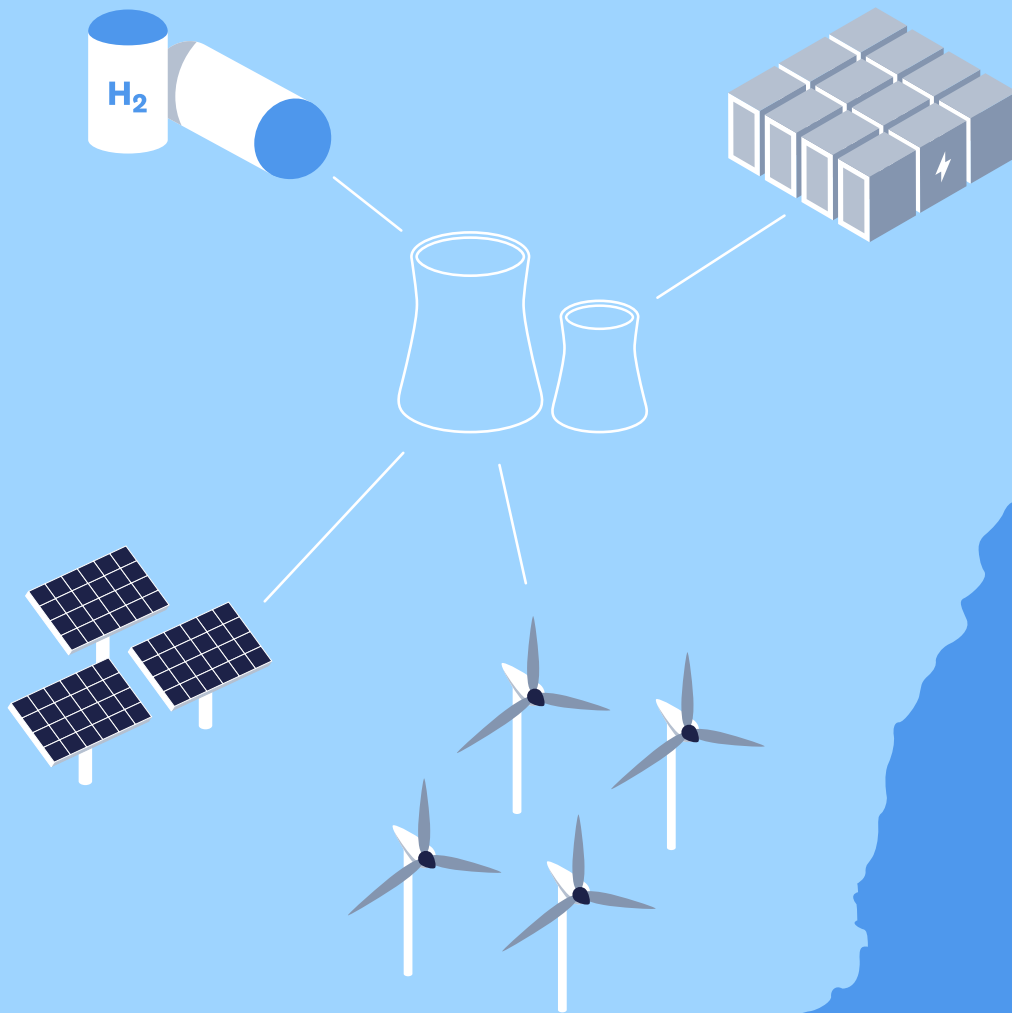


Blueprint Institute

Breaking new ground

Challenges and opportunities of a changing
energy landscape in regional Australia



Central Coast, New South Wales

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This series

This paper is part of a series exploring the specific challenges and opportunities facing those regions housing the majority of Australia's coal assets. We take a close look at each region, reviewing local economic opportunities in the context of a changing economic mix. This research equips policymakers with the information necessary to act and embrace the potential of our regions. The series builds on two of our past releases—[From the ground up: A Blueprint for economic diversification in regional Australia](#), and our [Voices from the regions](#) polling. These papers drew on international examples, as well as the perspectives of local communities, to recommend a cohesive policy framework to renew economies, by empowering communities and supporting workers through the shift to a clean energy economy.

About Blueprint Institute

Every great achievement starts with a blueprint.

Blueprint Institute is an independent public policy think tank established in the era of COVID-19, in which Australians have witnessed how tired ideologies have been eclipsed by a sense of urgency, pragmatism, and bipartisanship. The challenges our nation faces go beyond partisan politics. We have a once-in-a-generation opportunity to rethink and recast Australia to be more balanced, prosperous, resilient, and sustainable. We design blueprints for practical action to move in the right direction.

For more information on the institute please visit our website: blueprintinstitute.org.au

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Executive summary

The emerging clean energy economy offers a window of opportunity for New South Wales' Central Coast. Capturing this potential requires a targeted and proactive policy approach that leverages the region's entrenched advantages and lays the bedrock for sustained prosperity.

Regional communities along New South Wales' Central Coast—including those in the federal electorates of Calare, Cunningham, Hume, Hunter, and Shortland—have long formed a cornerstone of our economy. Housing significant coal assets, they have brought power into our homes and businesses, foreign capital to our shores, and provided employment to thousands of Australians.

Across the country, a massive change is already underway. Coal-fired generators are facing increased competition, with most veering towards expedited retirements—unviable in the face of ever-cheaper renewable energy. The days of insatiable global demand for our thermal coal exports are also numbered. COP26 galvanised international support for decarbonisation and coal is one of the main targets. With unanimous agreement to 'phase-down' coal-fired generation secured at Glasgow last October, even China and India are now pursuing net-zero agendas.

Private players in international finance have thrown their weight behind the energy transition. The Global Energy Alliance For People And Planet has pledged over \$14.8 billion to help developing countries reduce their fossil fuel consumption. Similarly, the Asian Development Bank and other large financial institutions such as Citibank and HSBC are developing private-public partnerships to accelerate the closure of coal plants across Asia. The initiative would see these players buy out existing assets and attempt to shut down operations within 15 years.

This shift should be met with optimism, not trepidation, in New South Wales' Central Coast. The region can prosper in the clean energy economy. The only question is whether policymakers have the courage and foresight to enable local communities to capitalise on emerging opportunities.

Few nations in the world share our combination of sunshine, wind, and access to financial and human capital. In addition, we possess an abundance of rare earth elements and critical minerals such as lithium—an essential input into the production of clean energy assets like batteries, and critical technologies like computer chips.

