Kern County

Subregional Plan for West Kern

September 2024

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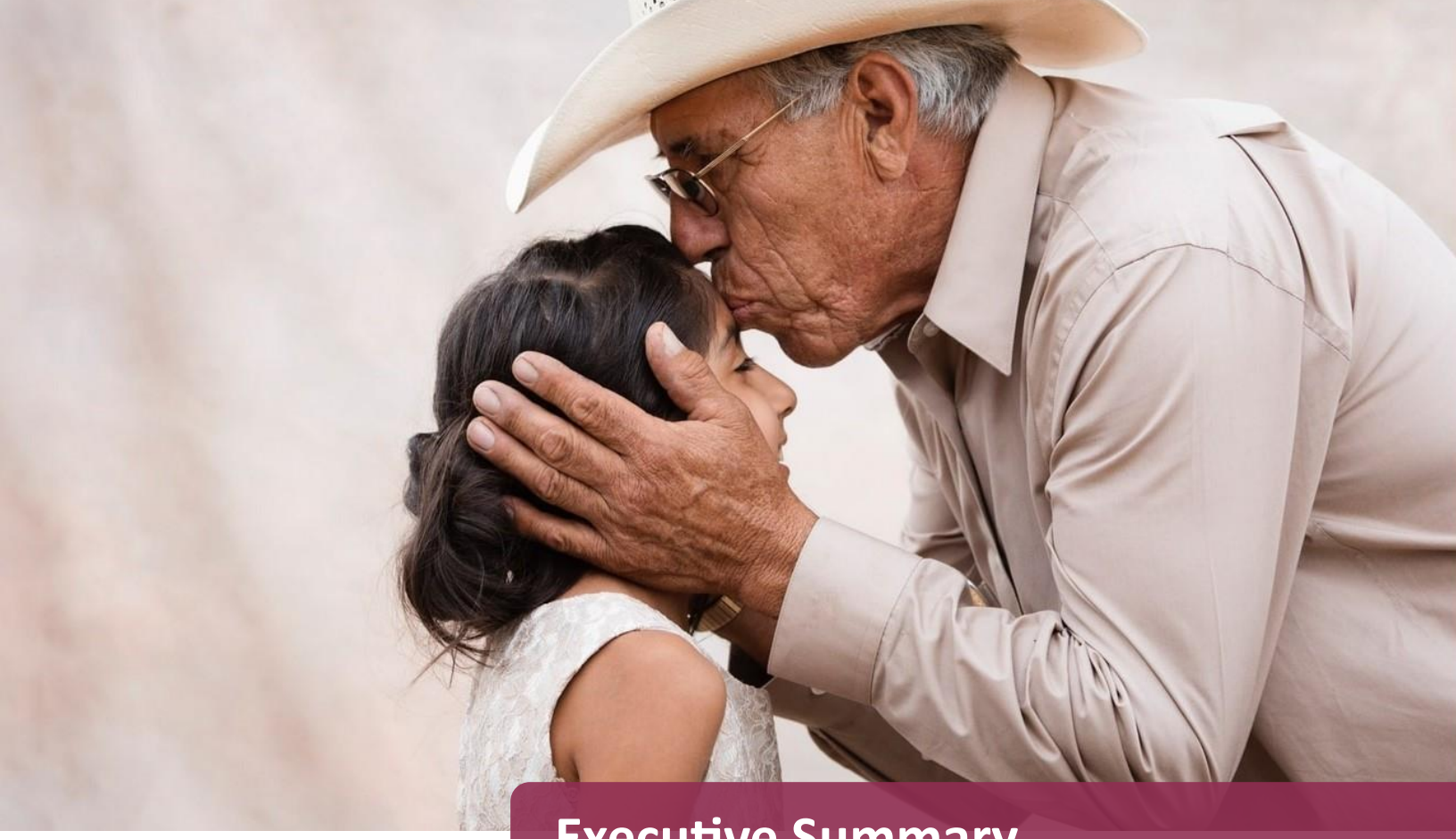

Executive Summary

Since 2021, the State of California has administered California Jobs First, a $600 million fund aimed at diversifying local economies, creating jobs, and improving economic resilience across the state. A group of local Kern County organizations formed the Kern High Road Transition Collaborative (KHRTC) in response to this funding opportunity and commissioned a series of Regional Plans identifying challenges and opportunities for creating a more equitable, inclusive, and sustainable economy in Kern County.

The Regional Plan Part II focused on economic development strategies across Kern County, identifying clean energy, manufacturing, and agriculture as priority industries and carbon management as a relevant industry to consider for West Kern. After its production, community leaders expressed a desire for more localized data and insights. Within West Kern, stakeholders identified Taft as a location with unique strengths, challenges, needs, and aspirations, warranting a special addendum to the Regional Plan Part II.

Taft is a West Kern municipality of approximately 7,400 people with strong historical roots in the oil and gas industry. It also employs workers in education, healthcare, and agriculture. The city has low unemployment compared to the rest of Kern County. However, Taft also faces roadblocks to sustainable growth. Its historical backbone industry of oil and gas is shrinking as oil productivity declines and regulations increase in the industry at large. Its agriculture industry, also an important economic driver, is seeing challenges as well. Taft faces high climate risk due

to regional drought, wildfire, and water risk. Pollution created by current industries also poses a health and environmental concern.

This report identifies two high-potential industries that can drive Taft's economic development.

First, Taft's natural resources, geography, and existing infrastructure make clean energy, including solar energy and geothermal energy storage, a promising driver of economic growth. These sectors are already growing throughout West Kern, which means Taft is well-positioned to begin tapping into their growth. In doing so, Taft should carefully consider environmental concerns associated with geothermal energy storage and also be mindful of community concerns that jobs in the industry are generally high quality but short-term in nature. Taft can support the growth of the clean energy industry by focusing first on boosting solar energy and storage, evaluating geothermal energy as a potential industry and repurposing former oil and gas infrastructure if appropriate, exploring potential in R&D investment, and leveraging existing workforce capabilities to enhance access to clean energy jobs. Thus, although clean energy is unlikely to be the 'silver bullet' for Taft's economic development objectives, it can be an important part of the solution.

Second, Taft's strategic location, proximity to agricultural hubs, and existing transportation infrastructure leave it well-positioned to develop a more sustainable and innovative agriculture industry supporting production in more fertile regions in the San Joaquin Valley. The industry can increase wages and improve job quality and stability through the development of technology-based, higher-skilled positions and investments in innovative technologies. Taft can boost the growth of its agriculture industry by supporting existing employers in adopting agricultural technologies, value-added processing, and regenerative practices; providing workers resources to transition to higher-skilled positions; and fostering entrepreneurship among former agriculture workers.

While Taft's depleted oil reserves are seen as promising sites for development in carbon management, the industry also raises significant environmental and community concern. An additional challenge is that jobs are generally high-quality but also largely short-term. For these reasons, we recommend pausing on carbon management as an economic development strategy until environmental risks are fully understood and a mitigation plan is established through transparent and impartial processes. To that end, we recommend ensuring a solid and objective understanding of environmental risk, with community input and impartial technical experts; establishing comprehensive policies that address and alleviate health and safety concerns; and

considering how to leverage any future planned investments to create sustainable, long-term, accessible jobs.

An additional growth enabler identified in Taft is an increase in vocational training, education, and certification programs through partnerships with Taft College.

Chapter 1: Context

The regional economic overview outlined in the Regional Plan Parts I and II assessed the current status of Kern County's economy, labor market, and industries; climate and environment; and public health—as well as the potential strengths, weaknesses, opportunities, and threats facing the region.[1]

As noted in previous reports, these opportunities and threats vary widely across Kern County's subregions. The following chapter focuses on the economic, climate, and health-related

[1] Note: In the course of developing the Regional Plan Part 2, Kern High Road Transition Collaborative (KHRTC) interviewed more than 30 organizational stakeholders including labor, industry, government, community-based organizations, and environmental justice advocates. The Coalition also held 10 community engagement meetings (2 in each of the five subregions) in June and July 2024, with support from local community-based organizations. These built on 40+ community meetings that had been held in the process of developing the Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund. KHRTC also administered surveys in multiple languages inviting residents to share their concerns, aspirations, preferences, priority industries, and general ideas. Overall, more than 800 individuals across the county were engaged in the process. To promote accessibility, community meetings were held at 6pm PT to minimize conflicts with participant's work schedules; offered access to materials in English, Spanish, and Punjabi, where applicable; included live translation to / from English, Spanish, and Punjabi, where appliable; included dinner and childcare; and compensated each attendee for their time with a $50 food voucher.

conditions in Taft, specifically highlighting differences and similarities with the overall assessment conducted in Part II.[2]

Taft Snapshot

City overview

Taft is a small, diverse community of about 7,400 residents.[3] After a decline in residents (−15%) from 2019 to 2022, likely due to the Covid-19 pandemic, Taft's population is stabilizing, with a slight annual decrease (−0.05%) and little projected change ahead.[4] With a median age of approximately 32, the population predominantly identifies as white (61.6% of residents), followed by 35.9% of residents identifying as Hispanic or Latino.[5] Additionally, the city's demographic profile reveals that 93.6% of residents are U.S. citizens by birth and 3.6% are non-US citizens.[6] Of those non-U.S. citizens, approximately 88% identify as Hispanic or Latino, 3% as indigenous (although this number may be higher based on community estimates),[7] and approximately 20% of residents speak a language other than English (predominantly Spanish).[8] Taft, along with the rest of West Kern, faces significant socioeconomic challenges which impact residents' well-being.[9]

Taft's economy is rooted in the oil and gas industry, but the industry's broader challenges are driving the need for structural change. Strategically located in the heart of the Midway-Sunset Oilfield, the largest oilfield in the lower 48 states, Taft has become a key location for major oil companies and associated businesses. Prominent companies operating in Taft include Chevron, AERA Energy, ExxonMobil, Phillips 66, and California Resources Corporation, among others.[10] However, oil productivity has declined in recent years. This, combined with increasing

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[2] Note: A more detailed subregional profile of West Kern can be found in the Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund.
[3] Source: US Census Bureau
[4] Source: Taft Demographics | Current California Census Data (california-demographics.com)
[5] Note: Demographic data can differ among various sources and surveys. Recent estimates consistently show that the percentage of Latino residents in Taft ranges from 31% to 36%. Community members often cite a higher percentage, which may be due to citizenship status excluding some residents from official statistics.
[6] Note: While we present a statistic on non-citizen status, it is important to note that there is no data available for undocumented individuals, who are a subset of non-citizens lacking legal permission to reside or work in the country
[7] Note: It is important to note that this data may be incomplete, as it does not identify the specific tribes or Indigenous groups represented; community members have reported a significant presence of Indigenous and Oaxacan populations in and around Taft. Additionally, undocumented residents are often excluded from official counts, potentially leading to inaccuracies in the overall representation of these communities.
[8] Source: US Census Bureau
[9] Note: Taft is identified as a disadvantaged community which California defines as areas that suffer from a combination of economic, health, and environmental challenges, such as poverty, high unemployment, pollution, hazardous waste, and high rates of asthma and heart disease (Office of Environmental Health Hazard Assessment, 2021).
[10] Source: Taft District Chamber of Commerce & Visitor's Bureau (taftchamber.com)

environmental regulation, is hindering the industry's ability to drive sustainable economic development.

