essential elements

WEST HILLS
COMMUNITY COLLEGE DISTRICT

West Hills Community College District

2014 Public and Private Policy Series
Essential Elements
for the Future of the San Joaquin Valley

Energizing the Valley
And Generating Jobs

Second in a series on water, food, energy and manufacturing

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Summary Report

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1. Background

Through its provocative series of public/private policy forums the West Hills Community College District (WHCCD) is calling upon experts to digest the events of the day and examine the future promise and prospects for the Valley. The first such forum focused on water, the second focused on the state of energy in the Valley. Future forums will address trade and logistics. This summary report outlines results of the daylong energy forum entitled "Energizing the Valley and Generating Jobs."

The challenges facing the Central Valley of California are best discussed in superlatives. Historically the Valley has been among the most productive agricultural regions in the world. It has been the beneficiary of one of the most complex and now challenged surface water distribution systems in the nation. Currently the Valley is coping with one of the most persistent and devastating droughts in the world. As recently reported by the Associated Press, even as a third parched summer forces farmers to fallow fields, two water districts and a pair of landowners in the heart of California's farmland are making millions of dollars by auctioning off their private caches of water at prices that have grown tenfold to as much as $2,200 an acre-foot in just five years (The Post-Star, Glens Falls, NY, July 2, 2014).

The Valley's counties suffer some of the highest unemployment rates in the U.S. Now is the time to take bold steps to create a more diversified economic base, provide the workforce to sustain it and enhance the quality of life that will attract and retain business and social capital. By identifying and capitalizing on its many energy related assets, the Valley is a prime candidate to be the region of California and perhaps the nation to be most dramatically transformed during the next five to ten years. Although the full extent of energy's role in the future of the Valley is yet to be determined, several "proof of concept" projects underway suggest it could be a leader in solar and biomass generation.

The daylong "Energizing the Valley and Generating Jobs" Conference on June 12th, with its emphasis on various forms of energy generation and the associated rules and regulations that support or inhibit its growth and development, set the stage for focused public policy debates. The outcome of these debates will have a huge influence on the future look and feel of the Valley. The Central Valley has a number of energy assets that could be used to much greater advantage if there is agreement to transform the region into a more prominent energy producer. Some in-ground assets will require further public discussion regarding oil and gas extraction techniques. Presently, those familiar with the industry suggest that most oil in the future may come from existing fields rather that from new oil field discoveries in the San Joaquin Basin.

Other Valley assets include solar and well-established technologies that extract energy from currently available biomass, suggesting a future emphasis on Valley crops grown expressly for energy production such as sugar beets. Unlike corn that uses energy to grow stalks and stores energy as a starch that first needs to be processed into sugar for energy production, sugar beets have no stalks and store energy as sugar, two characteristics that impart a distinct energy advantage.

"Energizing the Valley and Generating Jobs" opened with a welcome from Dr. Frank Gornick, WHCCD Chancellor. Dr. Gornick made clear the West Hills commitment to facilitating job creation and economic development in the Valley through education. By convening topical forums designed to stimulate constructive, future-oriented public/private policy initiatives, next steps can be identified in support of a productive, sustainable future for the Valley.

The outstanding speakers and panelists who contributed to "Energizing the Valley and Generating Jobs" represent a range of perspectives, all with direct bearing on energy and its connection to the future of the Valley. Opening speakers Mike Dozier (Executive Director, Office of Community/Economic Development, CSU Fresno) and Robert Lapsley (President, CA Business Roundtable) helped to set the scene by outlining challenges and providing trend data as background for later panel discussions. The new website referenced by Mr. Lapsley (http://centerforjobs.org) offers a source for California data on jobs and the economy. Brian Fiscalini (General Manager, Fiscalini Farmstead Cheese) provided a case study of his family's evolution from dairy farming to producer of award winning Fiscalini Farmstead cheddar cheese to installation of an innovative dairy digester system. Steve Kaffka (Director, California Biomass Collaborative) offered a statewide perspective on the role of biomass in energy production. (See Attachment A for listing of panelists and moderators for all Conference panels)

2. Panel Summaries—Energizing the Valley and Generating Jobs

2.1. Panel One: *Fossil Fuels: Boom or Bust?*

In his opening remarks moderator Mark Nechodom, Director of the California Department of Conservation, emphasized the need for energy resilience, reliability, infrastructure, representation and regulation.