“As coal declines, New South Wales' Central Coast has the opportunity to secure a sustainable future built around renewable energy and clean industry. But supportive state and federal policy must match local ambition.”

– David Cross, CEO

Central Queensland can prosper in the clean energy economy. The only question is whether policymakers have the courage and foresight to help local communities capitalise on emerging opportunities.

These opportunities exist throughout the Central Coast.

Blueprint's modelling indicates that approximately 5,400 jobs in renewable energy projects will be created in the Central Coast over the next three years. Of these, 320 are permanent, long-term positions. These are new jobs, drawn only from projects that are registered with the regulator and have commenced construction, or with clear construction dates and funding routes.

But in order to secure enduring prosperity along the Central Coast, we must do more. Based on current commitments, renewable energy will not create nearly enough employment to offset the 11,039 coal industry jobs at risk over the next three decades in the region. Moreover, the vast majority of renewable jobs are short-term construction positions, with far fewer long-term stable jobs in maintenance and operations.

The diversification of local employment beyond renewables—to areas such as clean industry development, critical minerals mining, and the auxiliary industries to support them, as well as other emerging sectors—will be necessary to provide meaningful and stable employment to the region’s communities and to support Australia’s broader economic growth. Thus, this report also explores the opportunities that are available to the region beyond renewable energy generation.

Lasting prosperity in the clean energy economy is attainable in the Central Coast, but it will require broad stakeholder collaboration, and in some cases, targeted government support. The policy settings required to ensure effective diversification of our regions can be found in Blueprint’s report, *From the ground up*. The report called for:

- the creation of coal adaptation authorities, supported with \$20 million each in initial federal funding and ongoing royalties, distributed by state governments, to empower local communities;

- the development of a national coalfield and infrastructure renewal and repurpose strategy to ensure that existing assets are utilised to help communities pivot and access new opportunities; and
- well-designed support for workers through job search and retraining services, income insurance and, where necessary, early retirement packages.

Regional Australia should not be left to carry the economic cost of our collective responsibility to act on climate. Policymakers must be honest about the decline of coal and proactively design policy that can help communities adapt and thrive.

As this series will illustrate, the regions can lead us into a new era of prosperity. The opportunities are there for the taking. Our polling shows that voters in the Central Coast are demanding their leaders step up. We hope that this research enables policymakers to move fast and embrace these opportunities with confidence.



New South Wales

Calare, Cunningham, Hume, Hunter, Shortland

New South Wales' coal country wraps around the perimeter of Sydney's outer suburbs, separated from the state capital by the Blue Mountains. Distributed across the federal electorates of Calare, Cunningham, Hume, Hunter, and Shortland, this diverse geography encompasses bustling regional centres like Orange and Goulburn, wool and 'food basket' country, picturesque wineries, and prominent mining and energy industries. Collectively, these five seats host [39](#) operational coal mines and five coal-fired power generators.

While New South Wales' coal communities are portrayed as detached from the attitudes and interests of the broader state, the two are deeply intertwined—coal supplies over [80%](#) of the state's energy and serves as the state's [largest](#) export sector. In the emerging clean energy economy, the fate of these communities will affect energy and economic stability across the entire state.

Of course, the costs of this shift will be felt most intensely by local coal communities if policymakers fail to develop proactive

diversification strategies. New South Wales' coal regions are over reliant on coal for employment and local economic activity—for instance, coal industries support almost 6,500 jobs in the Hunter Valley. Moreover, in two of the Hunter's shires, Singleton and Muswellbrook, mining (which is predominantly coal) accounts for [31.6%](#) and [28.4%](#) of employment respectively.

Fortunately, there are opportunities to diversify New South Wales' coal regions and create new, sustainable sources of prosperity. Renewable energy projects including solar and wind farms are already positioned to provide thousands of initial construction jobs and further ongoing positions. Large infrastructure projects such as hospitals and airport upgrades will create additional construction jobs over the near term. More significantly, critical minerals mining and clean industries such as green steel can create many secure long-term jobs if the Central Coast can capitalise on its entrenched infrastructure and natural resource advantages.

In the coming pages we outline the challenges these communities face, the significant opportunities which can shape their future, how they can seize these opportunities, and the perspectives of local residents on the ground.



The task at hand

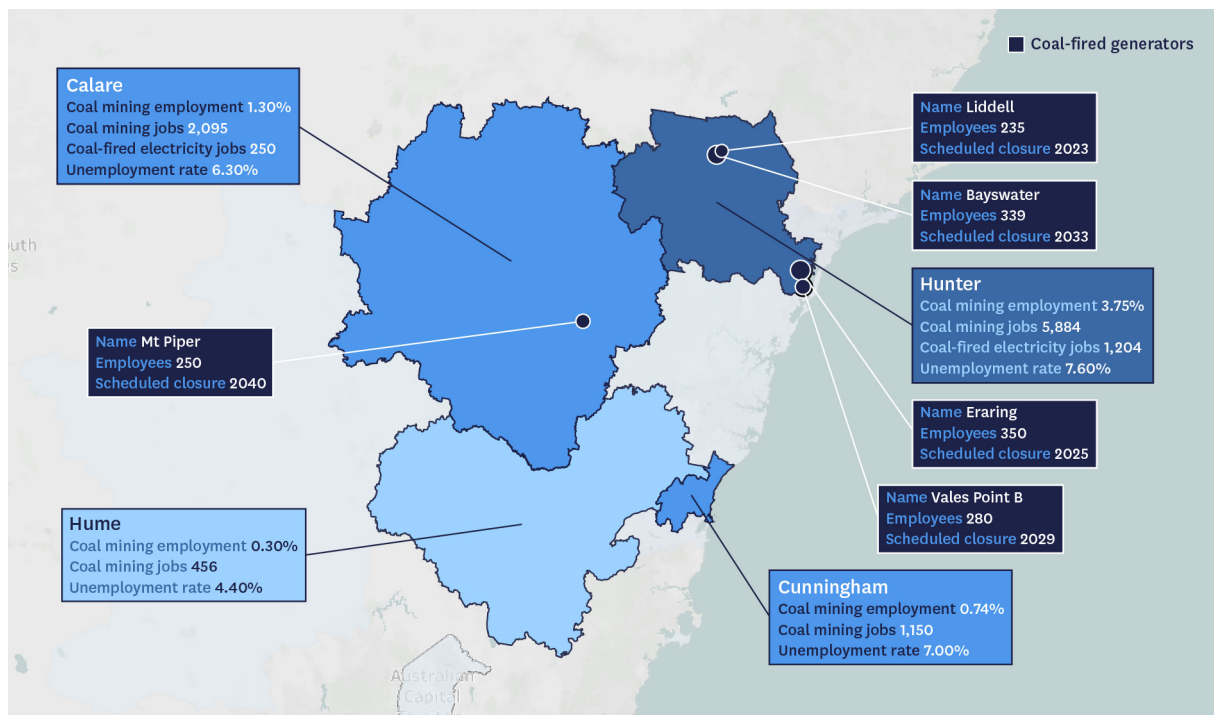


Figure 1 The demographics and coal assets of New South Wales' Central Coast

Source [Australian Bureau of Statistics](#), Company websites, Blueprint Institute Analysis