Labor market and industries

Taft's labor market has relatively low unemployment but faces challenges around the low quality and inequity of some existing jobs. Although the city's official unemployment rate (5.3%) is about half that of Kern County (10.5%), 24% of households sit below the poverty line.[11] This suggests that many existing jobs in Taft are not high-quality and do not provide a living wage. The median earnings for men in Taft is $53,000, while for women, the figure is significantly lower at $20,381.[12] Workers currently employed in the oil and gas and agriculture industries also face potential displacement in coming years. At the same time, there are few support systems for disinvested communities to promote economic mobility. For instance, Latino and undocumented workers looking to transition away from agricultural jobs face limited resources for guidance on starting a business or obtaining capital for entrepreneurship.[13]

The majority of Taft's workforce is employed in educational services (18.1%)**, healthcare** (12.2%), **construction** (10.2%), **oil and gas** (9.16%)**, and agriculture** (5.54%).[14] Construction offers the highest median wages at $85,355, followed by oil and gas at $78,504, and education at $51,344.[15] The agricultural industry in Taft does not offer high wages (~$14,000), with mean earnings falling short of the county's living wage standard. In comparison, North Kern's Shafter offers significantly higher wages in the agriculture industry at ~$40,000, indicating that Taft's agricultural industry has the potential to grow and evolve to provide higher-value jobs (although growth may be constrained by the relatively lower productivity of Taft's land compared to nearby regions).[16]

The oil industry has historically been a significant source of well-paying jobs in Taft, but in recent years, Taft has experienced a decline in oil production, leading to job losses and reduced economic activity. From 2014 to 2016, Kern County lost over 4,000 oil jobs out of a total of approximately 12,400.[17] Given that Taft is a key player in the Kern County region's oil industry, this county-wide decline is indicative of trends affecting Taft.[18] This decline is likely largely due to a decrease in oil production and new environmental regulations. (To reduce

[11] Source: Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report, Kern Economic Journal, 2021
[12] Source: US Census Bureau
[13] Source: Interview with Governance Council representatives of West Kern conducted in September 2024.
[14] Source: US Census Bureau
[15] Source: Ibid.
[16] Source: Ibid.
[17] Source: Russian ban stirs hope, frustration in California oil patch - Los Angeles Times (latimes.com)
[18] Source: A California oil town's plan to survive the energy transition | Grist

greenhouse gas emissions, Governor Gavin Newsom has pledged to end all in-state petroleum production by 2045[19] and ban new fracking permits by 2024.[20]) The pressure on the oil industry highlights the need to support job creation in alternative industries in Taft.

Like the rest of the Kern County region, Taft's agriculture industry relies heavily on seasonal employment, resulting in fewer full-time positions and ultimately less reliable job opportunities. Although agriculture is a key economic driver throughout the San Joaquin Valley, Taft's agricultural landscape specifically is less advanced because its location in the arid hills southwest of Bakersfield presents more challenges for farming compared to other, more fertile areas of the valley.[21] The agricultural industry across the Kern County region is also facing economic vulnerabilities to worsening climate conditions, following county trends.[22,23] Many existing jobs in the industry are low-quality, seasonal, or part-time.[24] Increased input costs, such as fertilizers, are driving many agribusinesses to bankruptcy or prompting owners to sell their farmland, often for solar energy projects. Additionally, small and medium-sized agribusinesses struggle to access the technology and resources needed to modernize, placing them at a disadvantage compared to larger firms that can better withstand these economic pressures.[25]

Despite these challenges, Taft also benefits from distinct competitive advantages that can be leveraged for growth. Its established manufacturing and construction industry provide a strong basis for development. Its expanses of nearby flat terrain, abundant sunlight, and existing infrastructure make it well-positioned for a transition to clean energy. Its location on the edge of the San Joaquin Valley, approximately two hours from California's Central Coast and 30 minutes from Bakersfield and other urban centers also makes it strategically positioned for agricultural distribution and value-added agricultural processing.

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[19] Note: California's Carbon Neutral by 2045: California aims to achieve carbon neutrality by 2045, targeting an 85% reduction in greenhouse gas emissions and a 94% decrease in fossil fuel consumption. The plan includes transitioning to 100% clean electricity, electrifying twenty-six million vehicles, and enhancing carbon sequestration through land management. This ambitious initiative is expected to create 4 million jobs and save $200 billion in health costs due to reduced pollution.

[20] Note: On April 23, 2021, Governor Newsom directed the Department of Conservation's Geologic Energy Management (CalGEM) Division to initiate regulatory action to end the issuance of new permits for hydraulic fracturing ("fracking") by January 2024; Source: California Releases World's First Plan to Achieve Net Zero Carbon Pollution | Governor of California

[21] Source: Exploring the Potential for Water-Limited Agriculture in the San Joaquin Valley - Public Policy Institute of California (ppic.org)

[22] Source: California's Climate Change Assessment for the San Joaquin Valley Region | Water Systems Management Lab (ucmerced.edu)

[23] Source: Policy Brief: The Future of Agriculture in the San Joaquin Valley - Public Policy Institute of California (ppic.org)

[24] Source: Regional Plan Part II

[25] Source: Stakeholder interviews: 9/19/2024 and 9/25/2024

In response to the declining oil and gas industry, Taft is focusing on shifting to green industries, a transition that presents distinct opportunities and challenges for different communities in the job market. Oil and gas workers, who are predominantly white males[26], are being impacted by the decline in the oil and gas industry. Their skill sets and educational backgrounds equip them with transferable skills that can be applied to emerging industries, such as clean energy. In agriculture, Taft's location in Kern County could allow it to benefit from value-added agricultural processing or support services to grow a climate resilient agriculture industry. Climate change factors alongside the push for green industries and economic diversification are placing pressure on the agriculture industry to modernize. But agricultural workers, many of whom are Latino,[20] will face significant challenges in retaining their jobs if the industry pushes towards advanced mechanization. Moreover, undocumented workers, who make up a substantial portion of the agricultural workforce[27], encounter specific barriers that hinder their access to new job opportunities as the industry evolves.[28] For example, without work authorization, they are unable to pursue many higher-paying positions in the formal economy.[7] These challenges could also prevent displaced workers in agriculture from transitioning easily into new jobs created in clean energy.

Taft leadership is actively seeking to diversify its economic foundation by pursuing green alternatives. Taft has implemented policies encouraging R&D projects in energy, streamlined permitting for alternative energy initiatives, and monitored state and federal regulations to promote responsible energy practices. For example, since 2011, the city has participated in the Beacon Award program, which acknowledges its commitment to sustainability, reducing greenhouse gas emissions, and enhancing energy efficiency. The city's General Plan also prioritizes sustainability and features an Energy Resources Element that details policies for energy development and conservation.[29]

In summary, Taft has the potential for significant economic revitalization despite its challenges. While the city is grappling with population loss and changes in important industries like oil and gas and agriculture, it is actively exploring ways to transition its workforce into fields like green energy and ag tech. Based on the current unemployment rate of 5.3%[30] (given the labor force is

[26] Note: Further analysis of racial disparities and citizenship among industries in Kern can be found in the Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund, Source: Industries and Occupations (immigrantdataca.org), US Census Bureau
[27] Note: Immigrants, and particularly undocumented individuals, are predominantly employed in the agriculture industry (~33% of immigrants and 53% of undocumented workers). This state is based on Kern County as reported in the Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund
[28] Source: Employment Among Immigrants and Implications for Health and Health Care | KFF (2023)
[29] Source: 6-1-10: GENERAL PLAN: (amlegal.com)
[30] Source: US Census Bureau

6,600,[31] this implies ~350 unemployed people),[32] it is estimated that at least ~400 high quality jobs are needed to significantly advance the city's economic development goals. This number could be significantly higher when accounting for populations with part-time or seasonal jobs living under the Kern County region living wage of $44,595.[33] This aligns with the city's economic development goals and the California Jobs First initiative. Additionally, these jobs would provide new opportunities for workers currently at risk of displacement, particularly those in the oil and gas industry and low-wage agricultural jobs. The city should prioritize skills training as well as promoting high-quality, long-term jobs, which will be explored in Chapters 2 and 3 of this report.

Climate and environment

Regional trends suggest that Taft is likely to face increased risks from extreme heat, drought, water scarcity, and potentially more frequent wildfires and floods. Climate projections for the valley suggest a shift towards more intense rainfall during the winter months, leading to longer dry seasons and an expected overall reduction of 20% in annual precipitation.[34] These more frequent and intense droughts may result in water scarcity for irrigation[35] Additionally, the Sustainable Groundwater Management Act (SGMA)[36], characterized by industry stakeholders as a significant threat to agribusinesses, restricts access to groundwater—a critical resource for Taft's agriculture—further exacerbating economic strain and operational challenges for the industry.[37]

These climate risks introduce both direct and indirect vulnerabilities for Taft. The worsening effects of climate change threaten agricultural yields, posing a significant threat to the agriculture industry and to job security for employees. As discussed above, there are also indirect impacts on job security in the oil and gas industry as concerns about climate encourage a shift away from oil and gas and towards green jobs.[38]

The city's key industries significantly contribute to greenhouse gas emissions, exacerbating environmental harm. Taft ranks as one of California's most environmentally burdened municipalities on CalEnviroScreen 4.0, a state measure of pollution and environmental

[31] Source: Ibid.
[32] Source: Ibid.
[33] Source: MIT Living Wage Calculator
[34] Source: California's Climate Change Assessment for the San Joaquin Valley Region | Water Systems Management Lab (ucmerced.edu)
[35] Source: Kern Community College District (2019)
[36] Note: The Sustainable Groundwater Management Act (SGMA) mandates the sustainable use of groundwater resources in California. It aims to address over-extraction and long-term water shortages, particularly in agricultural regions like Taft, which heavily rely on groundwater for irrigation.
[37] Source: US Census Data, community engagement interviews
[38] Source: Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report

challenges.[39] The oil fields around Taft, including Midway-Sunset, are among the top greenhouse gas-emitting oil fields in the U.S. due to the energy-intensive methods required for oil extraction.[40] A series of oil seeps close to Taft in 2019 raised worries about potential water and air pollution near the state's oilfields.[41]

The agriculture industry is also a significant source of greenhouse gas emissions, primarily due to enteric fermentation in livestock, the burning of crop residues, and fuel combustion for water pumping.[42] The San Joaquin Valley Air Pollution Control District notes that reducing emissions from coal-fired plants does not decrease pollution from power plants burning agricultural waste, which produce comparable emissions.[43]

Taft is confronting substantial climate risks that jeopardize its environmental and economic stability. The anticipated rise in extreme weather events and other climate-related challenges requires urgent action. Balancing the need to address pollution from existing and new projects without discouraging investment and growth will be challenging but is essential for the city's transition from the oil and gas industry. We acknowledge the significant climate and health risks associated with investments in carbon storage, as well as some concerns related to geothermal energy storage.

