



Renewable and Resilient Energy

Rationale

The region aspires to develop a Renewable and Resilient Energy (RRE) industry sector primarily centered around energy efficiency and renewable energy. Industries supporting such an industry include Utilities, Construction, and Repair and Maintenance, among others. These industries support a high proportion of family-sustaining occupations. Therefore, additional economic activity in these industries is likely to continue to foster and promote family-sustaining occupations.

Figure 11 Renewable and Resilient Energy Industries Performance

	Employment	LQ	% Change in LQ	% Job Growth	Job-to-Job Multiplier	% Family Sustaining Job	GHG per Job (kq)	
Construction (23)	10,827	1.3	-3%	14%	1.4	72%	10,279	Specialization & Resilience
Repair and Maintenance (811)	3,143	1.1	7%	3%	1.3	69%	198	Other Industries
Utilities (221)	679	1.6	-12%	-12%	3.1	97%	2,431,384	

4th Quartile (Highest Performing)
 3rd Quartile
 2nd Quartile
 1st Quartile (Lowest Performing)

Note. Data sourced from IMPLAN. Author's calculations. 2022 data with 2013 growth comparison. NAICS codes shown in parentheses. Employment figures include proprietors and may differ substantially from QCEW data, which include only employees.

The Redwood Region has great potential for developing its RRE sector. Establishing both energy efficiency and renewable energy investments offers significant potential for job creation and economic development. Energy efficiency investments are often labor intensive and so tend to create more jobs per dollar invested than do renewable energy projects. Moreover, energy efficiency jobs are often cross-sectoral and local (in industries like construction, manufacturing, and installation/maintenance). From an economic development standpoint, energy efficiency provides ongoing energy cost savings for households and businesses and frees up dollars that can be spent in local economies. Efficiency also has the benefit of added resilience: For example, reducing total energy demand can mitigate energy price volatility and supply disruptions.

Renewable energy investments also generate jobs in construction, manufacturing, and operations, although at a somewhat lower labor intensity than does energy efficiency. However, renewable energy can provide significant boosts to local economies as an export industry, especially in rural areas such as the Redwood Region, with strong renewable resources that can be sold outside the region (see the discussion below). Both efficiency and renewables offer opportunities for building local supply chains and spurring innovation as these industries grow. As such, a transition strategy (as is being developed by the RRE Sector Table) that prioritizes both energy efficiency and renewable energy based on regional strengths can maximize overall job creation and economic development while accelerating the shift to a clean, resilient energy system.

The offshore wind industry has high potential to contribute to the Redwood Region's economic growth, GHG emissions reduction, and climate goals. Preliminary economic modeling shows significant (yet highly uncertain) potential impacts statewide (modeling of regional impacts is currently being conducted). Estimates of Humboldt offshore wind job creation potential are difficult to pin down with present insights; the Schatz Energy Research Center at Cal Poly Humboldt is currently working on IMPLAN models to do so. Actual jobs and job creation estimates per GW (gigawatt) from studies across the nation use different job calculation procedures or models (IMPLAN, JEDI) based upon different assumptions, and on-site,

construction stage, supply chain, and induced job numbers are often aggregated. Offshore wind also presents opportunities for innovation and industry-specific asset development, and policy trends support renewable energy growth and job creation. As the industry grows over the next 10-20 years, further innovations in design, materials, and construction techniques are expected to drive down costs and improve technologies and operational efficiency.



Watch the Renewable and Resilient Sector Strategy Video

Vision

The RRE vision for the Redwood Region can showcase how rural communities can lead the transition to a clean energy future. The vision encompasses a carbon-neutral energy sector where all residents, including those in the most remote areas, have access to affordable and reliable clean energy. The RRE Sector Table envisions a future where community-owned energy projects keep economic benefits local. Supporting cutting-edge research drives innovation in energy storage and microgrid technologies, enabling strong energy infrastructure to be resilient in the face of climate impacts and other disruptions. Central to this vision is a thriving and diverse workforce that reflects the region's demographics and values. By leveraging the region's abundant natural resources, rich cultural heritage, and spirit of innovation, a flourishing clean energy economy can be created that not only meets local needs but positions the Redwood Region as a leader in rural energy solutions.

