implores NT Parliamentarians to harmonise the regulatory regime for these industries and make them accountable in the same way that pastoralists, tourism operators and other business ventures are.

### ***The Gas Rush – Emissions overboard***

ALEC also has concerns about the 'use it or lose it' approach to exploration licences. While ALEC understands the rationale behind the approach, ALEC is concerned that it may facilitate less than optimal project management, force quick business decisions and lead to taxpayer-funded clean-ups and on-going legacy concerns. ALEC suggests that the NT Government works with the industry to support long-term decision-making to ensure 'no regrets' approaches are taken. ALEC would prefer to see low-risk, long-term projects delivering benefits to the local community than a rushed, high-risk, export driven endeavour going wrong and leaving an environmental and economic legacy of regret. ALEC is also concerned that the 'use it or lose it' approach will increase domestic prices and the export-based extraction will weaken the long term energy security of the NT.

The Northern Territory is highly vulnerable to climate change<sup>17</sup> and the current lack of policies for mitigating carbon emissions and developing regional and local adaptation plans is of serious concern. ALEC has concerns for the growing emissions profile of the Northern Territory and the lack of NT Government resources to address it. ALEC urges the NT Government to develop policies requiring petroleum, gas and mining operations to offset emissions in the Northern Territory. ALEC also has concerns about the Mines and Energy Department's ability to independently monitor environmental compliance when the Department website states that the 'Mines and Energy team is committed to supporting and advancing this vital industry sector'<sup>18</sup>. ALEC recommends that the NT EPA is resourced to play a larger role in the monitoring of petroleum and gas wells across the Territory. The 'gas rush' that the Territory is currently experiencing will significantly increase global carbon emissions. The current NT Government must

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<sup>15</sup> <http://www.lockthegate.org.au/>

<sup>16</sup> <http://www.dangersoffracking.com/>

<sup>17</sup> <http://www.climatechange.gov.au/climate-change/climate-science/climate-change-impacts/northern-territory>

<sup>18</sup> [http://www.nt.gov.au/d/Minerals\\_Energy/index.cfm?header=About%20Mines%20and%20Energy](http://www.nt.gov.au/d/Minerals_Energy/index.cfm?header=About%20Mines%20and%20Energy)



balance its 'open for business' mantra with responsible and sustainable development policies. To do otherwise, is to throw economic opportunities for future generations overboard.

### ***Sustainable Development?***

ALEC has serious concerns in regards to the current flight of staff from the Department of Land Resource Management Water Branch. There appears to be a culture worthy of concern developing, where key staff are leaving or being pushed to leave as they cannot keep doing their work in good faith. This is a serious issue and I would suggest the Minister for Mines and Land Resource Management make an effort to support sustainable environmental policy development. The recent departure of some of the best water policy-makers in the NT suggests that the ideological push from the Cabinet for an 'open for business' at all costs approach is failing the public service and the wider community. The current challenge is that the Department is now playing catch up as the gas and mining companies continue to expand their exploration activities without the benefit of clear policy directions beyond 'open slather'.

The promise of jobs for Territorians is also fast becoming a myth. The industry is driven by a fly-in, fly-out and highly specialised workforce. This is driving up the cost of living for ordinary Territorians and is marginalising long term economic development for short term economic gains. The onslaught of shale gas exploration has resulted in more than 90% of the NT now being under application for exploration. The lack of community engagement in the process has led to widespread distrust and concern within the community.

ALEC is also concerned about the recent removal of cultural rights to water and the removal of caps. The Minister's recent announcement regarding the reduction in water planning to only 50 years into the future is severely compromising the ability of future generations to have access to the quantities of water that we enjoy today. ALEC is concerned that the current 'gas rush' being heralded in the NT is moving too quick for the full and proper benefits for Territorians to soak in. The rush to get the gas out and the current failure to properly regulate it is placing the future (groundwater) at risk. Unless properly addressed, this could be a serious barrier to any ambitions that the current government has on achieving any level of sustainable development.