Health and education

In Taft, key public health concerns include air quality issues stemming from high emissions, which can lead to respiratory problems, as well as potential water and air pollution from local oil seeps. The UC Merced Community and Labor Center has identified agriculture, oil and gas, and transportation as the primary sources of this localized pollution.[44] The pollution from oil and gas operations contributes to high rates of asthma and other respiratory issues in the region.[45] The San Joaquin Valley has been designated an "extreme non-attainment zone" by the EPA, meaning residents are exposed to hazardous air quality.[46] These findings underscore the

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[39] Note: The state uses CalEnviroScreen, a tool from the California Environmental Protection Agency (CalEPA), to identify the most environmentally burdened communities in California. The map shows communities in the top 25% of these scores and highlights key socioeconomic factors, including education level, housing burden, linguistic isolation, poverty rates, and unemployment. Taft has an overall score of 82, with key socioeconomic factors such as poverty rates at 81, housing burden at 47, education level at 77, and unemployment at 43.

[40] Source: Methane emissions from major U.S. oil and gas operations higher than government predictions | Stanford Report

[41] Source: In Kern County, an oil town grapples with a green future (kvpr.org)

[42] Source: Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund

[43] Source: San Joaquin Valley APCD Home Page (valleyair.org)

[44] Source: Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund

[45] Source: Ibid.

[46] Source: San Joaquin Valley | US EPA

urgent need to address both air and water pollution and drive the search for sustainable alternatives to reduce the impacts of fossil fuel dependence in the region. This includes the need for a rigorous assessment of the health concerns associated with potential carbon storage projects that could exacerbate these issues and would need to be addressed.

Agricultural workers also face a series of dangerous work conditions that contribute to a higher rate of deaths and illnesses, including heart attacks and strokes. This includes heat (worsened by climate change), insufficient rest breaks, poor sanitation, wage theft, and exposure to pesticides.[47]

Taft struggles with low overall educational attainment, with only 10.2% of residents holding a bachelor's degree or higher.[48] However, Taft has an extremely strong asset in Taft College which offers a wide range of programs and certificates to all students in areas like health, energy, and administration.[49] Also known as West Kern Community College, it was recently ranked second in the nation among community colleges, has an enrollment of nearly 6,000, and is a boon to Taft's economy.[50] This emphasis on quality education can serve as an asset for the community, potentially drawing in families and businesses.

Conclusion and implications

Taft possesses several key strengths and opportunities that can drive its future economic growth. Taft is traditionally reliant on the oil industry but is now navigating a pivotal transition to a more diversified economy, embracing green technologies and clean alternatives. Concurrently, agriculture remains a crucial industry, adapting to changing environmental conditions. Leveraging the city's unique industry base, skilled workforce, geological benefits, and growing "net zero" policy opportunities, Taft has the potential to broaden its energy industry to include clean energy.[51] However, the small and declining population of Taft, coupled with its relatively young demographic and low educational attainment, highlights the need to prioritize vocational training programs tailored for adults. As Taft strives to capture these opportunities, it should focus on adult education and skill development for key industries to better align the workforce with emerging industry needs and support sustainable economic growth.

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[47] Source: Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report for the Community and Economic Resilience Fund
[48] Source: US Census Bureau
[49] Source: Ibid.
[50] Source: Taft College | Transform Your Life
[51] Note: Supported by conversations with B3K Prosperity Leadership Council

Figure 1: SWOT analysis for Taft

Strengths	Weaknesses	Opportunities	Threats
• Skilled oil and gas workforce with transferable skills for clean energy and other emerging industries • Abundant land area for agriculture • Abundant land area and decommissioned buildings that could be repurposed for R&D • Strong community college presence • Established manufacturing and construction industry with existing workforce	• Low educational attainment among the population • Insufficient vocational and language training programs	• Repurpose legacy oil wells (e.g., for geologic energy storage) • Integration of technology in agriculture (ag-tech, regenerative agriculture, etc.) • Kern Community College District's involvement in training for clean energy jobs • Evolving educational programs focused on new technologies like hydrogen fueling infrastructure • Partnerships with industry leaders to ensure relevant skill development • Initiatives to encourage diversity in the clean energy workforce	• Climate-related policies leading to job losses in traditional oil and gas industries • Risk of worker displacement in agriculture and oil and gas industries • Uncertainty about long-term sustainability and quality of green jobs • Risks around carbon storage, as well as (potentially) geologic energy storage

Chapter 2: Industry Prioritization

The analysis in the Regional Plan Part II identified priority industries for the West Kern subregion, including clean energy, manufacturing, and agriculture, along with carbon management as a highly relevant industry. The analysis in this chapter aims to validate similarities and differences between priority industries at the subregional and city level to identify priority industries specifically for Taft.

This analysis identified clean energy and agriculture (including entrepreneurship) as priorities for the city. The analysis also includes a discussion on how to manage planned investments in carbon management, which are expected to have a significant impact on Taft's economy.

Industry prioritization and rationale

Industries were analyzed with the goal of identifying the two or three industries with the highest potential for economic development and quality job creation for Taft. Supporting strategies for each of these industries were then developed and are included in Chapter 3 of this report. This exercise analyzed industries that were (i) identified as "highly relevant" or "relevant" in the Regional Plan Part II industry analysis, and/or (ii) were raised as high-potential industries by members of the Kern High Road Transition Collaborative (KHRTC) and stakeholders interviewed. Priority industries and supporting strategies were also chosen for their potential to

create alternative job opportunities for workers at risk of displacement due to current trends in the oil and gas and agriculture industries, which are key employment drivers for Taft.

In this exercise, **each industry was evaluated[52] across four key categories:**

- **Regional assets** that can support an industry's growth, including natural resources, geographic location, and existing infrastructure in the region
- **Job quality**, including current or projected job numbers as well as average wages
- **Market signals** that suggest favorable conditions for industry development or growth, such as anticipated investments, supportive government policies, or emerging market trends
- **Community desirability**, which refers to community desire for jobs in the industry, based on insights gathered from community and stakeholder interviews conducted during Phase II, as well as stakeholder interviews conducted while preparing these subregional plans

Additionally, each industry was also evaluated based on its alignment with equity, climate, and regional strategies to assess compliance, or in its absence, identify any necessary steps for compliance to be achieved.

Based on these factors, the two to three industries with the highest potential for Taft were identified: clean energy, and agriculture (including entrepreneurship). It is estimated that development in these industries could bridge the gap towards creating the hundreds of quality jobs needed for Taft's unemployed residents, workers living below the poverty line, and those facing potential displacement, and to support the city's economic development goals outlined

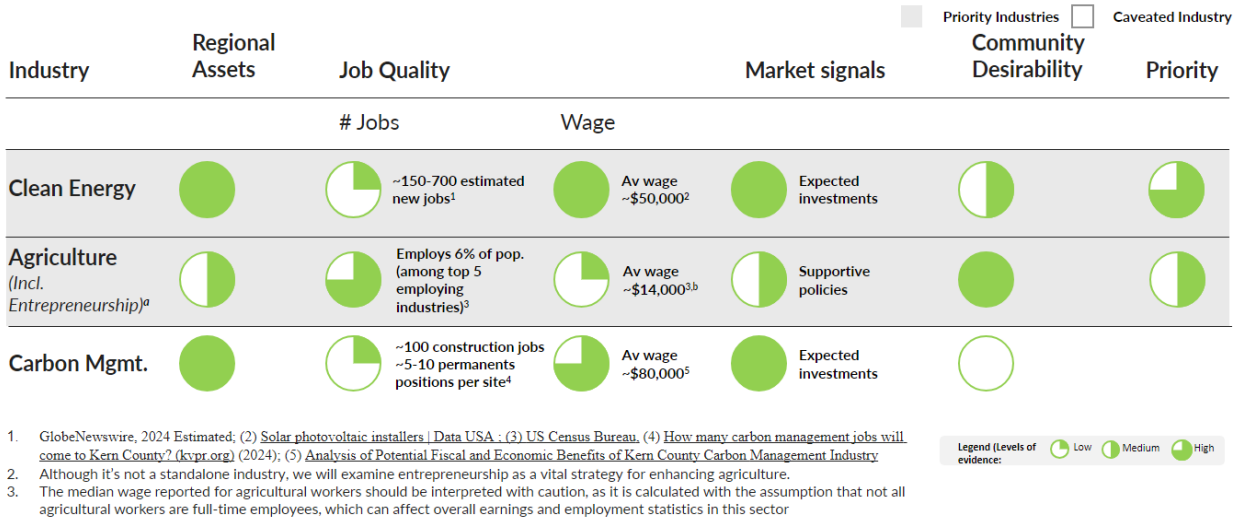
[52] Note: The category criteria are as follows:
Regional assets: High (<1 hour distance), Medium (1-2 hour), Low (>2 hour)
Job quality: High (if both of the following criteria were high), Medium (if one of the criteria was high), Low (if both were low).

- Number of jobs: High (Projections can reach 50% of the target metric of job creation), Medium (20-50%), Low (0-20%)
- Wage: High (10% above county living wage, which is 44K according to the MIT Wage Calculator), Medium (<= 10%), Low (below 44K)

Market signals: High (Multiple factors: 2-3 incoming opportunities specific to subregion), Medium (1-2 incoming opportunities that are specific to the region at large, not the subregion), Low (limited qual data suggesting opportunities to (sub)region
Community desirability: High (Ranked 1-3 in community interviews and/or highly ranked in qual data), Medium (highly ranked by some community members, but unconclusive via qualitative data), Low (low ranked by all qualitative data sources)

in Chapter 1.[53] A summary of the prioritization exercise and criteria can be found in Figure 2 below.