"Let's focus on using technology to address environmental needs. We could become the new green tech hub."

Background

The RRE sector is dynamic and rapidly evolving, sitting at the intersection of environmental sustainability, economic development, and social equity. The sector encompasses a wide range of technologies and practices, including solar and wind energy, advanced energy storage solutions, smart grid and microgrid systems, energy efficiency advancements, biomass and waste-to-energy technologies, green hydrogen production, and electric vehicle infrastructure, among others. The state is supportive of such technologies in support of its clean energy goals, and incentivizes their adoption through programs such as the Renewable Portfolio Standard 25 and Cap-and-Trade 26 programs.

While the RRE sector is concerned with energy technology, it also addresses critical challenges faced by people and communities. A key purpose of the Sector Table discussions has thus been to assess ways to (1) Ensure reliable and equitable access to clean energy in underserved rural areas; (2) Develop a skilled and diverse workforce ready for the clean energy transition; (3) Reduce greenhouse gas emissions to combat climate change; (4) Enhance community energy resilience to extreme weather events; and (5) Foster local economic development through sustainable energy industries.

The RRE sector currently includes occupations such as solar installers, energy auditors, electrical engineers, and plumbers, with new occupations emerging in wind energy, microgrids, transmission and distribution, energy storage, community energy, and energy-related circular economy applications. The sector is poised to become a cornerstone of the Redwood Region's economy, driving innovation, creating high-quality jobs in myriad new occupations, and ensuring a sustainable future for generations to come.



The RRE sector must navigate and address several critical environmental challenges:

- ◆ Climate change impacts, including rising temperatures and changing precipitation patterns, impact energy demand patterns and infrastructure performance. Sea-level rise threatens coastal energy infrastructure and vital revenue derived from tourism, while increased frequency and intensity of extreme weather events strain grid resilience.
- ◆ Grid resilience and modernization present both challenges and opportunities. The region's aging infrastructure is vulnerable to climate impacts and cyberattacks, necessitating significant upgrades to accommodate increasing renewable energy integration and electrification. Balancing grid stability with high penetration of variable renewable sources remains a key challenge.
- ◆ Wildfire risk poses a growing threat to transmission lines and other energy infrastructure, necessitating innovative approaches to vegetation management and grid design. The potential for Public Safety Power Shutoffs (PSPS) further underscores the need for local, resilient energy systems.
- ◆ Balancing renewable energy development with habitat and biodiversity conservation is crucial; this effort includes mitigating impacts of wind and solar installations on wildlife and managing potential conflicts between energy projects and protected areas. Water resource management in energy production, particularly with an increasing drought risk, is another key consideration.
- ◆ Developing sustainable end-of-life solutions for renewable energy equipment and maximizing the potential of waste-to-energy technologies while minimizing emissions are essential for creating a truly sustainable and circular energy system. The sector must also address potential air quality impacts, particularly from biomass energy projects.
- ◆ Land use conflicts between renewable energy development and other uses (agriculture, forestry, recreation) must be carefully managed, as well as community concerns about visual impacts and changes to local landscapes. Ensuring that the benefits of clean energy transition are equitably distributed and addressing historical environmental burdens in priority communities are paramount.
- ◆ Finally, quantifying and preserving the carbon sequestration potential of natural landscapes and integrating green infrastructure into energy system design present both challenges and opportunities for the sector.