**Recommendation: That the exemptions for mining, gas and petroleum activities from the *Water Act* and the *Waste Management and Pollution Control Acts* are removed.**

**Recommendation: That the *Mining Management Act* and *Petroleum Act* are suitably amended to facilitate the removal of exemptions from the *Water Act* and *Waste Management and Pollution Control Act*.**

**Recommendation: That the NT Environmental Impact Assessment Guidelines ensure that all petroleum activities (including exploration) are covered by an EIA process.**

**Recommendation: That Territory gas reserves are reinstated.**

**Recommendation: That cultural water reserves are reinstated.**

**Recommendation: That a community benefit fund is established from gas royalties on pastoral leases to contribute to regional land management activities.**

**Recommendation: That the NT EPA is resourced to randomly inspect petroleum titles for environmental damage, fugitive emissions and groundwater impacts.**

**Recommendation: That the NT Government develop policies for carbon emission offsets in the NT.**

**Recommendation: That the NT Government develop regional mitigation and adaptation strategies in response to the changing global climate.**

## **Nuclear Free NT**

Nuclear power has received significant promotion in Australia by industry advocates such as the Uranium Association of Australia, with proponents attempting to exploit concern about climate change to reverse the industry's ongoing decline.

However, nuclear power cannot be divorced from the cycle of deleterious health, environmental, social and security issues posed by the industry from uranium mining to energy production, waste management and weapons proliferation. The Australian uranium industries contribution to the ongoing Fukushima nuclear disaster serves to highlight the unacceptably high risks of nuclear power and further entrench public mistrust in an industry that has never enjoyed public support for its introduction in Australia.

There is also growing recognition that the urgency of the climate change crisis means there is simply no time to choose nuclear power. The average construction time for a new nuclear power reactor is close to 10 years with construction costs for a new reactor estimated at approximately \$15 billion. A 2003 Massachusetts Institute of Technology study<sup>19</sup> concluded that more than two new reactors would have to start operating somewhere in the world every month over the next 50 years to displace a significant amount of carbon-emitting fossil-fuel generation<sup>20</sup>.

### ***Uranium Mining***

Claims that nuclear power is 'greenhouse free' are incorrect as substantial greenhouse gas emissions are generated across the nuclear fuel cycle. Fossil-fuel generated electricity is more greenhouse intensive than nuclear power, but this comparative benefit will be eroded as higher-grade uranium ores are depleted.

Most of the earth's uranium is found in very poor grade ores, and recovery of uranium from these ores is likely to be considerably more greenhouse intensive<sup>21</sup>. Nuclear power emits more greenhouse gases per unit energy than most renewable energy sources, and that comparative deficit will widen as uranium ore grades decline.

High-grade, low-cost uranium ores are limited and will be exhausted in about 50 years at the current rate of consumption and the estimated total of all conventional uranium reserves would only be sufficient for about 200 years<sup>22</sup>. But in a scenario of nuclear expansion, these reserves will be depleted more rapidly.

The most recent independent assessment of the Australian uranium industry, a Senate inquiry in October 2003 found the sector was characterised by underperformance and non-compliance, an absence of reliable data to measure contamination or its impact on the environment and an operational culture focused on short term considerations.

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<sup>19</sup> Massachusetts Institute of Technology, 2003, The Future of Nuclear Power accessed at <http://web.mit.edu/nuclearpower/>

<sup>20</sup> *ibid*

<sup>21</sup> Nuclear Energy Agency and International Atomic Energy Agency, 2004

<sup>22</sup> 'Water-Smart Power: strengthening the U.S. electricity system in a warming world'. Accessed at [www.ucsusa.org](http://www.ucsusa.org)

The World Nuclear Association (WNA), the trade body for companies that make up 90% of the industry, admits that in "emerging uranium producing countries" there is frequently no adequate environmental health and safety legislation, let alone monitoring.

The Northern Territory's experience of uranium mining has been plagued by environmental contamination incidents, ongoing failed rehabilitation of former mines, transport accidents and security and water management problems and the sector is long overdue for an independent assessment of its regulation and operations.

Ranger uranium mine situated within the boundaries of the World Heritage Listed Kakadu National Park and the longest running uranium mine in Australia has recorded over 200 spills, leaks, breaches and incidents in its operational lifetime.

The significant problems and risks regarding water management for an open-cut uranium mine in the Wet/Dry tropics have consistently plagued Ranger's operations. A 2009 report by the federal government's Supervising Scientist Division (SSD) indicated that Ranger's Tailing Storage Facility is seeping contaminated water at a rate of around 100,000 litres per day.

Ranger's operators, Energy Resources of Australia, are currently undergoing an approval process to expand the mine underground to extract uranium from a deposit called Ranger 3 Deeps holding an estimated 34,000 tonnes of uranium. If the project proceeds it would see the creation of 21,990 tonnes of depleted uranium waste, 3850 tonnes of high level nuclear waste and enough plutonium to build 3900 nuclear weapons.

