

Saturday, June 13, 2009 (file cac221)

To: Dan Breedon

Fr: Ed Miller

Subj: Community types, fuel cells, food creation efficiency, cluster zoning & rural job spectrum

Ref A: D. Christian, Finding Community, New Society 2007

Ref B: U. of Michigan, Fuel Cell Zinc Oxide electrode, Journal of the American Chemical society, Apr 2009, summarized in Scientific American, June 2009, p10

Ref C: S. McNaughton, The end of plenty, National Geographic, June 2009, pp 26-59

Comments:

1. Per Ref A, the advantages and conflicts associated with ecovillages/intentional /cohousing/egalitarian... communities I found worthy of intense scrutiny from a societal and individual point of view. Many of their approaches involve deviation from standard zoning and building practices that are subject to governmental control or operate under the radar screen. Costing studies in Ref A are primarily based on data from British Columbia, Washington and Oregon. Much of the material presented was derived from articles derived from "Communities Magazine" that examines a wide range of geography and different political entities. Sensitizing individual/families to issues/questions before making major commitments is the primary goal of this reference.
2. Ref B describes what may be a major economic breakthrough in fuel cell technology. The use of nanotechnology and relatively inexpensive zinc oxide provides an enormous surface to mass ratio for electrodes ($5000 \text{ m}^2/\text{gm}$) that is key to avoiding the use of precious metals such as platinum. If successful, the ball is now in the court of the hydrogen creation/storage /distribution technology folks to bring the zero GHG emission hydrogen fuel system to fruition.
3. Ref C describes the critical food shortages primarily in the 3rd world that need to be addressed by the agricultural/ecological research, farm and lay communities. Economic and sustainability criteria need to be put high on the list of attack approaches.

Candidate principles for generic cluster residential zoning:

1. Pro-rated ownership =>2.5 acres (TBR) in rural portions of Butte County.
2. Potable water availability=>60 gal/day/capita based on worse case seasonal measurements adjusted for recorded rainfall statistics, dendrology and IPCC adverse rainfall predictions.
3. Worst case drawdown of ground water will not adversely affect water availability for adjacent parcels.
4. Leach fields will be sized to achieve a life of >30 years or at a minimum, 50 linear ft or equivalent per capita.
5. A grey water optional irrigation system will be allowed.
6. A dwelling unit useable area shall be > 800 ft^2 (TBD) and < 2000 ft^2 . (TBD)

7. Duplex and triplex dwellings up to two stories will be allowable.
8. Vegetation near structures will be negligible within 3 ft. A tree basal area of $< 45 \text{ ft}^2/\text{acre}$ within 30 ft, and $< 90 \text{ ft}^2/\text{acre}$ within 100 ft (TBD) shall be maintained based on a 10 year revisit inspection. All ladder fuels shall be eliminated to a height of 10 ft (TBD)
9. The thermal and electrical energy requirements for occupancy shall provide renewable energy sources that satisfy 75% of the yearly requirements. (TBD)
10. Non-dwelling structures shall be designated utility or AG units based on building requirements and taxation.
11. A substantial investment of the order of $> \$20,000$ shall be required by stakeholders (TBD).
12. Equity buildup shall be recognized when stakeholders leave the development.

Butte County rural Job Spectrum that needs to be recognized

1. Vegetation Management: Industrial/non-industrial forestry, seed/seedling/large plant development/production, agroecology oriented food production and firesafe landscape architecture/maintenance,
2. Manufacturing: Small scale wood products, control/sensor systems & processing systems.
3. Energy production: Renewable source development and production.
4. Energy distribution: Electric, gas and fluid transmission development and creation.
5. Communication: Extended wide band and mobile service.
6. Health care: In-home/nearby health services, emergency, preventive health services.
7. Education: Formal public/charter school, one on one mentoring, & on-demand service guidance.
8. Construction/maintenance service:
9. At home media/art/literature creation:
10. Recreation support: Nearby parks, volunteer support of U.C.C.E.
11. Real estate services:
12. Road/trail services:
13. Animal services:

Note: TBD/TBR or "to be determined or resolved" implies that the value or approach is based on common practice and needs to be debated in the Butte County context.