New South Wales' Central Coast has long been a successful coal mining and coal-fired energy powerhouse. The state's vast and plentiful coal deposits once promised energy and economic security into the distant future. However, the pivot of global economies and markets towards new clean industries means the region must adapt to promote a new era of prosperity.

As in Queensland, coal jobs in New South Wales are largely found in regional areas, with mining employees in the regions outnumbering those in Greater Sydney by [ten to one](#). Two areas—the Hunter Valley and the Southern Coalfields—host the majority of the state's jobs in coal mining and coal-fired power generation. Our research observes both the accelerating closure of domestic coal-fired generators and a decline in demand for coal internationally.

Fortunately, New South Wales' regions have an array of opportunities at their disposal to shift towards new sources of growth and secure employment. But local, state, and federal governments must collaborate to ensure that these opportunities come to fruition, and that more can be created to ensure the regions' ongoing prosperity.

Hunter Region

In 2020, mining accounted for [28%](#) of the Hunter Valley's gross regional product, valued at \$6.2 billion. Growth in coal exports across the past two decades has supported higher than expected living standards for a region with a relatively [low level](#) of tertiary education completion compared to the broader population. The Hunter hosts [22](#) operational coal mines, alongside three of the five remaining coal-fired power stations in New South Wales. Coal mining is written into the Hunter's DNA—serving as the region's largest employer at [nine percent](#) of the workforce.

Thermal coal is a key regional product. Although thermal coal feeds a major source of electricity for New South Wales, [90%](#) of all coal mined in the Hunter is exported and burned in Asia. The once-unthinkable decline of our thermal coal exports is already identifiable locally in the Hunter region, with plans to expand the Port of Newcastle's coal shipping capacity [abandoned](#) in 2018 amid slowing demand. The operator [confirmed](#), "We do not expect that the conditions to support an investment of the large and long-term nature of [the planned] Terminal 4 will be in place."

After two decades of remarkable growth, the decline of coal will be felt sharply by Hunter communities that have built prosperity and stability on the back of this commodity. Singleton and Muswellbrook are especially dependent. Hunter Valley mines and power plants account for [58%](#) of economic output in the two shires and employ [31.6% and 28.4%](#) of workers respectively.

Without active diversification, the decline of coal will aggravate a range of socio-economic vulnerabilities in Muswellbrook. The shire's high school and tertiary completion rates are [low](#) and the proportion of people receiving government assistance is more than [two times](#) the Upper Hunter average. Barring a proactive strategy and meaningful government support, a fall in coal exports could decimate these localities as local businesses collapse and people are forced to move elsewhere to find new employment.

As for the broader Hunter Region, the retirement of its three remaining power plants by 2035 will be felt deeply. The first of these, Liddell, is set to close by 2023. Meanwhile, the largest plant, Eraring, will now be retired by [2025](#) after having its closure date dramatically brought forward by seven years—the earliest possible closure date after providing the market operator with the minimum required notice period of 3.5 years. While the announcement may have come as a [surprise](#) to government leaders, the Australian Energy Market Operator's (AEMO) latest [analysis](#) predicts that our nation's coal-fired fleet will face expedited closures over the next decade, well in advance of official timelines. Eraring will not be the last to make such a commercial decision as coal stations struggle to contain financial losses.

The fragility of New South Wales' coal industry has already been demonstrated from 2008–2014, when coal demand and prices fell to record lows, taking [25%](#) of mining employment with it. Presently, [most mines](#) in the Hunter region are operating far below their capacity due to falling international demand. Even so, new mines continue to be approved throughout the region, reflecting the underdevelopment of alternative, sustainable industries and opportunities.

The emerging risks are not limited to regional jobs, but extend to the security of New South Wales' electricity supply. Given that the Eraring plant currently supplies around [25%](#) of New South Wales' daily energy needs, replacing it with renewables will require a vast improvement

in transmission infrastructure, which is [not currently positioned](#) to support the more decentralised geographic concentration of solar and wind farms. This challenge reflects the significant structural adjustments which must be anticipated and addressed, rather than ignored and resisted. Without them, our regions will be unable to thrive in the clean energy economy.

Southern Coalfields

In Sydney's Southern Basin (a geological region centring around Wollongong, south of Sydney), [six](#) coal mines extract high-quality metallurgical coal—a vital component in [steel production](#), so demand for this variety remains high. Although the Basin's underground coal mining sector has provoked a range of [controversies](#) surrounding its environmental impact, it is still an active supplier of employment for the broader region.

When we think of coal in New South Wales, the Hunter region is usually the first that comes to mind. But coal mining is also king down in Sydney's Southern Basin. Over the [past 150 years](#), mining has shaped the livelihoods of many families in the area. The very existence and history of these communities is tied to coal, and their level of prosperity has closely followed fluctuations in its price.

With metallurgical markets remaining strong in the short term, these communities face a less imminent adjustment than those centred around the coal-fired power industry. Emerging green technologies have yet to mature to displace the role of metallurgical coal in traditional industrial processes like steel-making. Yet, it would be foolish to bet against technological development when our leading international coal markets are themselves driving the shift to green steel. For instance, the Japanese government has allocated approximately [\\$27 billion](#) to commercialise hydrogen-powered steel-making technologies by 2030. The international climate agenda and movement of capital markets towards green technologies also means that the sector is very much swimming against the tide—surviving only until viable technological alternatives are developed.

If the Central Coast is to flourish in the future clean energy economy, we must begin preparing now by supporting local residents in their search for new economic opportunities.