- **Resilience and Reliability**—Consider exploration and extraction cycles more as business cycles than boom or bust cycles. What are we doing to balance today's demands with tomorrow's needs? New technologies and smart people are needed to focus on fossil fuel development for the next 50 years in order to prepare for economic success into the next century.

- **Representation**—Since the 1970s (well before the Great Recession) the

U.S. and California economies were headed down a two-tiered track. Hollowing out the middle class is unhealthy and needs to be reversed. Given the current surge in energy research, exploration and infrastructure development, robust pathways for middle-income careers can and should emerge.

- **Infrastructure**—The energy economy not only depends on natural resources and big businesses like Chevron, it also relies on a secondary and tertiary network of people, goods and services and creates a multiplier effect in the economy. Meanwhile, much of the infrastructure in California (transportation systems, water and sewage systems, etc.) was created in the 1950s and 1960s for a population of 25 million. These infrastructure systems are inadequate to serve today's population of nearly 40 million and will require a realistic investment of new resources.

- **Regulation**—California's legislative policy mandates are fraught with unreadable, un-navigable and unmanageable mandates that stifle economic development. Not all regulation is bad, but a serious commitment must be made to streamline and simplify it.

Fossil Fuel panelist presentation topics ranged from the long-term role of natural gas and the California Climate Change Initiative to energy/fuel efficiency and effective practices in environmentally sustainable fossil fuel extraction. The panel discussion was followed by a brief audience question and answer period.

Based on the panel discussion, session facilitators presented a synthesis of possible action steps to create a more sustainable future for the San Joaquin Valley while coping with climate change. Session participants were invited to add to and/or "edit" the list of recommendations in real time. Then, through electronic clicker voting, participants were invited to cast one vote for the single most important action step that could be taken with regard to the fossil fuels discussion.

The following priority action steps resulted from this voting. The order of Action Step following each panel summary does not connote priority. A total of 10 priority action steps were selected throughout the day (based on number of votes received) as a result of participant clicker voting at the conclusion of each panel discussion.

Action Step 1.

Create a Valley-specific energy vision/focus to align producers, industry, education, government and end users. All of the "players" in the exploration, extraction, production, education/training, regulation and end users of energy must come together to create and communicate a 50-year vision for energy production

and consumption in the San Joaquin Valley. Collaboration among public and private partners will be required to:

- Prepare sustainably for the long term,
- Identify effective practice, discover new solutions and deploy technologies that make fuels more efficient,
- Integrate renewables,
- Minimize the footprint while unlocking supplies, and
- Educate consumers.

Action Step 2.

Create a research agenda. Improve the efficiency of today's vehicles and de-carbonize natural gas and fuels for tomorrow. A focused research agenda must be identified, prioritized, funded and implemented that will specifically focus on improving the efficiency of vehicles and "de-carbonizing" natural gas. California's Sustainable Communities & Climate Protection Act of 2008 requires the Air Resources Board to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations. California's goal is to reduce emissions 80 percent below 1990 levels by the year 2050.

Action Step 3.

Energy should be a core curriculum issue with K-12, community colleges, universities and adult education. The better educated the population, the more likely it will be to create a sustainable energy future for California. Energy education should become part of the core curriculum for learners of all ages in order to focus attention on the scope and repercussions of energy use today while creating and achieving goals for a sustainable energy future. Education will result in increased consumer awareness and provide energy-related career preparation to build the intellectual and workforce capital for the energy sector.