Analysis of the RRE sector’s Strengths, Weaknesses, Opportunities, and Threats (SWOT) provides valuable insights for strategic planning:

Figure 12 Renewable and Resilient Energy Sector SWOT

<p>Strengths</p> <ul style="list-style-type: none"> ◆ Abundant and diverse renewable energy resources, as well as emerging Tribal leadership in renewable energy projects ◆ Strong culture of environmental stewardship ◆ The presence of leading research institutions ◆ Modest numbers of skilled workers with transferable skills from traditional energy and resource industries ◆ Strong policy support at the state level for the clean energy transition ◆ Unique geography offering opportunities for innovative solutions 	<p>Weaknesses</p> <ul style="list-style-type: none"> ◆ Aging and limited grid infrastructure (particularly in remote areas) ◆ High upfront costs for renewable energy projects in a region with economic challenges ◆ A limited local manufacturing base for clean energy technologies ◆ A notable numbers and skills gap between the current workforce and emerging clean energy job requirements
<p>Opportunities</p> <ul style="list-style-type: none"> ◆ Rapidly growing global market for clean energy technologies and services ◆ Increasing federal and state funding for clean energy and resilience projects ◆ The potential to become a leader in rural clean energy solutions, including energy efficiency ◆ The potential ability to leverage synergies with other sectors (e.g., agriculture, forestry) for integrated resource management 	<p>Threats</p> <ul style="list-style-type: none"> ◆ Accelerating climate change impacts ◆ Rapid technological change that may outpace local workforce development efforts ◆ Competition from other areas for clean energy investments and talented workers ◆ Uncertainty in the long-term federal policy landscape for clean energy incentives ◆ Cybersecurity risks to increasingly digitized energy systems ◆ Public concerns about land use changes and visual impacts of large-scale renewable projects ◆ Potential supply chain disruptions ◆ Economic disruptions in traditional industries during the energy transition

By leveraging its strengths, addressing its weaknesses, seizing opportunities, and mitigating threats, the Redwood Region can better position itself as a leader in rural clean energy development.

Renewable and Resilient Energy Sector Strategies

Strategy 1: Strengthen Regional Workforce Development

Key Components and Specific Objectives

The first RRE strategic pillar focuses on creating a robust pipeline of skilled workers ready to meet the demands of the evolving clean energy sector. This strategy is crucial not only for a successful energy transition, but also for ensuring that the economic benefits of this transition are widely shared.

“I really like the idea of energy that we produce here. Staying here. And if we are utilizing our sea and our land for renewable energy project[s], it seems fair to me that we should get the electrons first and free.”

A cornerstone of this strategy is establishing partnerships between Tribal, public, private, and business entities to launch ongoing investments in comprehensive clean energy workforce training programs. These programs will cover a wide range of skills needed in the sector, from solar installation and wind turbine maintenance to energy auditing and microgrid operation, as well as installation and maintenance of vital electric vehicle charging infrastructure. These programs will be accessible to a diverse range of learners, including those transitioning from traditional energy sectors, young people entering the workforce, and individuals from priority communities. It will be important to expand K-12-to-career pathways in partnership with educational institutions and industry. Dual enrollment programs with community colleges for early career exploration should be developed with newly established research partnerships to drive innovation and attract talent. Existing programs such as Mendocino College’s Sustainable Construction and Energy Technology Program, and Foundation for California Community Colleges’ Resilient Careers in Forestry program should be leveraged to the extent possible.

A key initiative proposed by the RRE Sector Table is the “Clean Energy Corps,” targeted at disinvested communities, dislocated and unemployed workers, and Tribal members. This program (currently in the pre-feasibility stage) could be designed to enable job creation in clean energy (in partnership with industry) and to provide paid training and job placement services, helping to ensure that the benefits of the clean energy transition address community energy needs, while providing opportunities for employment to those who need them the most. In support of this (and similar) efforts, and recognizing that many individuals face barriers to participating in workforce development programs—the RRE Sector Table also proposed the development of comprehensive wraparound support services for trainees, including child care assistance, transportation support, mental health resources, health care, and help with basic needs. Such regional programming could offer financial literacy training and assistance with securing training stipends or scholarships, in addition to addressing other identified barriers to participation.

To prepare our workforce for the future of energy, Sector Table participants saw a great value in more digital skills development and circular economy job training as part of the energy workforce development programming (e.g., training in smart grid technologies, energy management software, and principles of material recovery and reuse in clean energy systems and in other sectors). Training programs would need to be inclusive, flexible, and culturally responsive, with modular, stackable credentials that allow for multiple entry and exit points. This approach would allow learners to build their skills over time in a way that fits their individual circumstances and cultural backgrounds.