### ***Nuclear Power, Uranium Mining and Water Scarcity***

The critical issue of water scarcity is already impacting on the power industry in Australia, largely due to the high water supply needs of coal-fired power plants. An expansion of uranium mining or the introduction of nuclear power, the most water-intensive of all electricity sources, would significantly exacerbate these problems.

A 2013 report by the Union of Concerned Scientists noted that the non-renewable power sector is built for a water-rich world and that at every stage of the nuclear fuel cycle the industry contributes to unsustainable water consumption and pollution. The nuclear power cycle uses water in three major ways: extracting and processing uranium fuel, producing electricity, and controlling wastes and risks. Compared to coal-fired plants nuclear power plants consume between 20-83% more water, with water consumption for nuclear reactors typically 13-24 billion litres per year, or 35-65 million litres per day<sup>23</sup> Conversely, the water consumption of renewable energy sources and energy efficiency/conservation measures is negligible or zero<sup>24</sup>.

Regulation of the uranium industry to prevent contamination is inadequate and, in the case of existing Australian mines, finite water supplies are used by companies free of charge despite proven adverse impacts on biodiversity and environmental flow rates.

Operator of the Beverley uranium mine in South Australia, Heathgate Resources, pollutes the underground aquifer with heavy metals, acid and radionuclides as a routine aspect of its operations, and is under no obligation to rehabilitate the aquifer.

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<sup>23</sup> Guy Woods (Department of Parliamentary Services), December 4, 2006, "Water requirements of nuclear power stations", Research Note no. 12, 2006-07, ISSN 1449-8456. [www.aph.gov.au/library/pubs/rn/2006-07/07rn12.pdf](http://www.aph.gov.au/library/pubs/rn/2006-07/07rn12.pdf)

<sup>24</sup> L. Pentz Gunter and K Kamps, Nov 7 2013, Don't trade global warming for nuclear meltdowns, CNN accessed at <http://edition.cnn.com/2013/11/07/opinion/pandora-nuclear-gunter-kamps/index.html>

BHP Billiton, operator of the Olympic Dam uranium, copper, gold and silver mine in South Australia does not pay a cent for water it extracts from the Great Artesian Basin and is licensed to extract 42 million litres daily for the mine, making it the largest single-site industrial user of ground water in the Southern Hemisphere. Since GAB water extraction for the Roxby Downs mine began in the 1980s, many connected Mound Springs have experienced reduced flows and some have ceased flowing altogether.

In 1994, former Olympic Dam operation WMC admitted that some 5-6 billion litres of waste had leaked from the tailings dams at Roxby Downs and into the groundwater and soil below. The leak had occurred unchecked for at least two years.

Jillian Marsh, Adnyamathanha Traditional Owner, noted in her submission to the 2002-03 Senate References and Legislation Committee that: "The government chose not to demand that the groundwater be rehabilitated, an unacceptable situation for the Australian public at large given our increasing reliance on groundwater and the increasing salinity of land surfaces and water systems."<sup>25</sup>

### ***No Solution to Nuclear Waste***

As the potential host of Australia's first national radioactive waste dump, the Northern Territory government is well placed to consider the social, environmental and political costs of the six year community and legal campaign to resist the imposition of the waste facility on Muckaty Traditional Owners and the wider NT community.

Over its operational lifetime every nuclear reactor produces hundreds of tonnes of highly dangerous and long-lived radioactive waste. There is currently estimated to be over 300,000 tonnes of high-level nuclear waste around the world today in addition to over one billion tonnes of low-level radioactive waste. This waste includes some of the most toxic materials known to humankind, such as plutonium, which pose a threat of cancers and genetic disorders to future generations for hundreds of thousands of years.

After nearly 50 years of the nuclear power experiment, to date, internationally no government has been able to solve the intractable problem of storing radioactive wastes. In the absence of a viable solution, expanding the rate of waste production is deeply irresponsible.

On a national scale the introduction of nuclear power in Australia would exacerbate water problems caused by fossil-fuel intensive energy production, increase electricity prices and blackouts and increase competition for access to scarce water resources. Coastal nuclear plants face the added impediment of rising sea levels and predicted increases in extreme weather events such as tornados, cyclones and tsunamis.

At a time when the uranium commodity price is at historic lows reflecting a lack of confidence from governments and investors worldwide, it makes little sense for the Northern Territory government to consider subsidies to prop up failing ventures or establish additional uranium mines.