Figure 2: Preliminary Taft industry prioritization



Industry 1: Clean energy (solar and energy storage)

Overview

Over the past 15 years, the Kern County region has become a center of clean energy in California. The region currently boasts over 20,000 megawatts of wind, solar, and battery storage capacity.[54] Solar energy is expanding rapidly, representing over a third of the region's clean energy workforce. The growth in solar is driving the need for additional investment in storage capacity. In addition to exploring improved battery-based options, there is potential to investigate innovations in Geologic Thermal Energy Storage (GeoTES), a cutting-edge geothermal energy storage technology designed to retrofit depleted oil wells for storing excess concentrated solar energy. This innovative technology is still being explored and tested.[55] This technology could provide a complementary solution to solar generation and an alternative use for Taft oil reservoirs.[56] Government funding may help to ensure that risks are effectively

[53] Note: Estimation based on the size of the total labor force and the unemployment rate and is to be pressure-tested by community members. The unemployment rate used in this calculation reflects formal employment and may not fully capture informal or underreported employment statuses. Therefore, the estimate serves as a baseline and could underestimate the total employment needs, especially for disadvantaged or underrepresented communities; Source: US Census, 2022.

[54] Source: Kern County Finds Economic Opportunities Beyond Oil and Gas Production in a "Carbon Management Business Park" | Department of Energy (2024)

[55] Note: A demonstration of 1,000-hour thermal energy storage in depleted oil wells is one of the innovative climate technologies that received $6 million in funding from the US Department of Energy this year.

[56] Source: Geological Thermal Energy Storage (GeoTES) Charged with Solar Thermal Technology Using Depleted Oil/Gas Reservoirs and Carnot-Battery Technique Using Shallow Reservoirs: Preprint (nrel.gov)

managed throughout its development.[57] However, its implications for health and safety for surrounding communities need to be thoroughly assessed.

Regional assets

With its natural resources and existing infrastructure, Taft is well-positioned to attract investments in both solar generation and storage, including through geothermal energy storage. Taft's abundant sunlight, large stretches of flat terrain, and existing infrastructure can help the city to assume a leadership position in the growth of solar energy in California. As mentioned in Chapter 1, the city's central location near various planned solar projects can help to attract investors and create jobs for Taft workers. Moreover, with its unique resources and infrastructure, Taft is well-positioned to advance R&D in solar and geothermal energy storage solutions. There is strong potential to harness Taft's depleted oil reservoirs for geothermal energy storage for solar power, providing alternatives to battery storage and enhancing the city's competitive edge in these industries.

Job quality and quantity

As outlined in the Regional Plan Part II, clean energy jobs are generally high quality, offering competitive pay, benefits, stability, and opportunities for worker participation. Research has identified a higher proportion of quality jobs in energy efficiency and clean energy generation compared to the overall labor market.[58] Notably, many positions in clean energy generation and green construction are accessible to individuals without a four-year degree, with only 39% and 37% requiring one, respectively.

One commonly cited shortcoming is that the clean energy industry has higher potential for short-term rather than long-term job creation. For planned projects around Taft, job creation potential in short-term construction is estimated at roughly 150 positions, with 40 positions estimated for ongoing operations.[59] The estimated median annual wage for installers is $50,000, though it can be significantly higher for specialized workers (e.g., wages for engineers begin at roughly $80,000).[60]

The clean energy industry also faces notable gender disparities. Women in this industry earn nearly 20% less than their male counterparts, reflecting a significant wage gap.[61] In the solar

[57] Source: https://www.solarpaces.org/1000-hour-thermal-energy-storage-to-get-test-in-californias-abandoned-oil-wells/
[58] Source: Urban Institute 2024
[59] Note: Compared to the living wage for the county at $44K; Source: MIT Living Wage
[60] Note: Based on estimations from nearby solar projects (e.g., Camino Solar Project and Willow Rock Energy Storage), Source: Bureau of Land Management, 2024
[61] Source: https://www.spglobal.com/commodityinsights/en/market-insights/blogs/electric-power/092823-women-in-energy-more-utility-leadership-roles-but-parity-remains-far-off

photovoltaic industry specifically, women hold 40% of full-time positions[62], but only hold 14% of senior management positions globally.[63] Their participation in science, technology, engineering, and mathematics (STEM) roles within the clean energy industry is also considerably lower than in administrative positions.[64] These trends underscore the need for targeted initiatives aimed at promoting equity and representation, ultimately fostering a more inclusive energy industry that can effectively harness the diverse talents of its workforce.

Market signals

Large-scale investments in clean energy are on the horizon in the Kern County region, including several high-value planned projects in West Kern that could benefit Taft. Clearway Energy Group has secured $550 million in construction financing and has commenced work on the Rosamond South I solar and storage project in West Kern. The project is anticipated to generate over 400 union labor jobs during its construction phase,[65] and an estimated 110 permanent positions.[66] Set to begin commercial operations in 2025, the project's 140 MW solar and 118 MW battery energy storage system (BESS)[67] is expected to produce enough electricity annually to supply more than 63,000 homes, contributing to Clearway's growing portfolio in Kern County.[68]

Additional planned solar projects in West Kern are expected to create jobs for Taft residents alongside other West Kern residents.[69] These projects are within a ten-mile radius of Taft and include the Valley Solar Project: Elk Hills Solar (Site 3), the SKIC Development Inc. solar project, the Maricopa Sun Solar Complex project, and the Northern Orchard Solar project.[70]

Taft is also well-positioned to leverage investments in clean solar microgrids and localized community solar projects coming into California more broadly, which could create over 166,000 jobs by 2030 and generate over $22 billion in gross domestic product.[71] In 2021, for

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[62] Source: https://www.irena.org/Energy-Transition/Socio-economic-impact/Gender
[63] Source: https://blogs.worldbank.org/en/voices/clean-energy-women-women
[64] Source: Renewable Energy A Gender Perspective (irena.org)
[65] Source: Clearway Closes Financing and Starts Construction on Solar and Battery Energy Storage Facilities in California - Clearway Energy (clearwayenergygroup.com)
[66] Note: This estimation assumes that most projects convert 25% of construction positions into permanent roles, drawing on examples from nearby solar projects like the Camino Solar Project and Willow Rock Energy Storage.
[67] Source: Clearway Closes Financing and Starts Construction on Solar and Energy Storage Project in California | Utility Dive (2024)
[68] Source: Microsoft Word - F. Letter to Surrounding Property Owners Rosamond South.docx (kerncounty.com)
[69] Note: Data on the number of jobs these initiatives would attract is limited, and the specific status of these projects is not clearly outlined in the research. However, they are part of Kern County's broader clean energy efforts and are likely operational or nearing completion as part of ongoing solar capacity expansion in the region.
[70] Source: Kern County Planning & Natural Resources Department: Solar Project Sites Within Western Kern County (2024)
[71] Source: New Research Shows Microgrids Can Create Jobs and Contribute to Economic Growth | HOMER Microgrid News

example, California microgrid investments created 4,670 jobs and $1.76 billion in business sales.[72] There is potential to leverage microgrid investments through Taft's expanding solar industry as Taft explores localized community solar projects, such as the Taft Union High School Solar Project, which aims to install solar array panels on a 10.28-acre vacant parcel owned by the school district. Solarcollab is also leading a program to develop 2-5 MW community-owned solar farms in the surrounding region of Taft, empowering landowners and community members to engage in solar farm ownership and development.[73]

There is increasing interest and investment in geothermal energy storage development projects throughout the Kern County region. The National Renewable Energy Laboratory (NREL), in collaboration with a private investment group, is spearheading development of this innovative solar storage technology through a major initial project.[74] Known as GeoTES (Geologic Thermal Energy Storage), this initiative aims to be the world's first to store solar energy in a natural geological reservoir. The project involves retrofitting depleted oil wells to store concentrated solar energy in superheated groundwater, which can then be used to drive turbines during peak energy demand, providing a reliable power source. By integrating geothermal storage and solar technologies, GeoTES could offer a more efficient alternative to traditional solar storage, enhancing energy resilience and supporting the transition to cleaner energy sources. Currently in development, the project aims to generate 100 kilowatts by 2027, with potential to scale up to 400 megawatts in the future. [75] As Taft embraces a similar shift, it stands to benefit from this county-wide initiative to explore and invest in GeoTES.

From a policy perspective, Taft, like the broader Kern County region, benefits from clean energy-supportive policies outlined in the Regional Plan Part II. These include the Green Jobs Initiative and federal legislation such as the 2021 Infrastructure Investment and Jobs Act and the 2022 Inflation Reduction Act. These could present critical opportunities to bring more sustainable and higher-wage jobs into the county, as well as mitigate the economic impact of the ongoing national shift away from oil and gas.[76] These initiatives could also attract additional investment in Taft and West Kern.

Community desirability

Community leaders engaged thus far gave positive feedback about prospective clean energy investments in West Kern, but with a desire for more information about its potential and

[72] Source: https://www.kvpr.org/local-news/2024-02-21/californias-oil-country-hopes-carbon-management-will-provide-jobs-it-may-be-disappointed
[73] Source: https://solarcollab.com/community-owned-solar-farm-program-for-landowners-in-taft-california/
[74] Source: California Repurposes Oil Fields into a Massive Solar Battery with GeoTES, Aiming to Store Solar Energy to Power Thousands of Homes by 2045 - Karmactive
[75] Source: Can a California Oilfield Be Retrofitted to Store Solar Energy? - Yale E360
[76] Source: Regional Plan Part II

technical implications. They expressed some reservations about the industry's potential benefits to the community and its capacity for long-term job creation.[77] Clean energy was ranked second among priority industries for West Kern residents in stakeholder interviews.[78]

One potential concern pertained to energy storage, both with traditional battery technology and geothermal energy. Solar power traditionally relies on battery-based energy storage solutions, which can pose environmental risks to the community such as fire hazards.[79] While GeoTES offers potentially fewer environmental concerns than those associated with traditional battery storage,[80] the systems can still require significant water usage. Thus, if GeoTES becomes a priority avenue for driving growth in the clean energy industry, the environmental risks of this approach would need to be carefully considered and evaluated.[81] As GeoTES is in its initial stages, there is significant potential for R&D to enhance its efficiency and effectiveness, with a focus on community and environmental considerations at the forefront.

Alignment with equity, climate, and regional strategy

The development of clean energy aligns well with equity and climate goals. As outlined in the Regional Plan Part II, building the clean energy industry in Taft not only supports the transition away from fossil fuels—one of the largest contributors to climate change—but also addresses critical equity and public health issues. This transition addresses the urgent need for climate action and offers substantial public health benefits, particularly for disinvested communities disproportionately affected by pollution. By replacing fossil fuel power plants with clean energy sources, Kern County can improve air quality, reduce health risks associated with respiratory and cardiovascular diseases, and create job opportunities that help alleviate economic disparities.