The opportunities— what's on offer?

A variety of new opportunities can allow local communities, such as those in the Central Coast, to prosper. Some government policy is already moving to support these new opportunities. New South Wales Treasurer Matt Kean has [already announced](#) a jobs package set to sponsor 3,700 new local positions in a ‘manufacturing renaissance’. The plan involves 2,700 jobs in construction of fast-tracked transmission infrastructure, \$250 million invested to create 500 jobs in renewable infrastructure manufacturing, and \$300 million invested to generate an additional 500 jobs in clean manufacturing (especially green hydrogen).

Renewable electricity generation

Blueprint Institute’s research projects that by 2025, approximately 5,400 new jobs will be created for regional communities as a result of upcoming renewable installations across the Calare, Hume, and Hunter electorates. This is a deliberately conservative estimate, and includes only those projects which are registered with the regulator (AEMO), and can be cross-

referenced with other records to ensure their ongoing potential. These jobs do not include rooftop solar installations, which the [federal government projects](#) will constitute up to a third of all grid-connected capacity nationwide by 2030—providing around [2,000](#) additional jobs throughout New South Wales by the same year, with 67% of those jobs based in regional New South Wales.

Renewable developments will account for:

- 869 jobs created in 2022,
- 1,080 jobs created in 2023,
- 2,200 jobs created in 2024,
- and a further 1,231 jobs in 2025,
- totalling approximately 5,400 jobs across the next three years.

These projections include 320 new permanent positions in operations and maintenance for Central Coast communities by 2025.

Figure 3 gives a granular breakdown of the timing of this employment. It illustrates our forecast that renewable employment across the Central Coast, on its current trajectory, is expected to surpass that of the local coal-fired generators.

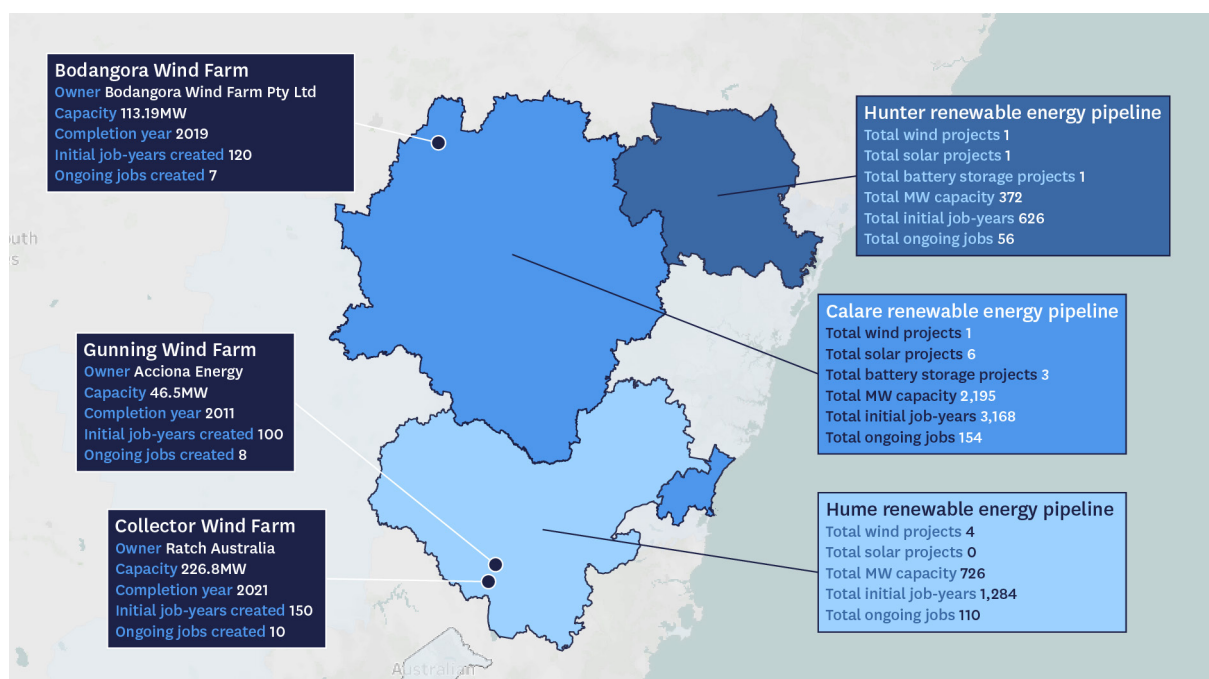


Figure 2 New green opportunities, Central Coast, New South Wales

Source Company websites, Blueprint Institute Analysis

Note We did not identify any renewable developments in Cunningham or Shortland.

However, this projection should not be extrapolated to suggest that these renewable jobs are a one-to-one replacement for coal-fired generator jobs. The fact remains that these projected renewable positions are likely not as well compensated as those in coal and are not a direct match in terms of required skill sets. Furthermore, there is still the matter of the roughly 10,000 local jobs in coal mining that are not included in the below graph. Simply put, more must be done to secure the future prosperity of the Central Coast.

The New South Wales government has plans to significantly add to the current lineup of renewable projects by attracting over [\\$37 billion](#) of investment in the sector by the end of the decade. If successfully raised, a significant portion of that investment will likely be allocated to develop the Central Coast's solar resources. Highlighting the region's potential are the [sixteen](#) utility-scale solar farms already in operation across the Central Coast, including two in Calare. These solar farms produce approximately 1,000MW of power, collectively generating just [2.3%](#) of the state's annual electricity demand in 2019. However, given the strong levels of [solar irradiance](#) in portions of New South Wales, solar farms have a considerable role to play in the state's future energy portfolio. In fact, along the Central Coast alone, we have identified seven solar farms currently in development with anticipated completion dates before 2026.

Following Eraring's early closure announcement, the New South Wales government has [announced](#) its intentions to build a 700MW 'Waratah Super Battery' before 2025. This battery will help ensure the grid's reliability by storing excess energy generated by renewables during periods of ample supply and dispatching energy to the grid during periods of peak demand.

The Central Coast is also blessed with the offshore wind resources necessary to productively absorb large amounts of additional renewable investment. The waters off the coast of Newcastle are endowed with [comparatively high wind speeds](#), [often](#) at times when onshore wind and solar are low.

