

Wednesday, May 20, 2009 (file cac215)

To: Dan Breedon

Fr: Ed Miller

Subj: Topics bearing on the general plan update

Ref A: Corey. Powell, the Big Heat & Rising Power, Discover Magazine June 09, pp 38-48

Ref B: Nathan Lewis, Powering the Planet, U.C. TV 5/20/09, available online at nsl.caltech.edu in expanded form.

Ref C: C N & R May 14, 09, p 49, The Greater Good, See also www.tanc.us, www.swtoptanc.org & www.sencal.org

Ref D: B. Pleasant, How to Make Instant No-dig Garden Beds, Mother Earth News, June/July 08, pp100-104

Ref E: B. Pleasant, Worms! Soil-building workhorses, Mother Earth news June/July 08, pp111-115, Adapted from Pleasant's book Complete Compost Gardening Guide

Ref F: Raymond Miller et-al, Soils an Introduction to soils and plant growth, Prentice Hall 1990

Ref G: L. Shatkin, 150 Best Recession-Proof jobs, JIST Works 2009

Ref H: M. Schwartz, The Future of Work, Reader's Digest 6/09 p 120

Ref I: J. E. Christophe, Open Source Remote Sensing: Increasing the usability of cutting edge algorithms, IEEE Geoscience and remote sensing, Mar 09, pp 9-15

Comments:

1. Ref A provides an upbeat assessment of global warming mitigation and tools for creation of renewable or minimal atmospheric impact energy production and utilization. Ref B takes a more pessimistic or contrarian view of the technological limits and lack of political will to achieve these same goals within a time constraint of the order of 10 years. The use of the equivalent terawatt (TW) electrical power for both electrical and thermal applications and sources allows a meaningful synoptic view of the problem areas. Special local interest centers on the use of biomass for liquid aircraft fuels that is unique. He notes that fusion power sources potentially available in the distant future will create intensely radioactive structures that will need to be abandoned in about 30 years. He is pessimistic in general about geothermal and hydro as significant economically viable sources of new energy.
2. Ref B is an example of concern about the 164 miles of new UHV electrical transmission corridor impacts proposed by TANC. Specific mention is made of 30 foot clearance of transmission lines to dwellings from the point of view of electromagnetic radiation effects on humans. The department of energy renewable energy laboratory in response to the goal of achieving 20%

national electric energy shows in Ref A p 47 describes a wind deployment system (WinDS) master plan. One element of this plan shows a 765 Kv AC transmission line passing through the Sacramento Valley. Some long haul DC interties are shown in the Central U.S. The ER Apr 28 article describes the TANC 500 Kv line connecting Lassen to Santa Clara/Stanislaus counties. Ref A notes that the power handling capability of transmission systems is proportional to the square of the voltage. If the current handling capability of the system is specified or limited, the power handling capability is linearly related to voltage. Ref A shows that "outstanding" wind power is available along the coast of California. That implies that a significant increase in east-west transmission may also be required. All of the above suggest that coordination and guidance from all levels of government and industry is necessary if Butte County wants to avoid excess transmission line corridors, eminent domain condemnation tension and loss of timber production. San Diego County is now embroiled in corridor controversy. Hopefully the Butte County General plan and zoning ordinance document can lay the groundwork for optimal evolution of transmission line corridors.

3. Ref D-F describes soil management practices that effect production, CO2 generation, water requirements and sustainability for a wide range of users. The general plan and zoning ordinance can indirectly affect these parameters.
4. Ref G in conjunction with educational offerings at local schools can have an effect on Butte County economic viability. On p89 are listed the best recession-proof jobs for people interested in scientific research, engineering and mathematics that bear on the general plan:

Job	Annual earnings	percent growth	Annual openings
Environmental Scientists And specialists, including health	\$56,100	25.1%	6961
Geoscientists, except Hydrologists and Geographers	\$72,600	21.9%	2471
Hydrologists	\$66,620	24.3%	687

If Butte County wants to encourage students or to initiate grant proposals in the areas above, a good local contact would be Gina Johnson (www.geos@csuchico.ed.u) in the geology and Environmental Science department at Chico State. They offer a certificate in hydrogeology. As part of frontier studies in cracked rock aquifers, effects of volcanism and global warming, contacts could expand to include other parts of the U.C. system and professional organization such as the International Association of hydrogeologists and the IEEE professional group on geosciences and remote imaging. In Cac210 I reviewed Harley's book on careers in renewable energy that could have a profound impact on employment in Butte County.

5. Ref H notes the changing nature of work in this country and the world. The U.S. average work week was 38.5 hours in the 1960's and is currently 34 hours. Germany is now 26 hours and South Korea is 43.6 hours. Many jobs lend themselves to working partly or entirely at

home or a nearby general purpose facility that can reduce our carbon footprint. Some counties and cities are incentivizing this method of carbon footprint reduction in addition to encouraging the use of enhanced communication facilities to substitute for face to face interaction. Indirectly the effects above can influence the formation of work related cluster housing and zoning in more remote areas of Butte County.

6. Ref I describe robust software for image enhancement and difference detection that can help Butte County efficiently take advantage of remote sensing.