At the same time, the clean energy sector experiences significant gender disparities. Women in this field earn nearly 20% less than their male peers, highlighting a substantial wage gap.[82] In the solar photovoltaic sector, women occupy 40% of full-time roles[83] but only 14% of senior management positions globally.[84] Their representation in science, technology, engineering, and mathematics (STEM) roles within renewable energy is also much lower compared to administrative roles. These trends emphasize the pressing need for targeted initiatives to

[77] Source: Interview with Governance Council representatives of West Kern conducted September 2024.
[78] Source: Community interviews administered directly to West Kern residents, during research conducted for the Regional Plan Part II
[79] Source: Emerging Hazards of Battery Energy Storage System Fires | FEMA.gov
[80] Source: 1000-hour thermal energy storage to get test in California's abandoned oil wells - SolarPACES
[81] Source: Geological Thermal Energy Storage (GeoTES) Charged with Solar Thermal Technology Using Depleted Oil/Gas Reservoirs and Carnot-Battery Technique Using Shallow Reservoirs: Preprint (nrel.gov)
[82] Source: S&P Global, 2024
[83] Source: International Renewable Energy Association
[84] Source: World Bank, 2022

promote equity and representation, ultimately creating a more inclusive energy industry that can fully leverage the diverse talents of its workforce.

Lastly, clean energy as a priority industry in Taft aligns with West Kern's economic development strategy. In the Regional Plan Part II, clean energy was categorized as one of the highly relevant industries for the subregion.

Conclusion

Taft is well-placed to capitalize on the region's clean energy investment momentum by attracting investments in solar and geothermal technologies. The development of innovative projects like GeoTES highlights the potential for sustainable energy solutions that enhance energy resilience while creating high-quality jobs. Community support for clean energy initiatives indicates a readiness for this transition, despite some concerns about long-term job stability and, in the case of GeoTES, potential water and environmental concerns. As the region embraces incoming investments in microgrids and community solar projects, it stands to benefit economically while advancing equity and environmental sustainability. Ultimately, the strategic alignment of clean energy initiatives with broader policy frameworks and community needs can transform Taft into a hub of sustainable growth and job creation, leading to a cleaner, more resilient future.

Industry 2: Sustainable agriculture (including entrepreneurship)

Overview

As Taft transitions to a greener economy, its agriculture industry has the potential to increase wages and improve job quality and stability through the development of higher-skilled positions focused on improved production practices, investment in technology and value addition. As highlighted in the Regional Plan Part II, agriculture plays a key role in employing individuals from disinvested communities, particularly migrant farmworkers who often have limited education qualifications and English proficiency. With only 0.6% of agricultural positions requiring an educational certificate, this industry offers job opportunities to those who might encounter substantial educational and credentialing obstacles in other fields. To improve job quality in agriculture, Taft can focus on fostering innovation and enhancing value addition. Agricultural innovation, which encompasses various technologies and practices aimed at improving agricultural efficiency, productivity, and sustainability, including advancements in technology, processing methods, and supply chain improvements (such as ag-tech, value-added processing, and manufacturing. By embracing innovative technologies and practices, the city can boost efficiency, productivity, and sustainability in the industry. This could involve upgrading processing methods, enhancing supply chains, and investing in value-added processing and manufacturing. Additionally, Taft can support entrepreneurship for agricultural workers who

may be affected by mechanization and technological advancements, helping them transition into new opportunities and roles.

Regional assets

As previously mentioned in Chapter 1, Taft's agricultural landscape is relatively disadvantaged due to its location in the arid hills southwest of Bakersfield, which presents greater challenges for farming than other, more fertile areas of the region. However, the city's strategic location within the greater San Joaquin Valley and relative to Bakersfield[85]—which produces a sizable portion of California's agricultural output—and proximity to robust transportation infrastructure, supports the efficient distribution of agricultural products to major markets. Furthermore, the abundant land around Taft is a valuable resource for research and development (R&D) in several areas, including sustainable agriculture practices and clean energy projects.[86] These logistical assets could enable Taft to benefit from value-added agricultural processing and support services.[87]

Job quality and quantity

Many agricultural positions are seasonal, informal, or part-time, which can impact job stability, income, and access to benefits for workers in this industry. Currently, 6% of the labor force in Taft are engaged in agriculture, but only 1.7% are employed full-time / year-round. The industry's median annual wage of around $14,000[88] is below the Kern County region's living wage ($44,000)[89], and below the median earnings for Taft (~$34,000).[90]

Agricultural worker demographics vary significantly between Taft and West Kern. The median annual wage of around $14,000 in Taft falls well below the ~$23,000 median for West Kern and ~24,000 median for Kern County.[91] In Taft, 62% of agricultural workers are female and 38% are male.[92] Conversely, in West Kern, the agriculture industry is 64% male and 36% female.[78] The accuracy of this census data for Taft could be skewed by the exclusion of undocumented workers. However, as the city aims to develop higher quality jobs in agriculture, it will be important to consider gender demographics and ensure that women working in the industry are able to access higher quality job opportunities. While specific wage data broken down by

[85] Note: Taft is located 32 miles (51 km) west-southwest of Bakersfield
[86] Source: Interview with the Chief Economic Development Officer of Kern County conducted on September 2024
[87] Source: Regional Plan Part II
[88] Note: The median wage reported for agricultural workers should be interpreted with caution, as it is calculated with the assumption that not all agricultural workers are full-time employees, which can affect overall earnings and employment statistics in this industry.
[89] Source: MIT Living Wage
[90] Source: US Census Bureau
[91] Source: Ibid.
[92] Note: It's important to note that these figures may not be entirely accurate, as a significant number of workers are undocumented and not accounted for in these statistics.

gender is not available for Taft, the gender pay gap in West Kern's agricultural industry shows that women earn on mean 80% of what men earn.[93] It is reasonable to assume that a similar or potentially larger gap may exist in Taft, given the broader trends in gender pay disparity across industries.

Investing in agricultural innovation alongside value-added processing and manufacturing could lead to higher-quality job opportunities in the industry by creating longer term and higher paying jobs. For context, the logistics and transportation industry in California provides competitive wages, with median annual earnings ranging from $41,000 to $55,000, depending on the specific role.[94] For context, estimations suggest that ag-tech jobs in the state offer mean salaries around $63,000 annually, 1.12 times more than non-tech jobs.[95]

Market signals

Several factors are driving increased investment into agriculture technologies (ag-tech) and sustainable farming practices throughout California and in the San Joaquin Valley that could facilitate growth in this space in West Kern and Taft. In recent years, there has been a push for sustainable use of agriculture land local policies in Taft[96] and increasing investments in ag-tech and value-added processing throughout California. Investment is growing from firms like CapRock Partners[97] and Mission Driven Finance[98] focused on value-added industrial assets, alongside a recognition of the need for strategic innovation in the agriculture industry, with U.S. farm incomes projected to drop 25.5% in 2024. For example, the California Department of Food and Agriculture (CDFA) is actively defining, promoting, and funding regenerative agriculture practices throughout the state.[99] As the region faces climate variability and water scarcity, regenerative agricultural approaches can help to develop more drought-resistant farming practices. Investments in ag-tech, such as advanced irrigation methods and drought resistant crop varieties, also have potential to increase crop yields and safeguard against climate risks.[100] Taft could also explore generation of higher-value products by leveraging sustainably harvested

[93] Source: US Census Bureau
[94] Source: Taft_PublicReview_GP_Cover.ai (municipalone.com)
[95] Source: This figure is an estimate derived from various job posting sites and industry reports on California and country-wide wages, primarily https://ag.purdue.edu/department/agecon/_docs/ag-jobs-reports/ag_job_report_march_2022.pdf, Note: The range can vary significantly based on specific roles and geographic locations.
[96] Source: 6-1-10: GENERAL PLAN: (amlegal.com)
[97] Source: CapRock Partners Acquires 6.47-Acre Value-Add Incubator Industrial Park In San Gabriel Valley - CapRock Partners (caprock-partners.com)
[98] Source: Regenerative Harvest | Mission Driven Finance®
[99] Source: https://www.cdfa.ca.gov/RegenerativeAg/
[100] Source: Exploring the Potential for Water-Limited Agriculture in the San Joaquin Valley - Public Policy Institute of California (ppic.org)

and organic goods, or branding and promoting heritage products such as indigenous produced goods, enhancing the value of local production.

Taft is well positioned to leverage investments in ag-tech and agro-processing coming into the surrounding area. For example, substantial public and private investments (~$1.6 billion) from programs like FARMER, the Carl Moyer Program, and EIP have driven the adoption of advanced ag tech in San Joaquin Valley since 2015.[55] Additionally, the KCCD established the California Renewable Energy Laboratory (CREL), a collaborative effort between public and private partners aimed at securing a stable energy future. One of its initial projects is an agrivoltaics initiative at the Regenerative Agriculture Education Center at Bakersfield College's Delano Campus, which promotes regenerative farming practices. The ribbon-cutting for this project occurred in November 2023, and planning for both the installation and curriculum is currently in progress.[101]

Community desirability

Agriculture is a traditionally important source of employment for Taft residents, particularly for those in disinvested communities. As the climate changes, the risk of agricultural worker displacement underscores the need for the region to explore alternative job opportunities for at risk workers.[102] Community members advocate for increased support and resources for agricultural and farm workers, especially undocumented individuals, and highlight the need for more job opportunities to enhance the local economy.[103]

Alignment with equity, climate, and regional strategy

As outlined in the Regional Plan Part II, this target industry strategy seeks to minimize the negative impacts of agricultural economic development on the environment and public health by promoting mechanization and technological advancements. This approach aims to transition workers from fieldwork to higher-skilled, less hazardous jobs, reducing health risks and the environmental footprint of agricultural practices. Taft can also benefit from California's focus on regenerative agriculture as a framework for developing local policies that promote sustainable farming practices.

Agriculture as a priority industry in Taft aligns with West Kern's economic development strategy, where it was categorized as one of the three highly relevant industries for the

[101] Source: In California, NREL Helps Kern County Embrace Clean Energy in Partnership With Community Colleges | News | NREL

[102] Source: Community interviews administered directly to West Kern residents during research conducted for the Regional Plan Part II

[103] Source: Kern Coalition Stakeholder Meetings

subregion. Additionally, the needs and interests expressed directly by disinvested communities inform the selection of agriculture as a target industry strategy.