Since they remain in the early stages of planning and financing, our projections currently exclude even the [most promising](#) offshore wind proposals for the waters off the Central Coast. But things are moving quickly. According to Oceanex CEO Andy Evans, construction for their Newcastle and Illawarra farms could begin [as early as 2028](#), with first generation now expected by 2030. And while these projects are still somewhat uncertain, they are undoubtedly massive in scale—those listed in a leading 2021 survey report total 13,400MW of power, far dwarfing the 3,300MW of onshore wind and solar capacity included in our projections. Meanwhile, the even more recently announced [Newcastle Offshore Wind Project](#) could represent up to 10,000MW alone.

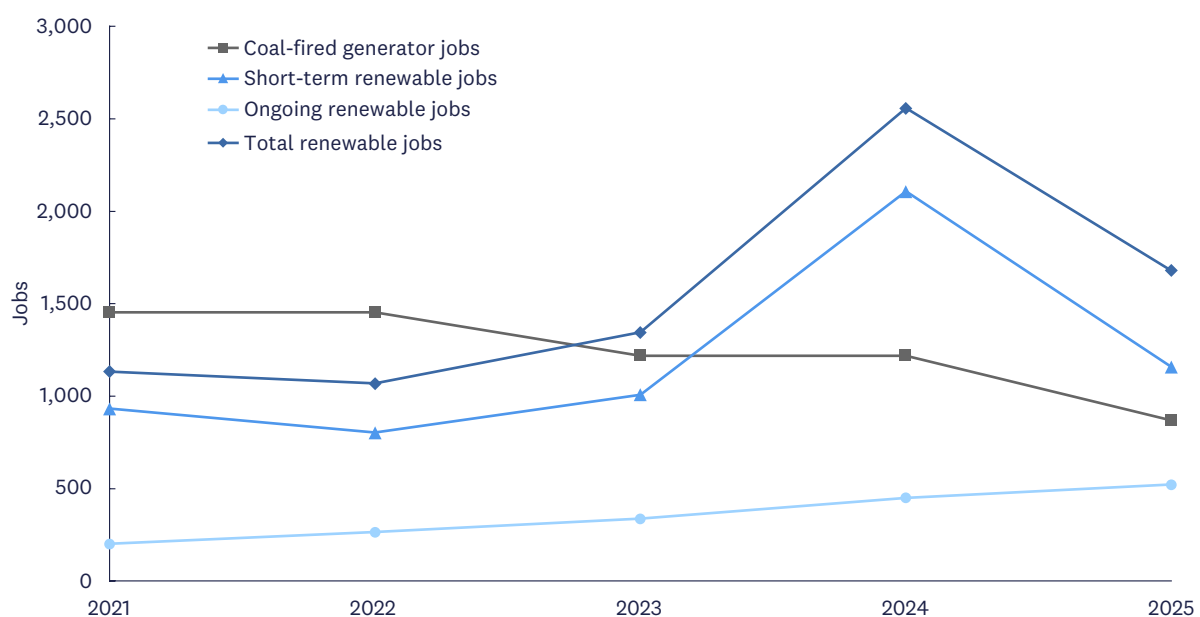


Figure 3 Timeline of employment for energy generation in New South Wales' Central Coast (2021-25)

Source Blueprint Institute Analysis

[Employment factors](#) indicate that the combined 23,400MW of offshore wind power could sponsor over 22,000 job-years of construction work and over 4,200 permanent positions in operations and maintenance. The level of employment associated with these projects offers a clear signal that offshore wind should be top-of-mind for local and state officials as they search for additional opportunities for renewable investment.

Even if the Central Coast's offshore wind resource is developed, however, it is unrealistic to expect the renewable energy industry alone to mitigate the inevitable loss of well-paying, stable coal jobs. The Central Coast will fare better with a considered policy that enables the region to diversify its economic base, setting up prosperity for the long run.

Let us not forget—renewable energy projects are only a fraction of the vast opportunities that are available across the Central Coast.



Methodology—why we need to be clear when talking about jobs

Many industry groups, and even governments, posit that hundreds of thousands of jobs will be brought to regional Australia because of the growth in various economic opportunities. Energy providers have been prone to careless exaggeration, with [Adani claiming in 2015](#) that its mines would create 10,000 jobs, before admitting later in court that the real number was only 1,463.

All claims of job creation, from governments and business alike, need to be taken with a grain of salt. That's why we have implemented a consistent and rigorous methodology that errs on the side of caution, and only counts those jobs that are highly likely to be created.

Even with the aforementioned distinction between short- and long-term jobs in mind, estimates of so-called *employment factors* (the number of jobs created per megawatt of installed power) vary widely.

Such estimates are necessarily imprecise and depend not only on the type of renewable technology employed, but also on factors such as site terrain, environmental impact, and local regulations. In order to be as realistic as possible, Blueprint has taken a conservative approach, drawing on the most credible research available. Our methodology is based on a comprehensive [2020 University of Technology Sydney \(UTS\) study](#) that directly surveyed the Australian renewable industry to calculate employment factors. Given Australia's relatively high productivity and access to technology, these employment factors were lower than those found by [IRENA](#) and others in the broader international literature. In order to maintain reliability over time, UTS also employed cost data to project proportional declines in employment factors over time due to productivity advancement. Finally, the study broke down job types and their prevalence in regional areas to provide estimates of how many of these new jobs could be accessible to regional workers.

On average, we conclude that 2.3 job-years of temporary construction and installation labour are needed to install one megawatt of utility solar capacity in Australia. Each megawatt of utility solar is also projected to require 4.4 job-years of manufacturing (only 0.092 of which are currently serviced by domestic Australian manufacturing) and create 0.11 permanent positions in operations and maintenance. The corresponding numbers for wind power are as follows: 2.8 job-years per megawatt in construction and installation; 1.7 job-years per megawatt in total manufacturing (including 0.377 job-years in Australian manufacturing); and 0.22 ongoing jobs per megawatt in operations and maintenance.

In the case of utility-scale battery technology, while UTS did provide employment factors, they resulted in employment figures that were five to six times greater than those reported by the respective renewable energy firms. In instances where there were no sensible employment factors, we have relied on company reported numbers. Company projections have also been used for hydrogen-related jobs where, due to the relative infancy of the technology in Australia, reliable employment factors were unavailable. These company projections have been cross-checked with relevant international employment figures for other hydrogen projects to ensure that outlandish claims have been discarded.