In addition, targeted diversity and inclusion initiatives should be implemented to ensure that the clean energy workforce reflects the diversity of regional communities, including outreach programs to underrepresented groups, mentorship programs pairing experienced professionals with new entrants to the field, and partnerships with organizations serving the region's diverse communities and Tribal nations. Finally, particularly in rapidly evolving fields like clean energy, learning must be continuous. Ongoing upskilling programs and online learning platforms for clean energy professionals should be developed to continually update worker skills throughout their careers.



Julia Nikhinson

Strategy 2: Support Community Energy Resilience and Reliability

Key Components and Specific Objectives

The second strategic pillar focuses on building a decentralized, resilient energy system that enhances community self-reliance and economic stability. This strategy recognizes that the transition to clean energy is not just about changing energy sources, but about reimagining the entire energy system to be more responsive to local needs and more resilient to disruptions.

Key components of this strategy include:

- ◆ The deployment of community microgrids that combine local renewable energy generation, energy storage, and smart controls to provide reliable power even when the larger grid is down.
- ◆ Comprehensive energy efficiency and electrification programs for low-income, climate and health-impacted households to reduce energy bills (for those who need it most), improve indoor air quality and comfort, and reduce greenhouse gas emissions. In remote communities, off-grid energy solutions such as standalone solar-plus-storage systems or small-scale wind energy installations, should be explored.
- ◆ Grid modernization is a crucial aspect of this strategy, including utility implementation of smart grid technologies that enable better monitoring and control of the energy system, facilitating the integration of more renewable energy, and improving overall reliability.
- ◆ To ensure continuity of essential services during emergencies, clean backup power systems for critical facilities such as hospitals, emergency services, and community centers should be developed; these systems will primarily use solar energy and battery storage, providing a clean alternative to diesel generators.
- ◆ Innovation in energy generation can also be pursued through pilot projects in waste-to-energy and bioenergy, including community-scale organic waste digesters to produce biogas and the use of forestry residues for bioenergy production (reducing wildfire risk while generating energy).
- ◆ Supporting Tribal- and worker-owned clean energy enterprises is another key objective. By promoting local ownership of energy resources, we can ensure that the economic benefits of the clean energy transition stay within our communities.
- ◆ Finally, there is high potential for automation and robotics to enhance the efficiency and safety of renewable energy manufacturing and waste management. The integration of these technologies in ways that create high-skill job opportunities for local workers should be supported.

Strategy 3: Foster Information and Resource Sharing

Key Components and Specific Objectives

Develop Robust Ecosystem of Knowledge Exchange

The third strategic pillar focuses on creating a robust ecosystem of knowledge exchange, collaboration, and public engagement. This strategy recognizes that the transition to a clean energy future requires not just technological change, but also social and cultural shifts. By fostering information and resource sharing, the RRE sector can accelerate innovation, build public support, and ensure that best practices are widely adopted across our region.

Key components of this strategy include:

- ◆ Establishing regional “Clean Energy Hubs”—physical centers that would serve as one-stop shops for clean energy information, demonstration sites for new technologies, and community gathering spaces for workshops and events; to reach our more remote communities, the hubs would deploy mobile units that can bring clean energy resources and education directly to underserved areas.
- ◆ Integrate Traditional Ecological Knowledge into modern energy solutions by partnering with Tribal Nations and developing educational programs that highlight indigenous approaches to resilient resource management.
- ◆ A comprehensive digital knowledge platform can be developed to support the physical and mobile hubs; this online resource would provide access to clean energy information, job listings, training resources, and real-time data on our region’s energy use and renewable energy production, and energy (and other sector) workforce dynamics; the platform could also include tools to help residents and businesses plan their own clean energy projects.
- ◆ Development of collaborative research networks through partnerships among academia, industry, and community organizations; with universal design as an underpinning, these networks would focus on solving the unique challenges of implementing clean energy in rural and Tribal contexts.
- ◆ Public education and engagement programs for building broad-based support for the clean energy transition, through accessible and multilingual multimedia educational campaigns to increase public understanding of clean energy benefits and opportunities; citizen science programs could be developed to allow community members to participate directly in energy and climate-related research projects.
- ◆ Finally, provide policy and regulatory support to local governments, recognizing the complex policy landscape surrounding energy; this would include technical assistance in developing clean energy policies and establishing a regional energy policy working group to coordinate advocacy efforts.