2.2. Panel Two: *Renewable Fuels: Can the Portfolio Expand?*

Moderator Suzanne Korosec, Deputy Director of Renewables for the California Energy Commission (CEC), cited State policies that are influencing today's decisions about investments in renewable energy. These include AB32 with 2020 and 2050 green house gas emission reduction targets and SBX1-2 requiring 33% of electricity to be generated from eligible renewable energy resources by December 31, 2020.

The state is investing in renewables. A total of $200 million has been awarded to date for renewable research and development; additional R&D funds are available through the Electric Program Investment Charge. Alternative and Renewable Fuel and Vehicle Technology Program support provides $100 million/year through 2024. A total of $400 million has been awarded to date including $127 million for biofuels projects such as biogas, ethanol and biodiesel with feedstocks that include municipal waste streams, dairies and feedlots, sugar beets and sweet sorghum.

Through the combination of incentives and benefits, energy usage in California appears to be moving in a more sustainable direction. In the past decade, California's energy usage has remained flat—even in light of population growth—while the rest of the nation's energy use has grown by 40%.

Ms. Korosec underscored the promising outlook for an expanded renewable portfolio including:

- Demand for electricity in California is expected to grow by 1.15%/year for the next 10 years which could result in 150-600MW/new renewables/year to fulfill the requirement that 33% of electricity be generated from eligible renewable energy resources by 2020,
- The 33% by 2020 is a floor, not a ceiling,
- Renewables are key to decarbonizing the electricity sector,
- The potential increased demand from high-speed rail and increases in alternative transportation fuel use by 2020.

The San Joaquin Valley could become a preferred target for renewable energy development due to efforts already underway and favorable CEC policy recommendations. Demonstration projects in biomass (such as BIODICO) and small-scale anaerobic digesters (such as Fiscalini Farms) are proving successful and have scalable potential. Feedstock—the raw material for biomass and anaerobic digesters from agricultural sources—is plentiful in the Valley.

Further underscoring the Valley's potential as a site for the burgeoning renewables industry are the CEC's 2012 policy recommendations to expand the state's renewable portfolio:

- Identify priority geographic areas for renewable development with initial focus on the Central Valley,
- Require investment in disadvantaged communities and
- Align workforce training to renewable industry needs.

Action Step 4.

Increase use of anaerobic digesters/biogas from agricultural sources.
Wind and solar energy are variable resources and expensive to store. Methane and power produced from anaerobic digesters and biogas facilities can be used to

replace energy derived from fossil fuels while reducing emissions of greenhouse gases because the carbon in biodegradable material is part of a carbon cycle. Feedstock is plentiful in the Valley (e.g. dairy and feedlot waste, sugar beets and sweet sorghum). California leads the nation in dairy farming with some 2,700 farms; approximately 75% of all dairy cows are located in the San Joaquin Valley. The severe draught in California has resulted in an estimated 800,000 acres fallowed. A portion of the fallow acreage in the Valley could be re-purposed for feedstock.

Action Step 5.

Streamline regulatory issues regarding renewable technologies.
Despite the goals, benefits and incentives associated with generating renewable energy in California, the maze of local, State and Federal regulations has become a barrier to large-scale implementation. Permitting issues alone are time consuming and expensive, often requiring experienced consultants and lawyers to navigate the process. The clash of "siloed" interests and goals between and among the regulatory bodies must be resolved and harmonized to facilitate a more streamlined process to carry renewable technologies into wider use.

2.3. Panel Three: *Herding the Electrons: Grid, Device & Demand*

Co-moderators for this panel, Steve Metague, Senior Director of Transmission Operations & Project Development, PG&E; and Heather Sanders, Director of Regulatory Affairs, CA Independent Systems Operator, shared information regarding the creation of new power capacity for the San Joaquin Valley and optimizing the integration of renewable energy resources to maintain a reliable flow of electricity for consumers.