Unfortunately, UTS did not provide offshore wind employment factors. Here we deferred to the most conservative international estimates calculated by the OECD, which were also used as the lower bound estimate in Blue Economy Cooperative Research Centre's leading paper on [Offshore Wind Energy in Australia](#). The paper quoted a projected 0.96 job-years per megawatt in construction and installation, 7.8 job-years in total manufacturing (including 0.78 job-years in domestic Australian manufacturing) and 0.18 jobs per megawatt in ongoing operations and maintenance positions.

All of this means that a new 100MW solar farm which takes one year to construct in 2022 would be expected to involve approximately 140 regional construction workers and up to eight manufacturing positions for one year. In addition, around five permanent jobs would be created for locals to operate and maintain the solar farm.

As noted, Blueprint has only considered projects that are recorded in official government sources or in the Australian Energy Market Operator’s (AEMO) latest database, and can be cross-referenced with other records to ensure their ongoing viability. AEMO’s records are particularly reliable given they are the basis for important market decisions and to accurately model the future of the grid. Our triangulation with multiple sources also addresses instances in which some projects proposed five or more years ago are abandoned without updating AEMO.

As technology improves and the cost of solar and wind power declines over time, so too will the number of jobs created by a given installation. Part of this effect is driven by what economists describe as ‘learning-by-doing,’ where productivity increases as workers gain experience with the tasks involved in the construction and installation of wind turbines and solar panels. Improvements in equipment—for instance, over the past two decades, the average rating of a wind turbine has increased from 0.5MW to 3MW per turbine—have also led to a decline in the number of jobs created per MW of capacity installed. To account for this, we followed UTS’ methodology in discounting a renewable technology’s employment factors each year on a proportional basis in line with its reduction in cost. For example, since solar power is projected to decline in cost by 5.7% per year from 2020–25, we discounted its employment factor by the same rate.

The second adjustment we made was to ensure we were only capturing regional jobs. Projections indicate that regional workers would be able to access 67% of the immediate construction jobs in wind, 69% of solar construction jobs, 73% of ongoing operational jobs in wind, and 55% of ongoing solar positions. But as industries continue to develop, the potential for even

more of these jobs to be housed regionally may continue to grow. By sponsoring programs to retrain and upskill workers, governments can equip local workforces to increase the local share of jobs.

All of this means that a new 100MW solar farm which takes one year to construct in 2022 would be expected to involve approximately 140 regional construction workers and up to eight manufacturing positions for one year. In addition, around five permanent jobs would be created for locals to operate and maintain the solar farm.

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Renewable technology	Construction & installation (job-years/MW)	Domestic manufacturing (job-years/MW)	Operations & maintenance (ongoing jobs/MW)
Solar	2.3	0.092	0.11
Wind	2.8	0.377	0.22

Table 1 Unadjusted employment factors for renewable energy assets

Source UTS, Blue Economy Cooperative Research Centre

Other opportunities

Clean industries—finding greener pastures

As coal declines and renewable electricity struggles to deliver a comparable level of employment, it is critical that the Central Coast explore novel industries to uncover new, sustainable sources of growth. The Central Coast's opportunities extend far beyond renewable generation—it is primed to harness the international growth of clean industry, especially green hydrogen and steel, to its advantage.

The Hunter Valley is an ideal home for large-scale clean industry. It is blessed with excellent transport infrastructure, a large skilled workforce, and is in close proximity to the planned [Hunter-Central Coast Renewable Energy Zone](#).

Accordingly, the Hunter Valley region has received [\\$486 million in federal funding](#) to develop an industrial hydrogen hub. The proposed [Hunter Hydrogen Network \(H2N\)](#) is the cornerstone project in Australia's first "Hydrogen Valley." The first stage of development aims to produce green hydrogen; the second stage of the project plans to transport the manufactured hydrogen through a pipeline to end-users, both domestic and overseas. The proposed two-billion-dollar network will transform the nation's capacity to transport, produce, and export hydrogen. According to [latest reports](#), New South Wales' hydrogen hubs have already received eight times more interest than expected with over four billion dollars in private investment and up to 5900MW of electrolyser capacity now on the table.

Several companies are studying the feasibility of converting the Liddell and Bayswater coal-fired power stations into green hydrogen plants. Should the redevelopment project move forward, it would constitute a momentous step toward the state's emissions reduction target—Liddell and Bayswater together produce [over 40%](#) of New South Wales' carbon emissions—and create over [1,000 jobs](#) in the region.

'Green steel' production involves the substitution of hydrogen for coal in the steel-making process. The by-product is water instead of carbon dioxide. Low-emissions green steel presents the Hunter Valley region with a clean alternative

industry following the shift away from coal. The region is well situated for green steel production, with access to an abundance of renewable energy sources. A cheap supply of green energy could be a source of significant comparative advantage in the future, and is foundational for a viable green steel industry. The birth of a new export sector through large-scale green steel production could create thousands of jobs and offset coal-related job losses. It may soon become a matter of competitive necessity, as some of the first commercial green steel is due to enter the market by [2026](#).

Critical minerals mining

Out of everyone in the Central Coast, coal miners may believe they have the most to lose in a clean energy future. However, a clean energy economy will nevertheless be in need of miners. Instead of a lengthy retraining process and disruptive career transition, a significant number of the region's coal miners could find their existing skills in high demand in the rapidly expanding critical minerals industry.

Uptake of renewable energy is accelerating around the world, and demand for critical minerals—a globally underdeveloped resource that serves as a key input for low-carbon technologies and other important growth areas like computer chips—has spiked. [The International Energy Agency predicts](#) that mineral requirements for low-carbon technologies are likely to double by 2040, and could almost quadruple if the world manages to achieve its Paris Agreement goals.

This presents New South Wales with a massive opportunity.

The New South Wales government has sought to capitalise on demand for critical minerals through the [New South Wales Minerals Strategy](#). The 2019 plan seeks to increase exploration for rare earth metals in the state by providing better data and faster approvals. This was followed in 2021 by the announcement of the [New South Wales Critical Minerals Hub](#) in the Central West region. While some of these opportunities would require Central Coast residents to relocate or work on a fly-in-fly-out basis, the close industry match could be a big advantage for those currently

working in thermal coal mining. The state hopes to encourage exploration by investing \$16 million to improve the geographic data critical to mineral exploration efforts. These are important first steps for developing this nascent industry.