Figure 13 Renewable and Resilient Energy Alignment with Key Program Objectives

Equity	Climate	Job Quality & Access
<ul style="list-style-type: none"> ◆ Develop community-owned energy projects through public-private partnerships; implement sliding-scale efficiency upgrades for low-income households, offering free audits and covering up to 100% of upgrade costs based on income level. ◆ Implement diversity quotas in clean energy hiring, requiring a certain percentage of new hires to come from underrepresented groups; create mobile training units equipped with solar panels and wind turbines to provide hands-on training in rural areas. ◆ Establish energy cooperatives managed by elected community boards; implement participatory budgeting processes for deciding on energy projects and profit allocation, ensuring equitable distribution of benefits. 	<ul style="list-style-type: none"> ◆ Construct climate-resilient microgrids in vulnerable communities using a combination of solar, wind, and battery storage; design systems to operate independently during extreme weather events and integrate seamlessly with the main grid. ◆ Implement AI-optimized renewable energy integration system for the grid using machine learning algorithms to predict energy demand and supply; develop real-time load balancing capabilities to maximize renewable energy utilization. ◆ Develop land management strategy using satellite imagery and AI to identify optimal areas for biomass production, forest conservation, and carbon sequestration; create a blockchain-based credit system to reward sustainable land management practices. 	<ul style="list-style-type: none"> ◆ Create Clean Energy Job Corps with guaranteed living wages at least 150% of local minimum wage; partner with unions to develop comprehensive apprenticeship programs covering solar installation, wind turbine maintenance, and grid modernization. ◆ Provide comprehensive transition assistance for fossil fuel workers, including relocation support, paid retraining programs, and guaranteed job placement services in the clean energy sector through partnerships with major utilities and renewable energy companies. ◆ Integrate clean energy curriculum into high school vocational programs, providing hands-on experience with solar panels and wind turbines; offer tuition reimbursement for related degrees and industry certifications, tied to a commitment to work in-state.

Implementing Renewable and Resilient Energy Strategies

10-Year Implementation Timeline

The implementation strategy is structured across four phases over a ten-year period

2024-2025: Foundation Building

- In this initial phase, focus on laying the groundwork for long-term success. Key activities include:
 - ◆ Conducting comprehensive regional energy needs and workforce assessments.
 - ◆ Establishing a regional coordinating body for clean energy initiatives.
 - ◆ Launching pilot training programs and initial wraparound services.
 - ◆ Identifying sites for the first wave of microgrid and resilience hub projects, with consideration of prioritizing brownfields for greatest utilization of land area. Grants are available through the EPA for remediation of such sites in the region.
 - ◆ Developing our regional energy data platform and public engagement strategy.

2025–2028: Scaling Up

- Building on the foundation laid in the first phase, scale the efforts:
 - ◆ Expand regional workforce programs with the goal of training 2,000 workers.
 - ◆ Retrofit 2,000 low-income homes for energy affordability.
 - ◆ Establishing two Regional Clean Energy Hubs and two mobile units.
 - ◆ Launch a regional clean energy innovation challenge to spur new ideas and startups.

2028–2031: Accelerating Transformation

- In this phase, we will significantly ramp up our efforts and begin to see transformative changes:
 - ◆ Expanding workforce and apprenticeship programs to emerging industries like offshore wind and green hydrogen.
 - ◆ Reaching a 25% energy burden reduction for 2,000 households.
 - ◆ Establish a clean energy curriculum in 75% of regional high schools.