Conclusion

Agriculture has long been an important source of employment for Taft residents, especially in disinvested communities. As climate change increases the risk of displacement for agricultural workers, it is important for the region to explore resilient farming methods, agricultural innovations, agro-processing opportunities, and alternative job opportunities for those at risk.

Industry 3: Carbon management

Overview

Carbon management has emerged as a potentially important growth industry for West Kern and Taft, with several planned investments in the industry. Carbon management takes a comprehensive approach that goes beyond direct air capture (DAC) and carbon capture and storage (CCS). While it includes methods to remove carbon dioxide from the atmosphere, it also involves the utilization and transportation of captured carbon, as well as the development of the necessary infrastructure to support these processes.[104] It also encompasses policy and regulatory frameworks aimed at addressing and controlling carbon emissions.

However, there are significant concerns from the local community as well as other critics about industry safety and viability. Some of the concerns cited by community leaders during engagement for this report included lack of information sharing and clarity around the technical aspects and implications of the industry, which includes various complex components.[105] The scope of this report does not allow for a full investigation of the industry to address concerns, validate opportunities, or explore alternative industries that could drive similar job opportunities (especially for workers transitioning out of the oil and gas industry) in place of a carbon management strategy. However, given the likelihood of significant investment in this industry in and around Taft, this chapter includes an assessment of the industry (followed by strategies in Chapter 3 for how to manage investments to optimize for community benefit).

Potential for industry growth and job creation

Existing regional assets and planned investments in carbon management indicate the potential for strong industry growth in West Kern that could create jobs for Taft residents,[106] particularly those experiencing displacement from the declining oil and gas industry. Anticipated industry growth drivers and potential benefits include:

[104] Source: Carbon Management and Utilization Research | Bioenergy | NREL
[105] Source: Interview with Governance Council representatives of West Kern conducted September 2024.
[106] Source: A California oil town's plan to survive the energy transition | Grist (2024)

Regional assets

Depleted oil reservoirs that are prevalent in and around Taft are seen as promising sites for carbon storage.[107] The Elk Hills Oil and Gas Field, one of America's most productive oilfields, is located between Buttonwillow and Taft, approximately 30 miles west of Bakersfield. It is actively being explored for carbon storage projects in reservoirs that were formerly utilized for oil and gas extraction.[108] Additionally, farmland areas that are no longer viable for agriculture due to groundwater use policies offer potential sites for carbon management parks.

Job quality and quantity

The mean estimated annual wages in carbon management are considerably higher than the city and regional median[109] **at $80,000.**[110] The industry has high potential to create short-term construction jobs (~100 positions per site), but lower potential for long-term job creation in ongoing operations (~5-10 permanent positions per site).[111]

Available workforce

Carbon management projects present job opportunities for former oil and gas industry workers, as the skills required for carbon dioxide injection are like those used in oil extraction. This could present an important source of employment for some Taft workers who face potential displacement as state policies and shifts toward clean energy investments put pressure on the city's traditionally strong oil and gas industry. One study indicates that fewer than 5% of oil and gas employees in Bakersfield are expected to secure positions in "green industries" in the next 10 years.[112] Given that many oil and gas industry workers possess transferable skills, carbon management has the potential to create pathways for these workers through targeted training programs that build on existing competencies.

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[107] Source: California's carbon storage plans in Kern County face a key test (kvpr.org)

[108] Source: California Resources Corporation - Carbon TerraVault - Vaults (crc.com)

[109] Note: Compared to Taft's median wage of $33,848 and the living wage of Kern County ~$44,600, according to MIT Living Wage

[110] Note: The total direct and indirect payroll for these jobs is anticipated to be between $1.1 billion and $1.8 billion each year, with a mean annual wage of about $80,000; Source: Analysis of Potential Fiscal and Economic Benefits of Kern County Carbon Management Industry

[111] Note: Percent employed estimations are based on data from the TerraVault project proposed by California Resources Corporation (CRC) and a Texas project proposed by Occidental, the former parent company of CRC. Occidental stated that its Stratos removal project in Texas will employ 1,000 workers during construction and 75 once it becomes operational. TerraVault's construction phase will employ 80 people, with only 5 permanent positions created in the initial project phase; Source: How many carbon management jobs will come to Kern County? (kvpr.org) (2024)

[112] Source: How many carbon management jobs will come to Kern County? (kvpr.org)

Market signals

Three large projects with carbon management and storage components are planned for development near Taft. These include Carbon TerraVault I (Elk Hills, within 10 miles of Taft), the Carbon Frontier project by Aera Energy, and the Carbon Management Business Park (CMBP).[113]

The Carbon TerraVault 1 (CTV I) project, proposed by California Resources Corporation (CRC), intends to capture emissions at its Elk Hills Oil and Gas Field and inject them over a mile deep into an exhausted oil reservoir.[114] The Carbon Frontier project seeks to capture CO2 emissions generated at the Bellridge oil fields and store it underground. It is designed to capture between 1 million and 1.6 million metric tons of CO2 annually. The project is currently undergoing regulatory review and is expected to be operational by the late 2020s.[115] The Carbon Management Business Park (which is currently at the conceptual stage) would include carbon removal and storage, hydrogen production, a steel mill, and a R&D incubator. Additionally, carbon would be captured from Lone Cypress, a planned hydrogen plant, and a direct air capture project that will use fans and filters to extract carbon dioxide from the air.[116]

Concerns regarding industry safety and benefits

Despite the growing interest and investment in this field, stakeholder interviews surfaced a series of health and safety concerns along with the desire for improved access to unbiased information. The criticisms and concerns associated with this industry include:

Job quality and quantity

There are significant concerns within the community regarding the quantity and quality of jobs these projects might create, as well as their accessibility to residents.[117] As stated above, while construction may generate ~100 jobs for each project, ongoing operations are expected to create only ~5-10 positions (~6% to 7% of the construction employment).[118] Some activists argue that focusing on carbon management misses the opportunity for broader economic reform and doesn't address the needs of agricultural workers and other low-income residents

[113] Source: https://www.utilitydive.com/press-release/20240826-clearway-closes-financing-and-starts-construction-on-solar-and-energy-stora/
[114] Source: Elk Hills Power Project | California Energy Commission
[115] Source: CarbonFrontier - Aera Energy
[116] Source: EPA-R09-OW-2023-0623-0007_content.pdf (calmatters.org)
[117] Source: Interview with Governance Council representatives of West Kern conducted September 2024.
[118] Percent employed estimations are based on data from the TerraVault project proposed by California Resources Corporation (CRC) and a Texas project proposed by Occidental, the former parent company of CRC. Occidental stated that its Stratos removal project in Texas will employ 1,000 workers during construction and 75 once it becomes operational. TerraVault's construction phase will employ 80 people, with only 5 permanent positions created in the initial project phase.

who haven't benefited from the oil industry.[119] Critics also argue that carbon capture and storage (CCS) enables fossil fuel companies to continue greenhouse gas emissions while profiting from the climate crisis, leading residents to worry that subsidies for these projects may inadvertently promote increased carbon production.

Health and environmental concerns

The public has expressed concerns about potential leaks, accidents, and explosions at carbon capture and storage sites (CCS) facilities that could release toxic substances into the surrounding environment. Many of these concern have been discussed in academic articles.[120] The release of smog-creating fine particles and gases from these facilities would likely be unavoidable.[121] One EPA environmental impact report indicates that while carbon injection into reservoirs does not appear to threaten drinking water sources, the project's substantial groundwater usage could exacerbate depletion in an already over-pumped basin.

Conclusion

Carbon management opportunities in Taft emphasize technologies and strategies aimed at reducing carbon emissions. With a robust oil and gas industry and favorable geology, Taft and the broader West Kern subregion could effectively utilize existing infrastructure, natural resources, and expertise to advance carbon management initiatives. Carbon management could provide a smooth transition for oil and gas workers and has the potential for quick expansion.

However, job opportunities may be constrained, and benefits to communities and workers could be limited or harmful due to concerns about environmental impacts, potentially limited job opportunities for local communities, and reliance on subsidies. Further data is needed to assess the quality and long-term sustainability of these jobs, recognizing valid community concerns as well as the potential that the industry could offer opportunities to retain well-paying positions in the region's evolving energy landscape.

[119] Source: A California oil town's plan to survive the energy transition | Grist

[120] Source: Understanding carbon capture and storage - British Geological Survey (bgs.ac.uk), Carbon Management – Earth and Environmental Sciences Area (lbl.gov)

[121] Source: Vital Climate Tool Or License To Pollute? The Battle Over California's First Carbon Capture Project | LAist

Chapter 3: Industry Strategies

This chapter presents strategies aimed at enhancing economic mobility in Taft across the prioritized industries identified in Chapter 2. The following presents the vision for each prioritized industry, followed by specific objectives to achieve that vision and detailed sub-strategies for each objective. Ultimately, these strategies aim to promote job quality, leverage regional assets, and align with the broader strategies as outlined in the Regional Plan Part II.

Strategies are organized and tagged by a series of development approaches, using the terms defined below:

- **Expand:** Refers to increasing the number of jobs provided by existing companies.
- **Upgrade:** Focuses on attracting new businesses within already established industries.
- **Adapt:** Involves adjusting current industries to meet future needs.
- **Initiate:** Pertains to drawing in new companies from industries not currently represented in the region.
- **Access:** Emphasizes improving access to existing job opportunities.

The following chapter outlines industry-specific strategies for Taft, including (i) the clean energy industry, (ii) the agriculture industry and entrepreneurship, and (iii) recommendations for managing incoming investments in carbon management, with a caveat.

Industry strategies

Industry 1: Clean energy (solar and energy storage)

This clean energy strategy envisions Taft as a leading hub for clean energy innovation, advanced manufacturing, and production, supported by a skilled workforce. The clean energy industry is still in a transitional phase in Taft, and the proposed strategy is designed to expand the region's current foothold in the solar power industry and position its competitive advantages for future geothermal energy storage**.** By developing the necessary infrastructure for growth, Taft can foster a robust manufacturing ecosystem that produces, maintains, and enhances clean energy technologies, generating long-term high-quality employment for current residents of Taft and the surrounding region.

1. **Expand/Initiate – Increase the number of long-term, high-quality jobs supported by proposed solar energy and storage projects.** The area around Taft has significant potential for solar farms, with ~five proposed solar projects in the vicinity. However, most jobs created would be temporary construction positions. This objective focuses on boosting the supply of permanent, high-quality roles throughout the supply chain in Taft, while also diversifying revenue streams through clean energy exports. Supporting strategies involve establishing a public-private-community partnership to identify workforce and infrastructure gaps, as well as upgrading energy infrastructure to improve grid capacity for energy exports.