Export-oriented growth stemming from critical minerals mining could cushion the impact of coal closures. The state has significant [deposits](#) of minerals (such as gold and rare earth metals) which are in high demand on world markets. A [report](#) published by Accenture predicts that clean exports have the potential to create over 7,700 jobs in the Hunter Valley region by 2040.

With [appropriate policy settings](#) in place, New South Wales could capitalise on this opportunity and become a hub for mineral mining.

Broad diversification in the region

The state government has actively sought to diversify the Central Coast's economic base. This has included the formulation of region-specific plans. The [Hunter Regional Plan 2036](#), in particular, sponsors numerous major projects as part of a comprehensive vision to establish the Hunter as "the leading regional economy in Australia." Critical to this is the development of broad sustainable industry, the revitalisation of regional centres, and growing opportunities for tourism.

Regional gas infrastructure is expanding rapidly with the \$1.2-billion Hunter Gas Pipeline having received approval from the New South Wales and Queensland governments. Once completed, the pipeline will span 830 kilometres and deliver gas from Wallumbilla in Northern Australia and Roma in Queensland through the Upper Hunter, Singleton, Muswellbrook, Maitland, and Port Stephens before terminating in Newcastle. The project will contribute 350 jobs in construction and 20 positions in operations and management. Thousands of additional jobs are projected to result from the [Williamstown Special Activation Precinct](#) defence and aerospace hub. Despite these advances in specific industry and resources projects, regional councils recognise the need for more general investment.

Most recently, in response to the pandemic, ten local councils in the Hunter have formulated a program to deliver a series of shovel-ready infrastructure projects valued at approximately \$400 million—prioritising investment in tourism,

regional aviation, cycling and pedestrian safety, town centre revitalisation, and community infrastructure and facility upgrades. This is the latest in a series of regional plans designed to improve the basic infrastructure of regional towns.

One of the most ambitious regional infrastructure projects is the planned [\\$650-million](#) redevelopment of the Newcastle area. In addition to a greater focus on tourism and health services, the redevelopment plan includes the establishment of a greater metropolitan zone, encouraging business innovation, increasing housing supply, and improving transport networks. Newcastle Airport will also receive a Code E runway upgrade, providing the Hunter with the capacity to increase tourist and freight activity. The upgrade is expected to create 4,410 jobs and generate an additional \$12.7 billion through tourism and freight transport.

Regional universities are also important in the transition to a clean energy economy. Funding has been secured for the [\\$17.8-million Hunter Innovation Project](#), which will bring together researchers, students, and entrepreneurs at the University of Newcastle. Building research capacity complementary to existing industry is an important step for the region. The New South Wales government has also announced increased funding for the Agriculture, Water and Environment Institute at Charles Sturt University. Research funded under this scheme will lessen the impact of viticulture on freshwater ecosystems and optimise farming systems, thus ensuring the continued productivity and sustainability of this regionally important industry.

Tourism is a much-touted solution to regional economic decline. It is, however, essential that it be supported by existing competitive advantages, of which the Hunter has many. Chief among them is the international reputation for its wine. The wineries around the Pokolbin area produce some of Australia's best. This presents an opportunity for further integration with tourism. Indeed, the continued success of the region's wineries is seen as a major drawcard for tourists.

These opportunities, combined with the outlined renewable and clean energy projects, offer the key to setting up the Central Coast to prosper in a future driven by innovation and diverse industry.

Recommendations

It is crucial that policy settings, determined by federal, state, and local government, reflect the reality that current efforts will be inadequate to counterbalance the eventual loss of employment and economic activity associated with the decline of coal. In order for the Central Coast to thrive in the clean energy future, the government must empower local communities and businesses to leverage all available opportunities to grow beyond the limits of coal.

In order to achieve these goals, we recommend that the federal government:

- provide \$20 million in funding to establish a coal adaptation authority in the Hunter Valley, covering the electorates of Hunter, Calare, Hume and Cuningham. These authorities would be staffed primarily by respected locals and tasked with analysing issues relating to the energy shift while continuously engaging with communities, and developing and iterating strategies to respond appropriately. They would maintain distinct statutory independence while working with existing governments and agencies where appropriate. These authorities would also be responsible for conducting a thorough fact-finding mission, studying local industry and demographics to ensure that any recommendations are data driven. By establishing employment information hubs, they would engage with the workers anticipated to be directly impacted.
- offer financial and administrative support to coal mine and generator operators to develop renewal strategies for their infrastructure. To support innovative regeneration plans, the federal government would match private investment, from the operator or otherwise, up to a value of \$100 million per asset. Such a figure is in line with existing government support for energy infrastructure investments, though in this case the benefits for local communities would be far greater. In New South Wales this would mean developing renewal strategies for regional communities like Muswellbrook and Singleton. This would also necessitate

planning for the shutdown of the Liddell power plant, rather than seeking to prolong its life.

And that the Queensland government, working together with local governments:

- provide five percent of its collected coal royalties to the coal adaptation authority. In 2019–20 this would have amounted to \$80 million. A similar, but smaller, scheme was introduced in April 2021 with the New South Wales Royalties for Rejuvenation program. Such a plan ensures that the royalties collected by the state is approximately proportional to the number of coal workers located there. These revenues would be collected by the state and held in a specific New South Wales Coal Adaptation Fund within the Department for Regional New South Wales. The funds would then be distributed between the state's various coal adaptation authorities at the Department's discretion.
- support coal adaptation authorities to ensure that they can deliver their mission. This would include providing resources and support to enable the authorities to complete thorough fact-finding missions, and establish employment hubs to reduce hiring costs for firms and job seeking costs for workers in the impacted regions.
- Continue to support and investigate the possibility of the green hydrogen industry, to further encourage investment into the Central Coast region.

These recommendations are outlined in greater detail in Blueprint's [From the ground up: A Blueprint for economic diversification in regional Australia](#).

Local perspectives

Interview insights

Interviewing locals on the ground in New South Wales has revealed the pragmatic attitudes held by many in the community. As a machine operator in an underground mine that produces metallurgical coal in the Southern Coalfields, Phil’s* risk of unemployment is on a different timeline to his counterparts at coal-fired power stations. But he knows this won’t be the case forever. A former plumber, Phil started as a fly-in-fly-out worker, before beginning to live locally. He notes that the coking coal his mine predominantly produces is still in demand: “without the coal mines in the Illawarra, you wouldn’t be able to make steel.”

But he recognises that coking coal mines won’t be around forever: a “couple [of the mines] in the Illawarra [have] only 20 years left, or less.” Yet, he notes these communities are heavily tied to mining—both historically and in the present.