2031–2034: Realizing the Vision

- In the final phase, work toward achieving our ambitious 2034 goals:
 - ◆ Reaching the target number of trained clean energy workers, with at least 50% from priority communities.
 - ◆ Support the buildout of Tribal-owned clean energy assets.
 - ◆ Complete home electrification and efficiency retrofits.
 - ◆ Deploy community-owned renewable energy projects.
 - ◆ Reduce regional power outage duration by 50%.

This phased approach allows us to build momentum over time, learn from early experiences, and adjust our strategies as needed to ensure we meet our 2034 goals.



Figure 14 Renewable and Resilient Energy: Key Indicators of Success

- ◆ By 2034, train 2,000 new clean energy workers, with at least 50% coming from disadvantaged groups; this target reflects both the scale of workforce needs in the clean energy transition and our commitment to equity and inclusion.
- ◆ Strive to achieve 75% job placement rates within one year of training completion through strong partnerships with employers, effective job matching services, and ongoing support for graduates as they enter the workforce.
- ◆ Increase the diversity of the energy workforce to reflect regional demographics more closely.
- ◆ By 2030, establish clean energy career pathway programs in all regional high schools to provide students with the opportunity to learn about and prepare for careers in clean energy.
- ◆ Create 100 paid internship and apprenticeship positions in the clean energy sector by 2034; these hands-on learning opportunities can help bridge the gap between classroom learning and real-world job skills, providing valuable experience to newcomers in the field.
- ◆ Develop specific Tribal workforce goals in partnership with Tribal Nations, tailored to the unique needs and aspirations of each Tribal community.
- ◆ By 2030, deploy three community microgrids across the region; these installations would provide critical energy security and community support, particularly in areas vulnerable to power outages.
- ◆ Reduce the energy burden by 40% for 1,000 low-income households by 2034 through a combination of energy efficiency upgrades, electrification, and assistance with renewable energy adoption.
- ◆ Achieve 100% clean energy access for Tribal Nations in our region by 2034.
- ◆ Reduce regional power outage duration by 50% by 2030, significantly improving energy reliability for all residents.
- ◆ By 2034, source 5% of our region's energy from circular economy initiatives, showcasing the potential of waste-to-energy and other innovative approaches.
- ◆ Support the launch of 10 new Tribal and worker-owned clean energy businesses by 2034, promoting local economic development in the clean energy sector.
- ◆ By 2034, establish four fixed Regional Clean Energy Hubs and four mobile units to provide the physical backbone of the information-sharing infrastructure.
- ◆ Commit to hosting 10 community energy workshops annually across the region, covering a range of topics from basic energy literacy to advanced clean energy technologies and policies, including Tribal knowledge and practices.
- ◆ Achieve a substantial and measurable increase in public understanding of clean energy sources, uses, and distribution by 2034 (measured through community surveys and assessments).
- ◆ Increase enrollment in energy-field workforce development programs by 25% by 2034 over 2024 levels, reflecting growing interest and opportunities in the clean energy sector.
- ◆ Increase adoption of energy-efficiency and electrification programs through information sharing and community engagement.
- ◆ Create a comprehensive regional energy data platform with participation from 75% of municipalities in our region. This platform would provide transparency and insights into the region's energy system (supply, demand, workforce, etc.).

Partnerships and Funding

The success of the strategies relies on effectively leveraging existing resources, forging strong partnerships, and capitalizing on emerging funding opportunities. A multi-pronged approach to ensure the achievability of goals includes:

Federal Funding: Aggressively pursue funds from the Inflation Reduction Act, Infrastructure Investment and Jobs Act, and other federal programs focused on clean energy and climate resilience; these federal investments in clean energy provide a unique opportunity to accelerate the energy transition.

State Support: California's ambitious climate goals and associated funding programs, including those from the California Energy Commission and Strategic Growth Council, align closely with regional objectives; it will be important to work closely with state agencies to ensure the region benefits from these initiatives.

Industry Partnerships: Collaboration with clean energy companies, utilities, and industry associations will be crucial; these partnerships will help align workforce development efforts with market needs and secure private investments in clean energy projects.

