

Wednesday, May 27, 2009 (file cac216)

To: Dan Breedon

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Subj: Short term fixes

Ref A: ER Editorial Board, Clean Energy Now would be a gas, ER May 26, 09, 10A

Ref B: S. Masla, Low carbon emission vehicles, SolarToday, June 09, pp44-47

Ref C: ER Editorial Board, Power Line Plan creates a buzz, ER May 1, 09, 6A

Ref D: J.Cliburn, Thin film PV compared to crystalline models, SolarToday, June 09

Ref E: t. Storer, R. Usinger, & D. Lukas, Sierra Nevada Natural History revised, U.C. Press 2004, Butte Lib 508.7944 S

Ref F: Denman Forest Issues, Restoration ecology/education, UWTV 5/24/09, originally broadcast 2008

Comments:

1. Natural gas sources in the U.S. per Ref A can provide the order of 18 years of current energy demand based on known field capacity and technology. The ER echoes T.Boon Pikens similar advocacy. New methods of recovery offer hope of providing 100 years of current energy demand. Fiat has announced the availability of a motor vehicle that used compressed natural gas as a short range fuel to supplement conventional liquid fuels. Many areas of Butte County could reduce their thermal fuel costs by utilizing natural gas. Natural gas is superior to coal for electric power generation in terms of reduced CO₂, Heavy metals and particulates. Capture of methane from waste facilities like Neal Road or formal biomass generators can be part of the natural gas stream. Natural gas is the gold standard for conventional electric power generation in terms of atmospheric contamination. Expanded underground gas distribution systems could provide the basis for a hydrogen or natural gas-hydrogen mixture distribution system from renewable sources based on promising low temperature catalysis' systems being developed at MIT. Natural gas can provide a basis for creation of liquid fuels for required for minimal weight mobile vehicles. Ultimately, natural gas can be converted to hydrogen for fuel cell applications.
2. Ref B provides tables of GHG and economy for a wide range of currently available motor vehicles for a variety of assumptions for fuel costs and travel distances. Possible government incentives were not included.
3. Ref C continues the discussion of UHV transmission line corridors. Issues involving redundancy/reliability, local access, coordination with the WindDS transmission system and projections of demand and availability of power/energy need to be laid out as fully as possible. I suspect that the haste and limited transparency of all of the UHV systems is driven by the hope

for creation of shovel ready projects and associated economic stimuli. There is some win-win potential for many of the alternatives.

4. Ref D describes work on a 419 kW single axis tracking thin film solar array system nearing completion in Manteca. Ultimately the system will be expanded to 1.6 MW. The 175 watt single axis motion modules are reported to be 15-18% better than a comparable fixed array. PV arrays are a natural for water handling utility systems. The business model for power providers needs to be examined. SolarToday notes that PG&E currently has a PV power of 28.3 watts per customer as opposed to SCE that provides 86 watts per customer. PG&E ultimately plans to provide a 750 MW of solar capability.
5. Ref E provides a good overview of the history of development, geology, vegetation and animals to be found in the Sierra Nevada extending into Butte County. The work encompasses the more voluminous and older SNEP report funded by congress.
6. Ref F describes ecosystem analysis and restoration in Washington State that may be a good model for a similar activity in Butte and nearby counties. Warren Gold was the guiding force in establishing an educational outreach for grade 8 and above student over a typical period of 8 months resulting in a restoration assessment report made available to a range of organization sizes from parcel stakeholders to government entities. Ref E documents efforts at ecosystem restoration in the Sierra/Cascades with its Mediteranean climate.