    1a. Support planned solar projects in expanding their operations. Engage solar energy companies that are planning projects in the surrounding area of Taft (e.g., SKIC Development Inc. and others mentioned in Chapter 2) to assess potential to support expansion and enhancement of their initiatives in the region. Also, engage with solar developers to pursue opportunities for project development within Taft itself, particularly for microgrids. As discussed in Chapter 2, California is experiencing significant investment in these systems, and Taft has several promising upcoming projects focused on localized microgrid solutions. These collaborations could involve assisting businesses in identifying new opportunities for expansion, promoting incentives like cost savings through subsidies, and supporting efforts related to land acquisition, utility upgrades, and workforce expansion.

    1b. Develop local advanced manufacturing for solar components to create long-term positions. Collaborate with manufacturing companies to promote the fabrication and assembly of solar components (such as solar panels, inverters, and mounting systems) in the region. Development of local manufacturing capacity could serve emerging demand as more solar energy farms are constructed in West Kern. Taft could position itself as a key local manufacturing hub, leveraging its significant presence in the industry, strategic central location, and strong logistics assets, to create more high-paying, high-quality jobs

(as highlighted in Chapter 1, manufacturing and construction currently offer the highest local wages in Taft at $85,355[122]). Additionally, Taft could encourage this growth by forming an advanced manufacturing task force focused on attracting businesses that specialize in solar panel production and energy storage systems.

1c. Improve the safety and efficiency of lithium-ion batteries to reduce potential risks while expanding solar energy projects. Lithium-ion battery cells used for solar energy storage can experience "thermal runaway," leading to the release of extremely hot, flammable, and toxic gases, which raises significant concerns about fire hazards. [123,124] Given that West Kern is already susceptible to fires, it is crucial to leverage incoming investments to manage these risks effectively and minimize threats to nearby communities. As lithium-ion batteries are currently the conventional storage option, it is essential to prioritize making them safer, more durable, and more efficient as solar projects expand in Taft. Implementing robust safety measures, ensuring proper ventilation, and conducting regular maintenance of the battery cells are critical steps to mitigate these dangers and protect communities.

2. **Initiate – Evaluate environmental risks associated with Geologic Thermal Energy Storage (GeoTES) and, if appropriate, purse this technology by repurposing oil and gas infrastructure assets and workforce capabilities.** Taft's location in a major oil and gas production area presents an opportunity to pivot towards geothermal energy solutions. As noted earlier, there are some environmental (e.g., water usage) concerns associated with geothermal energy storage. After evaluating these risks, it may be appropriate to try to build the geothermal energy storage industry in Taft. This could be achieved through the following strategies:

   2a. Leverage state/federal funding to strengthen R&D capacity to incentivize localized design, production, testing and installation of equipment. Facilitate partnerships among state and county governments, the private industry, and research institutions (such as Taft College) to advance clean energy R&D in Taft. By attracting public and private investment in innovative technologies, Taft can leverage its abundant land and existing infrastructure to establish itself as a hub for clean energy R&D. Importantly, it should include research focused on assessing environmental impacts and identifying steps for mitigation. Collaborating with universities, government laboratories, and industry leaders will help secure additional resources and expertise. For instance, partnerships with initiatives led by the National Renewable Energy Laboratory (NREL)

[122] Source: US Census Bureau
[123] Source: Emerging Hazards of Battery Energy Storage System Fires | FEMA.gov
[124] Source: California's Climate Change Assessment for the San Joaquin Valley Region | Water Systems Management Lab (ucmerced.edu)

could focus on advancing geothermal storage solutions or developing geothermal-hydrogen hybrid systems for hydrogen production. Creating a robust R&D ecosystem could promote localized manufacturing, enhance workforce upskilling, and position Taft as a leader in clean energy innovation.

2b. Consider plans to repurpose oil and gas infrastructure. Consider developing a comprehensive plan to convert abandoned oil and gas wells into geothermal wells, making optimal use of existing drilling sites and infrastructure. Development would benefit from a city-led effort, supported by EPA funding and potentially involving developers, to clean up, permit, and make existing sites investment-ready.[125] Doing so could leverage the extensive expertise of the local oil and gas workforce in subsurface exploration and drilling techniques to effectively identify and develop geothermal resources. Many approved solar projects include traditional battery-storage components, creating opportunities to collaborate with companies like Clearway Energy (involved in the Rosamond South I solar and storage project in West Kern) and the National Renewable Energy Laboratory (NREL).

3. **Access - In alignment with the focus of the Regional Plan Part II, leverage existing workforce capabilities to enhance access to clean energy jobs.** As Taft increases investments in renewable energy sources—by expanding solar initiatives and potentially pursuing geothermal storage—it will be important to develop training programs to ensure access to these new job opportunities for the local workforce. This includes leveraging transferable skills held by oil and gas workers, as well as training other residents including those from disadvantaged communities to access quality jobs in the industry.

   3a. Upskill and retrain local workforce in solar installation, maintenance, and related technical roles. Develop targeted training programs with local community colleges to equip workers with essential skills for clean energy jobs. This includes fostering collaboration between clean energy companies and the oil and gas industry to enable workforce sharing, internships, and transition programs that allow workers to remain in their current roles. These programs will emphasize installation, maintenance of energy facilities, and electrical systems related to clean energy and should be tailored to meet the needs of Taft's disadvantaged communities (language accessibility, flexible scheduling, etc.). Collaborate with project developers to establish career development initiatives that provide clear advancement pathways within the clean energy industry. This could involve mentorship programs, professional development workshops, and opportunities for further education.

[125] Source: Interview with the Chief Economic Development Officer of Kern County conducted on September 2024

3b. Provide Financial Incentives for Upskilling and Retraining. Work with solar energy employers to create financial incentive programs that support Taft's disadvantaged workers to pursue initial training, upskilling, or retraining for higher-quality positions. This could include offering tax incentives to businesses that implement these programs, which would be granted only if companies meet specific key performance indicators (KPIs), such as the number of quality jobs generated, the mean wage of those jobs, the percentage of positions offering benefits, and the level of job training provided to employees. Suggested KPIs that can also help identify gaps and improve job accessibility for disadvantaged workers include wage disparity, promotion and job retention rates, as well as employee satisfaction across demographics in similar roles. Additionally, offer wage increases or job guarantees in fields such as solar panel manufacturing, energy storage system maintenance, and clean energy infrastructure development upon successful completion of relevant training. Strategies should be tailored to enhance women's access to clean energy jobs by implementing fair and transparent performance evaluation systems, promoting allyship among both male and female leaders, and offering mentorship opportunities. These initiatives can help create a supportive environment that empowers women to succeed and advance in the industry.[126]

Industry 2: Sustainable agriculture (including entrepreneurship)

Taft's agriculture strategy aims to transform the city's current agriculture industry into a sustainable and innovation-driven industry. This vision would be realized by implementing current industry trends including regenerative practices and value-added processing, developing a manufacturing industry to support growth, transitioning existing workers to higher-skilled jobs, and creating entrepreneurial pathways for displaced workers to improve their economic stability. By investing in higher-skilled jobs, these strategies aim to improve the efficiency and sustainability of local farming practices, particularly benefiting undocumented individuals and predominantly Latino populations.

1. **Adapt: Support existing employers in adopting ag tech, regenerative practices, and value-added processing, increasing the number of long-term high-quality jobs.** Existing agricultural production in Taft is limited compared to more productive agricultural regions in the surrounding San Joaquin Valley. However, the potential shift in Taft away from fossil fuels may foster a greater focus on sustainable agricultural practices and on diversifying the local economy, creating opportunities for agricultural innovation and expansion. In response, this strategy would support existing agribusinesses in enhancing regenerative practices and sustainability to boost outputs and improve job stability while exploring potential for value addition. As noted in Chapter 2, Taft has a relatively strong transportation

[126] Source: Empowering Women in Clean Energy: Advancing and Retaining an Equitable Workforce | Global Energy Alliance for People and Planet

network and communication systems, which could help the city leverage value-added agricultural processing and related services. Strategies supporting this objective aim to provide financial incentives for transformative projects, establish business incubators for value-added processing, and invest in infrastructure and R&D to foster technological advancement and regenerative agricultural practices. By prioritizing upskilling and retraining, especially for workers moving from traditional agricultural roles, the strategy aims to equip them with the skills required for higher-quality, higher-paying jobs.

1a. Provide financial incentives for agribusinesses to adopt ag tech and value-added processing. Incentivize employers either to shift their operations toward value-added food processing or to increase ag tech innovation and integration. This can be achieved through targeted financial incentives for both large and small-scale local agribusinesses, including tax credits, rebates, or reduced property taxes. To qualify, businesses would need to commit to transformative projects that enhance productivity through technological innovation or shift towards more sustainable and profitable practices. Additionally, these incentives would support the hiring of disadvantaged communities within Taft. The program could establish clear guidelines to ensure that employers actively recruit, train, and retain a percentage of employees from underrepresented or economically disadvantaged groups, with tracking and reporting mechanisms in place to monitor compliance and assess the impact on local employment.

1b. Develop a value-added processing business incubator. Launch a tailored business incubator designed to support medium and small-scale local agribusinesses in transitioning from primary production to advanced value-added processing techniques. This incubator would provide hands-on, expert-led assistance, offering technical guidance, access to industry mentors, and practical support for adopting more complex agricultural processes such as food preservation, packaging, and product innovation. The program would focus on helping businesses refine their products, enhance marketability, and navigate the regulatory requirements necessary for scaling operations. Through personalized mentorship and tailored support, participating agribusinesses will acquire the knowledge and tools needed to successfully advance into value-added production, boosting both their profitability and their ability to create higher-quality jobs for the local workforce.

1c. Strengthen R&D capacity for agricultural innovation. Create an environment conducive to agricultural innovation by partnering with agribusinesses, universities, and research institutions to pilot new practices and technologies. The city is positioned to obtain substantial public state funds being allocated to economic development in agricultural technology, primarily concentrated on sustainable and drought-resilient ag-tech. For example, the expertise of existing organizations like the California Department

of Food and Agriculture (CDFA) could be leveraged. The CDFA also provides several grant programs that support agricultural technology and value-added processing, such as the Value-Added Producer Grants (VAPG)[127] and the State Water Efficiency and Enhancement Program (SWEEP).[128] Taft could broaden its focus to incorporate regenerative agriculture techniques for enhanced sustainability in primary production while also exploring organic branding and value-added processing to maximize local economic benefits. This strategy emphasizes hands-on R&D that directly benefits Taft's agricultural community by enhancing climate resilience, improving worker safety, and promoting sustainable business growth. Key actions include securing public and private funding for research and experimentation, as well as creating a pipeline for pilot programs that can rapidly scale based on early successes, serving as proof-of-concept for broader adoption of innovative practices. There is also an opportunity to leverage the city's cultural heritage to highlight the Indigenous communities in and around Taft, particularly the significant Oaxacan presence.