Educational Institutions: Partnering with K-12 schools, community colleges (e.g., Mendocino College Sustainable Construction and Energy Technology Program), and universities to develop comprehensive educational pathways and drive research and innovation will play a key role in preparing our workforce and in advancing clean energy technologies.

Community Organizations: Close collaboration with local non-profits, community action agencies, and grassroots groups will help ensure that programs are equitably designed and effectively implemented. These organizations bring invaluable local knowledge and can foster community trust and involvement.

Labor Unions: Partnerships with unions will be crucial for developing high-quality apprenticeship programs and ensuring job quality standards in the clean energy sector.

Financial Institutions: Engage with local banks, credit unions, and community development financial institutions to develop innovative financing mechanisms for clean energy projects, making clean energy more accessible to all.

Philanthropic Organizations: Seek support from foundations focused on climate action, rural development, and just-transition initiatives. Philanthropic funding can provide crucial support for innovative pilot projects and community engagement efforts.

Relevance and Alignment with Broader Initiatives

The strategies proposed here are closely aligned with key state and federal priorities, enhancing their relevance, and increasing opportunities for support and collaboration:

At the state level, California's SB 100 goal of 100% clean electricity by 2045 provides a strong policy backdrop for these efforts. Regional goals and timelines are designed to keep pace with and even exceed state targets, positioning the Redwood Region as a leader in California's clean energy transition. The strategies here also directly support the state's objectives for carbon neutrality and climate resilience. By focusing on both clean energy deployment and community resilience, the strategies address mitigation and adaptation simultaneously.

Example Projects

- ◆ **Community-Owned Energy Projects:** Invest in community-owned energy projects that create local economic benefits, cutting-edge research that drives innovation in energy storage technologies, and energy infrastructure that is resilient in the face of climate impacts and other disruptions.
- ◆ **Resilience Hubs:** Identify sites for the first wave of microgrid and resilience hub projects, investigate brownfield remediation sites for their energy project potential.
- ◆ **Microgrids:** Deploy community microgrids that combine local renewable energy generation, energy storage, and smart controls to provide reliable power even when the larger grid is down. By 2030, deploy three community microgrids across the region; these installations would provide critical energy security and community support, particularly in areas vulnerable to power outages.

At the federal level, the approach here aligns closely with the Justice40 Initiative, which aims to deliver 40% of the overall benefits of climate and clean energy investments to priority communities. The emphasis on equity and inclusion in workforce development and energy access supports this important federal priority. The strategies here also support national goals for clean energy job creation and economic revitalization. By focusing on workforce development and local ownership of clean energy resources, a model for how rural regions can thrive in the clean energy economy will be developed.

At the regional level, the above approach addresses critical challenges identified in broader economic development plans:

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- ◆ **Economic Diversification:** The strategies create new job opportunities and business models in the clean energy sector, helping to diversify the regional economy away from declining traditional industries.
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- ◆ **Community Resilience:** By enhancing energy reliability and local energy production, the strategies build resilience to climate impacts and other potential shocks.
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- ◆ **Rural Infrastructure:** The focus on grid modernization and distributed energy resources will improve infrastructure and service delivery in rural areas.
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- ◆ **Innovation and Talent Retention:** By creating exciting opportunities in clean energy innovation and entrepreneurship, the strategies should help retain and attract talent to our region.
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By focusing on equitable access to clean energy and green job opportunities, the strategies directly contribute to broader economic well-being, particularly for disinvested communities—they support the health and well-being of community residents and the local workforce, create pathways out of poverty, improve energy affordability, and enhance local economic circulation through community-owned energy projects. The emphasis on resilience—from workforce adaptability to microgrid deployment—aligns closely with the need to prepare for and mitigate the most likely shocks facing the region, including climate-related disasters and economic disruptions. In summary, these strategies are not developed in isolation, but are carefully crafted to align with and support broader initiatives at the state, federal, and regional levels. This alignment enhances the relevance of the work and increases the likelihood of successful implementation and long-term impact.