The San Joaquin Valley's increased electrical load and power demands are outstripping the existing electrical system. Agricultural operations represent some 25% of the region's peak summer power demand. Now in the planning stages, the Central Valley Power Connect Project will be a new 70-mile transmission line to improve power reliability in Fresno, enable the use of the Helms pumped storage project and support delivery and integration of renewable power to fulfill the 33% by 2020 renewable requirement.

The project is being managed by Pacific Gas and Electric, Citizens Energy Corporation and MidAmerican Transmission. Expected completion date is 2020. According to an economic impact study conducted on behalf of the project partners, economic benefits of the project to the Valley include several hundred new jobs during construction and $1.6 million in annual property tax revenue after construction.

The integration of renewable energy into the grid is essential to efficient matching of supply and demand. The California Independent System Operator (ISO), a non-profit, non-governmental agency, provides a market service system that automatically balances supply and demand for electricity every five minutes. This facilitates the sharing of reserves and integration of zero-emission renewable resources such as solar and wind in support of California's renewables portfolio standard.

Timing of renewable energy integration is predicated on second-by-second analysis of supply and demand. According to Ms. Sanders of the ISO, a challenge to integrating solar energy is the lack of solar energy storage. California's abundant sunshine creates ample solar energy during the daylight hours, but the ramp-up time for solar generation is sometimes inconsistent with peak energy requirements. Perhaps the secret lies in using energy resources that have existing flexible storage capacity (e.g. water kept behind a dam or natural gas held in a pipeline) to accommodate variable demand.

Action Step 6.

Develop an energy storage plan for California. A mix of non-renewable and renewable energy resources, effectively integrated and managed, is required to provide a cleaner, "greener" electric grid for California. Continuing advances in renewable energy storage technology should be examined along with existing flexible storage capacity in order to apply cost efficient solutions that meet variable energy demand while supporting California's renewables portfolio standard.

Action Step 7.

Engage West Hills Community College District (WHCCD) with emerging projects (e.g. BIODICO/Novus) to encourage education/training for scale-up. WHCCD is an able partner for scale-up of emerging renewable energy projects. West Hills works with employers to anticipate and provide for workforce needs. Employers benefit from WHCCD's faculty expertise, student outreach and partnerships with the Westside Institute of Technology, Fresno Workforce Investment Board and Department of Human Service, I-5 Business Corridor, Central California Community Colleges Committed to Change (C6) and others who collaborate to provide effective education and training in emerging career fields. Task analysis with job experts, job shadowing and practicum opportunities are among the approaches used by WHCCD to design curriculum and related practical student learning experiences.

Action Step 8.

Combine WHCCD/Cal Poly curriculum development and training/retraining. WHCCD and Cal Poly's Irrigation Training and Research Center (San Luis Obispo) should combine forces to provide research acumen and applied solutions to decrease load and energy demand through new technologies and best practices. Training is essential to building a cadre of workers who understand how to solve water/energy issues. WHCCD is ideally situated to provide education and training in the Valley for in-demand jobs that include irrigation design technicians, irrigation operators/consultants, pump testing and design technicians, etc. Cal Poly can assist with curriculum development and faculty professional development.

2.4. Panel Four: *Energizing Employment*

Given the oil and gas energy industry boom (drilling, extraction and support) and vigorous focus on renewables to counteract climate change, the energy industry represents significant new opportunity for employment. According to Panel Moderator Staci Dabbs, Associate Director, Office of Community and Economic Development, CSU Fresno, the challenge to educators, career-seekers and employers is to create a diversified, qualified energy workforce in the right place at the right time.

What are the anticipated gaps in the energy workforce? Where are the future jobs? What skills are required? How do educators prepare learners with core skills adaptable to future applications while also providing them with job-specific skills? Beyond job-specific expertise, the desired employee skills identified by panelists were:

- Analytical thinking,
- Problem identification and resolution,
- Communications,
- Team work,
- Physics, chemistry, math and biology and
- Business accounting.

Action Step 9.