2. **Access: Transition workers to higher-skilled jobs in the agriculture industry.** To ensure workers remain competitive in agriculture and smoothly transition to related industries, access to skill development and technology training is essential. This objective emphasizes value addition for existing agribusinesses and explores opportunities for agro-processing in manufacturing investments distinct from primary production, requiring both additional investment and worker upskilling. By helping workers move into higher-skilled roles, Taft can prepare its workforce for stable, high-quality positions in agriculture. This strategy will secure long-term career opportunities while enhancing Taft's competitiveness in the evolving agricultural landscape.

   2a. Increase awareness of existing and emerging skilled jobs. Conduct targeted outreach to ensure that disadvantaged residents in Taft are informed about ag-tech and value-added processing job opportunities. Collaborate with community-based organizations and trusted local institutions to implement campaigns in English and Spanish, utilizing local radio, social media, and community events. Emphasize addressing barriers faced by women and underserved groups, ensuring that information on upskilling, training, and job placement reaches the appropriate audiences.

   2b. Train employees for roles involving technology. Encourage cross-training in various agricultural practices and technologies to build a versatile workforce capable of adapting to different roles. This includes training programs focused on skills needed for specific roles such as value-added processing (e.g., product packaging) and advanced

[127] Source: Value Added Producer Grants in California | Rural Development (usda.gov)
[128] Source: CDFA - Farmers Equity - Grant Programs (ca.gov)

manufacturing for ag-tech components. It is important to ensure equitable access to these programs by offering relevant English-language development training, and by offering technical training at convenient times and locations. Also ensure that trainings address barriers for women in the field, such as providing childcare, flexible scheduling, transportation assistance, and creating a supportive environment that fosters inclusion and empowerment. Additionally, consider offering resources for professional development and networking opportunities to help women thrive in their roles. These initiatives will equip Taft's workforce with the skills needed to succeed in emerging agricultural industries, effectively addressing gender disparities and barriers to higher-quality employment.

2c. Provide financial incentives for upskilling and retraining. Work with employers to improve or create incentives for workers to receive initial training, upskilling, or retraining and move into higher-quality positions. These incentives could include paid training, one-time cash bonuses, wage increases linked to certification completion, or job guarantees upon certification. This could involve encouraging employers to commit to paid training, one-time cash bonuses, wage increases (e.g., 5-10%) linked to certification completion, or job guarantees upon certification. Additionally, consider offering tax incentives to businesses that implement these programs that would only be granted if companies meet specific key performance indicators (KPIs) linked to quality jobs. By partnering with employers to implement these initiatives, the city can ensure that businesses actively invest in the workforce and promote inclusivity in hiring practices, particularly targeting women and underrepresented communities.

3. **Access: Transition agriculture workers into entrepreneurship.**[129] As technological advancements reshape the agricultural value chain, disadvantaged workers, particularly undocumented migrants, may face job displacement. This objective seeks to create entrepreneurial opportunities for these workers as alternatives to traditional agricultural roles that promote economic resilience and active participation. Proposed strategies include providing financial resources, mentorship, and accessible training to help them establish small businesses.

[129] Note: In this report, "entrepreneurship" primarily refers to small businesses across various industries, defined as those with 500 or fewer employees. However, the focus is on small and micro-businesses with 1–10 employees, given their prevalence and need for support in Taft, as highlighted during stakeholder engagement. Therefore, the terms "entrepreneurs" and "small business owners" are used interchangeably to describe residents looking to launch, sustain, or grow these types of businesses.

3a. Develop a specialized entrepreneurship incubator with financial and legal support for disadvantaged communities. This program would be a small-scale, application-based program that offers hands-on support and financial capital to help small businesses grow. The goal is to incentivize workers, especially former agricultural workers, to launch and scale their own businesses. Financial vehicles such as grants, low-interest loans, and flexible payment options would help former agricultural workers, particularly undocumented migrants, start small businesses in various industries. Grants could cover essential startup costs, such as equipment, inventory, and marketing, while offering low-interest loans and flexible repayment options to further support business growth. The program would also host workshops and networking events, enabling aspiring entrepreneurs to connect with established business owners, industry experts, and potential investors. By providing culturally sensitive resources and technical assistance, the incubator would empower participants to establish and grow entrepreneurial businesses, promoting economic inclusion.

3b. Establish a supporting industry body for disadvantaged communities, particularly the Latino community. This initiative seeks to improve policies and regulations while creating valuable networking opportunities and linking small businesses with quality, affordable service providers and guidance for small business owners. To support this, the program will prioritize accessibility for disadvantaged workers and enhance community engagement through a dedicated advocacy body focused on advancing the interests of Latino entrepreneurs in Taft. This organization will elevate the voices of Latino-owned businesses, influencing policy and improving resource access while collaborating with local, state, and federal entities to address regulatory challenges and promote equitable practices. The approach would include coordination with existing organizations, such as the Kern County Latino Chamber of Commerce, to ensure that industry bodies are effectively supporting Latino entrepreneurs in Taft. Comprehensive mentorship could cover business planning, legal guidance, market access, and financial management, specifically targeting the unique challenges faced by undocumented individuals entering entrepreneurship. Additionally, pro-bono legal services will assist participants in navigating business registration, tax compliance, and labor laws.

Industry 3: Carbon management approaches

We do not recommend moving forward with carbon management as an economic development approach until the environmental risks are clearly understood and a mitigation plan is in place. Moreover, the risk assessment and mitigation plan should be conducted transparently, with input and participation from carbon management industry

representatives, environmental advocates, impartial technical experts, and the community. As discussed in Chapter 2, carbon management presents potential opportunities for Taft and West Kern, but also raises significant environmental and community concern. The scope of this report has not allowed for a full investigation of the industry. Fully understanding carbon management's environmental effects is critical to evaluating its long-term economic development potential in Taft and alignment with the broader Kern Coalition goals of building an equitable, inclusive, and sustainable economy. This chapter presents three considerations for city planners as they navigate incoming, planned investments in carbon management for Taft:

1. **Ensure a solid and objective understanding of the environmental risks associated with carbon management and engage community members along with impartial technical experts in this process.** Community stakeholders have expressed concerns about the lack of information sharing around proposed carbon management investments. If investments go ahead, it will be important to ensure transparency and share consistent, accurate, unbiased, and clear communication with affected communities via trusted sources. Information sharing could address both potential challenges, health and safety issues around carbon management investments, mitigation measures being taken, and potential benefits in terms of economic development and job creation.

2. **Establish comprehensive policies that mitigate and alleviate environmental, health, and safety concerns associated with carbon management.** This includes engaging with community stakeholders and health experts to ensure that all potential risks are identified and effectively managed, fostering a safer environment for residents. It is essential to establish appropriate regulatory frameworks to ensure that any future carbon management projects adhere to safety standards, protecting both the environment and community health. Additionally, investing in ongoing monitoring and reporting systems would provide real-time data on emissions and safety, allowing for timely interventions if issues arise. Finally, integrating community feedback into project planning can foster a sense of ownership and ensure that the benefits of these initiatives are equitably shared.

3. **If investment proceeds after carefully considering the two points above, ensure industry investment in carbon management infrastructure will create sustainable, long-term job opportunities.** This strategy should involve collaboration with local businesses, workforce development programs, and industry experts to ensure that investments not only benefit the economy but also provide meaningful employment for community members. While some carbon capture projects present limited, short-term job opportunities, there is potential to create longer-term jobs by leveraging

carbon management infrastructure to attract investment from other industries. The proposed Carbon Management Business Park in West Kern, for instance, could attract investment from CO2-utilizing and-producing industries alongside carbon capture, storage, and R&D. Additionally, providing grants or subsidies to companies engaged in carbon utilization or innovative transportation solutions, both aspects of the proposed Carbon Management Business Park, can encourage investment across diverse industries, fostering a more comprehensive and sustainable approach to carbon management.

Industry development enablers and strategies

To effectively support the growth of the clean energy and agriculture industries in Taft, key enablers and strategies must be addressed. This enabler focuses on vocational training, through education and certificate programs, which are crucial for fostering a thriving industry, encouraging local entrepreneurship, and ensure quality of life for residents.

1. **Education and Certification Programs through Partnerships with Taft College.** Taft College is expanding its offerings, particularly in industrial electronics, to equip workers for new industries. Industrial electronics significantly enhance efficiency in both the solar power industry and modern agriculture. In solar power, they enable smart grid technologies, optimize energy storage, and improve panel monitoring through sensors and control systems.[130] In agriculture, industrial electronics support precision farming by integrating IoT (Internet of Things)[131] devices for real-time monitoring of soil conditions, crop health, and resource management, ultimately increasing yields and reducing waste.[132] The college can play a vital role in preparing the local workforce for emerging industries.[133] The Kern Community College District (KCCD) also focuses on training the future workforce for the clean energy transition through programs in solar installation, technology, and maintenance. Additionally, the KCCD Workforce Development Plan addresses challenges in agriculture, such as climate change, by offering training in advanced agricultural skills, including data analysis and IoT technologies, while also promoting diversity by supporting women and minorities in the workforce.[134] These programs are designed to adapt to emerging technologies and are developed in collaboration with industry leaders, ensuring that graduates are job-ready. Taft College

[130] Source: National Renewable Energy Laboratory (NREL) Home Page | NREL; IEEE Xplore
[131] Note: IoT, or the Internet of Things, refers to a network of interconnected devices that communicate and share data over the internet. IoT enables automation, remote monitoring, and data analysis, improving efficiency and decision-making in various applications, from smart homes to agriculture and manufacturing.
[132] Source: Harvard Business Review - Ideas and Advice for Leaders (hbr.org); International Journal of Agricultural and Biological Engineering (ijabe.org); Global management consulting | McKinsey & Company
[133] Source: (Taft College | Transform Your Life)
[134] Source: 2023-2028 KCCD Workforce Development Plan.pdf

emphasizes building a skilled and diverse workforce, actively encouraging participation from all individuals, with specific initiatives aimed at supporting women and minorities in these fields.[135]

This enabler will help create a strong foundation for the prioritized industries to thrive, ensuring that Taft remains a competitive and attractive location for both businesses and workers as it develops new opportunities in the clean energy and agricultural industries.

[135] Source: Regional Plan Part I: Addendum to the UC Merced Community and Labor Center 2024 Report