Figure 15 Renewable and Resilient Energy Sector Policy Alignment

- ◆ The emphasis on offshore wind development directly supports SB 100's clean electricity goals and aligns with AB 525's offshore wind planning mandates.
- ◆ Strategies for developing microgrids and improving energy resilience align with SB 1339's microgrid commercialization objectives.
- ◆ The focus on community-owned energy projects and equitable access to clean energy supports SB 350's (the Clean Energy and Pollution Reduction Act) goals for increasing renewable energy use, especially in disadvantaged communities.
- ◆ Initiatives in energy storage and grid modernization align with AB 2514's energy storage targets.

Last Words

The Redwood Region stands at a pivotal moment in its energy future. The transition to a clean, resilient, and equitable energy system presents both significant challenges and unprecedented opportunities. By embracing this transition, the region can address the pressing issues of climate change and economic inequality while positioning itself as a leader in rural energy innovation.

The strategies outlined in this report provide a roadmap for this transformation and encompass workforce development (to ensure our communities benefit from clean energy job opportunities), infrastructure development (to enhance our energy resilience and reliability), and knowledge sharing (to accelerate innovation and build broad-based support). However, the success of these strategies depends on the active engagement and collaboration of all communities and partners in the Redwood Region. From policymakers and business leaders to educators and community members, everyone has a role to play in this transition.

Humans of the Redwoods

Pliny of Humboldt on Overcoming Stigma for Justice-Involved Individuals and Rural Communities Banding Together

Born and raised on the Hoopa reservation, Pliny McCovey is a part of a vibrant and resilient culture, but has also seen that way its rurality impacts reliability of local services. Now working at a job training program in Eureka, he is familiar with the climate of the local labor market and Humboldt's unemployed population. The region's nuanced needs require small communities to band together to work for a prosperous future.

Beautiful Hoopa Valley

“It’s literally one of the most beautiful places on this planet. I truly believe that. We take it for granted a lot of times – the nature, the water, the trees, everything that surrounds us.” Pliny was raised with his culture in his ancestral lands of Hoopa. After spending some time in Oregon and Nevada, he moved back 15 years ago.

“We Hoopa Tribes are one of the lucky Tribes, so to speak. The fact that the reservation was built around our ancestral lands versus being placed [somewhere else]. It’s where my ancestors have been for tens of thousands of years. I still get to go back to it now and then and participate in dances and things like that. I’ll always have that connection, whether or not I’m living there.”



Remote Setbacks

While Hoopa’s isolation affords it some breathtaking views, outdoor recreation, and ancestral connection, it makes it harder for its community to access resources. The closest public transportation is five miles out in Willow Creek where an HTA bus leaves twice a day, and to catch that from Hoopa people have to either hitchhike or get a ride and hope to make it in time. There is a medical center in Hoopa, but community members have a difficult time navigating dental care, with appointments getting scheduled 6 months to a year out. Pliny sees opportunities for job training to fill in the lack of providers in the area.

“I think it’s important to have a local workforce here that’s available to handle these types of jobs and also be able to keep that money circulating here in a small county”

Workforce Trends

Pliny has been living in Eureka for the past three years, helping folks with substance abuse disorder and justice-involved individuals with workforce development, using his own experiences to help fight the stigma. Through his work at the Jefferson Community Center, he has an intimate look into the needs of the local community and local labor market trends. The boom and bust cycles of timber, fishing, and now cannabis have left the job market in a depressed state, eliminating a lot of gainful employment. Pliny believes that instead of outsourcing labor, it’s crucial to train the local workforce for big projects in the area.

“A lot of times when big projects have occurred up here in Humboldt County, the workforce is brought in from the Bay area or other regions. They come in, do the work, and then when the project is over, they and the money both leave. I think it’s important to have a local workforce here that’s available to handle these types of jobs and also be able to keep that money circulating here in a small county. I think that’s the secret of it, is that we need to continue to provide opportunities for workers so the economy can continue to circulate and grow here.”

[Read Pliny’s full story](#)