“Many have had whole families who have all been coal miners: dads, uncles, and grandfathers who have been coal miners.”

Mines have shaped the livelihoods of the people in the Illawarra region for over 150 years. According to Phil, the community is “built on mining.” It is financially centred around the coal industry, with not only the steelworks, but the local specialised engineering firms—such as those that service the trucks, maintain equipment, produce self-extinguishing plastic—dependent on the mines’ continued operation. Phil estimates 40% of the business of the regions’ laundromats consists of washing the uniforms of the mining employees. This means that the “flow-on effect would be pretty bad”, with many likely to relocate towards Sydney or other population centres for work when the mines close.

While his community is sure to face challenges stemming from the change sweeping the region, Phil noted that about half of mine workers were like him, and had a trade background they would be able to fall back on. But those who went straight to the mines from school—especially third- or fourth-generation miners—would face greater obstacles.

Ex-miners with trade backgrounds could find civil, machining, or labour work. However, for those without the necessary skills, retraining would be required—something Phil notes about 75% of the local mines’ employees would “jump at”. Such retraining could also help provide mental health support to the workers and those in the community affected by coal-related closures.

The challenge of maintaining gainful employment is already heightened for many mine workers, with Phil noting that volatility is a risk—a recent change saw one-third of the workforce, or around 100 casual staff, laid off by text message with little to no notice. Of those retrenched, 80% went to work in other mines. In a few decades time, however, Phil recognises there may not be any other mines left to go to.

*Names have been changed to preserve anonymity.

Blueprint's Voices from the regions poll

Hundreds of others in the broader community reflect Phil's pragmatic approach: Central Coast residents clearly recognise the challenges before them, but they also see that with these challenges come opportunities. And they want government policy to enable them to take advantage. In Blueprint Institute's poll—[Voices from the regions](#)—over 70% of respondents in Calare, Hunter, and Shortland agreed that coal wasn't the only option for their communities. Rather, they believed that alternative industries could thrive.

Residents favour two policies in particular. First, they want strong government investment to kick-start new industries and attract private funds. Over 70% of respondents believed that investing in more renewable energy facilities would create new jobs in the area.

Second, over 70% of residents in each electorate supported reducing subsidies for coal and gas companies and using the savings to invest in large-scale renewable energy. Despite their concentration of coal industry employees, support for this measure reached 50% in Calare, 67% in Hunter, and 55% in Shortland. It is hard to imagine a more ringing endorsement for

renewable energy investment. Coal industry employees see the writing on the wall. The majority want government assistance to enable them to continue their legacy in energy generation by prioritising the renewable opportunities of the future, even at the cost of subsidies to their current jobs.

On the industrial front, an average of 80% support investing in new clean industries such as green hydrogen. Support amongst coal households once again reached remarkable heights, ranging between 72% and 80% in the different electorates.

On top of economic renewal, communities know that workers also need individual support. While certainly related, many of the jobs offered by the clean energy economy will not involve identical skills to those in the coal industry. That is why over 80% of respondents in each electorate supported coal workers receiving government-funded training if they are made redundant—with “strong support” from 49%, 55%, and 59% of residents in Calare, Hunter, and Shortland respectively.

Our polling demonstrates just how aware communities in the Central Coast of New South Wales are of the opportunities available to them—and the corresponding need for sound policy to ensure they can be harnessed effectively.

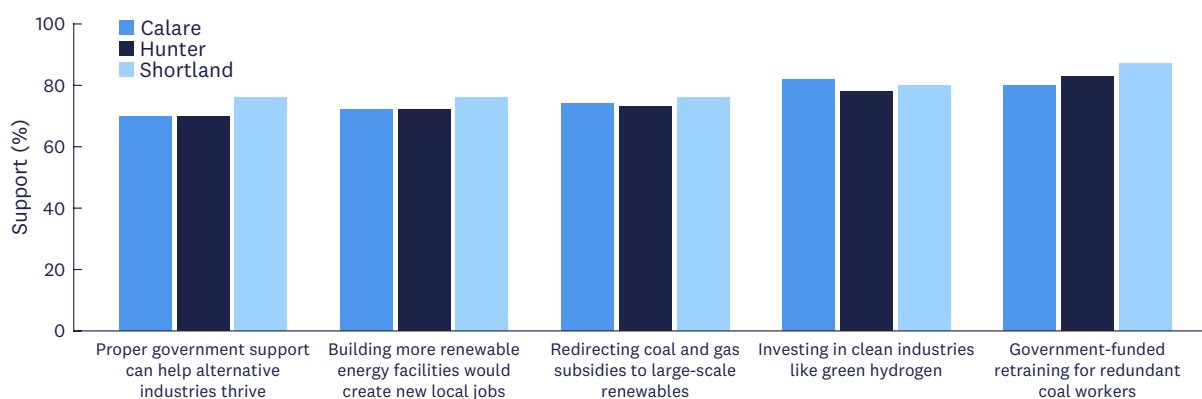


Figure 4 Calare, Hunter, and Shortland residents' support for different policies in response to the shift to clean energy

Source Blueprint Institute's [Voices from the regions](#) poll, conducted by YouGov

Conclusion

There is no denying that our coal industries are now in their twilight, living on borrowed time. The migration of capital from carbon-intensive economic activity to low-carbon alternatives like renewable energy has sounded the death knell of coal's long-standing cost advantage. International financiers and our leading trade partners are all pursuing ambitious climate agendas, threatening the longevity of even our export markets.

Rather than burying our heads in the sand, governments must be honest with regional communities, and enable them to position themselves to benefit from a changing economic landscape. Australia's regions have been the cornerstone of our agricultural and resource sectors for many decades. As hosts to many of the country's biggest industries, regional prosperity underpins prosperity for all Australians.

The Central Coast can adapt smoothly to a clean energy economy. It is already beginning to do so. Wind and solar farms are in development all across the region, offshore wind and clean industries hold great promise, and efforts to diversify its economic base are underway.

The Central Coast, however, needs more support. Our projections show that, at the current pace, these opportunities will not develop in time to fully offset the social and economic effects of coal's decline. The good news is that there is still time to act.

In our report, [*From the ground up*](#), we outline how governments can best empower communities, renew economies, and support workers. With well-funded local leadership to unite stakeholders and proactively embrace promising opportunities, the Central Coast can thrive well into the future.