Work with energy employers to create education/training programs that match future workforce needs. As noted in Action Step 7, WHCCD is a capable workforce development partner. Employers can benefit from WHCCD's faculty expertise, student outreach and partnerships with K-12 schools, other California community colleges, universities and workforce agencies to create a seamless web

of educational preparation to match industry needs. WHCCD is noted for student success and completion with industry-endorsed proficiency and credentials. Given the rapidly evolving energy industry, WHCCD must take immediate steps to engage energy leaders as partners for the future of the Valley's energy economy.

Action Step 10.

Chart barriers, seek alternatives in order to leverage results. It is recommended that a comprehensive list of the most significant barriers to energy development and diversification in the Valley be compiled together with strategies to minimize or overcome them. Based on panel discussions, this effort may require further research and prioritization. Some barriers may relate to policy and regulation, others to investment and/or the lack of attractive tax or other incentives. Some may relate to technical issues of scaling up current technologies. Still others may relate to environmental concerns. In any event, the exercise of identifying, prioritizing and developing strategies to overcome the most debilitating barriers would help to leverage the Valley's collective influence on behalf of a more vibrant energy future.

3. Next Steps

Three basic questions have emerged from the "ESSENTIAL ELEMENTS" Water and Energy forums:

1. What **future vision** can the Central Valley aspire to that is most positive, realistic and economically advantageous for residents and the general economy?
2. What **immediate steps** should WHCCD take in the next 12 to 24 months to help educate and prepare Valley residents to realize the greatest benefit from the Valley's likely future?
3. What is **WHCCD's role** in helping Valley residents and local and State policy makers share a sense of urgency and take action for the greatest social and economic return on investment?

Many of the challenges facing the Valley are well understood and have been clearly articulated in the two WHCCD **ESSENTIAL ELEMENTS** forums. A shared vision for the future and specific portfolio of actions required to achieve it has yet to emerge.

Dialog among policy makers and those most affected is essential. Many silos exist in the public policy world and especially among those in the agriculture, water and energy communities. Silos also exist among employers and workers most affected by day-to-day water and energy related decisions. Water and energy are central to the future of the Valley. A shift of a few degrees in the direction of selected long vs. short range, and macro vs. micro decision-making could have an immensely positive influence on the lives of thousands of Valley residents.

Taking Action – Recommendations

- ✓ **Develop and implement an aggressive educational program focusing on water and energy issues affecting the Valley** accompanied by the most complete scientific and evidenced based recommendations that will shape a viable, livable, sustainable San Joaquin Valley. **Timeframe: July-December 2014**

- ✓ The WHCCD, as neutral convener, should bring key decision makers, business leaders, funders and public policy experts together to **determine the best formula for the future of all concerned—a *Vision for the Valley***.

  It appears that a more diversified economy based on **optimizing scarce water**, **encouraging more specialized and progressively more sophisticated agriculture techniques** and **encouraging growth in the energy sector** are certain. In order to achieve this *Vision for the Valley* several factors are likely: streamlined or refocused regulations and policies, tax incentives, venture capital, a concentrated effort to marshal public support, participants accepting and working to achieve a new *Vision for the Valley* and an educated workforce—the intellectual capital to turn the *Vision* into sustainable reality. **Timeframe: January-June 2015**.

- ✓ Ensure the success of collective impact. **Identify the Backbone Organization** that will be required to coordinate the many "moving parts" that will contribute to realizing the *Vision for the Valley.* ***Timeframe: Beginning July 2015.***

  Kania and Kramer* suggest that in order to be effective in delivering "collective impact" a Backbone Organization must create and manage a separate or dedicated structure designed to deliver collective impact.

  In this instance, the Backbone Organization must be prepared to:

- Focus people's attention through continuous communication and community awareness efforts,
- Reiterate the sense of urgency,
- Apply pressure to key stakeholders without overwhelming them, and
- Frame issues in a way that presents opportunities.

*Backbone Organization (See Kania and Kramer, Collective Impact, Stanford SOCIAL INNOVATION Review, Winter 2011)