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<sup>25</sup> <http://www.foe.org.au/sites/default/files/Uranium-ISL-2p-2013.pdf>

**Recommendation: That the NT Government undertake a cost/benefit analysis of the nuclear industry in the Northern Territory considering the environmental, health, security and social risks posed by uranium mining and the nuclear fuel cycle.**

**Recommendation: That the NT Government remove all public subsidies for uranium mining or nuclear projects in the Northern Territory.**

**Recommendation: That the NT Government oppose the construction or expansion of any existing or proposed nuclear projects in the Northern Territory.**

## **Conclusion**

The Arid Lands Environment Centre (ALEC) thanks the Northern Territory Government for the opportunity to make a submission to this important parliamentary committee. It is hoped that the Committee on the Territory's Energy Future will consider this submission and take heed of the recommendations. For over 30 years, ALEC has been a voice for the plants, animals and people of arid and semi-arid central Australia. Energy policy is a critical juncture where societal demands intersect with environmental needs. ALEC asks that the committee consider the long term impacts of its decisions on the groundwater, climate, country and the people of the Northern Territory. Sustainable development is not the sustaining of industry but ensuring that future generations have equal or the same opportunities as the current. Clean water, clean air and clean country are essential ingredients for life. Fossil fuels and nuclear power are dead ends. Increasing energy productivity and renewable energy will ensure a strong energy future for the Northern Territory. ALEC urges the committee to support the recommendations made in this submission.

Thank you.

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## Recommendations:

1. That the Northern Territory Government phase in renewables as the source for 20% of power generation by 2018, ahead of the mandatory Renewable Energy Target.
2. That the Northern Territory Government work with partners to implement the recommended actions of the desertSMART Roadmap 2013-18 *Electricity* section (Appendix 1).
3. That the Northern Territory Government work with partners to adapt the recommended actions detailed in the desertSMART Roadmap 2013-18 *Electricity* section (Appendix 1) for use across the Territory.
4. That the Northern Territory Government takes actions based on previous research to support the development of Alice Springs as a world renowned solar centre (see *Appendix 2*).
5. That the Northern Territory Government continue to support the roll-out of renewable energy in remote communities with a 50% target by 2020.
6. That the Northern Territory Government support the development of renewable energy in other regions beyond the Alice Springs and Darwin electricity grids.
7. That the Northern Territory Government ensure all of its operations are utilising 'green power'
8. That the NT Government establish an Energy Productivity unit within the Department of Chief Minister to work across all sectors and departments to rapidly improve energy efficiency.
9. That the NT Government explore opportunities for developing a Territory-based model providing for environmental upgrade agreements/financing.
10. That the NT Government provide rebates for home energy and water efficiency upgrades.
11. That the NT Government mandate energy efficiency target for energy generators and retailers.
12. That the NT Government set energy efficiency targets for NT Government buildings and cars (rented and owned).
13. That the NT Government enforce national building standards for energy efficient design and construction.
14. That the Northern Territory Government promotes PWC rebates for solar hot water systems for homes and businesses.
15. That the NT Government review all current energy efficiency rebate schemes to increase uptake and effectiveness of investment.
16. That the NT Government continues to fund both desertSMART and Top End COOLmob programs to inform and engage the community in water and energy efficiency actions.
17. That the exemptions for mining, gas and petroleum activities from the *Water Act* and the *Waste Management and Pollution Control Acts* are removed.
18. That the *Mining Management Act* and *Petroleum Act* are suitably amended to facilitate the removal of exemptions from the *Water Act* and *Waste Management and Pollution Control Act*.
19. That the NT Environmental Impact Assessment Guidelines ensure that all petroleum activities (including exploration) are covered by an EIA process.
20. That Territory gas reserves are reinstated.
21. That cultural water reserves are reinstated.
22. That a community benefit fund is established from gas royalties on pastoral leases to contribute to regional land management activities.
23. That the NT EPA is resourced to randomly inspect petroleum titles for environmental damage, fugitive emissions and groundwater impacts.
24. That the NT Government develop policies for carbon emission offsets in the NT.
25. That the NT Government develop regional mitigation and adaptation strategies in response to the changing global climate.
26. That the NT Government undertake a cost/benefit analysis of the nuclear industry in the Northern Territory considering the environmental, health, security and social risks posed by uranium mining and the nuclear fuel cycle.
27. That the NT Government remove all public subsidies for uranium mining or nuclear projects in the Northern Territory.
28. That the NT Government oppose the construction or expansion of any existing or proposed nuclear projects in the Northern Territory