



Kurt: Following the Advisory Council discussion, I gave some thought on the seemingly cool response to actions that would implement the "Framework for the Future" -- which I consider a very strong document. It is my impression that you have sold its message to the utilities, but not to the opinion-making public that needs to support and fund it (i.e. PUCs, legislative committees, business associations, journalists, Wall St.,etc). [Kurt would argue that we are doing this now. He recently met with Wall St. analysts to brief them on ESFF. We are holding regional workshops that involve leaders from the business, regulatory and political communities. And, we have an active outreach program to NARUC which is being developed with the help the immediate past president of NARUC.] My impression stimulated the following suggestion to emphasize a specific approach in your promotional efforts for the Framework.

Premise for the suggestion:

There are two kinds of EPRI programs that historically got support. **The first and easiest to sell within the industry and RAC** (and the least imaginative) are those that attack immediate obvious performance problems with a near-term payout of 3-5 years. The public doesn't notice these, or care, as these are buried in the daily service, and to the public these should have been done anyway (e.g. non-destructive testing; better line maintenance, which seems like fixing flat tires on the road,etc). EPRI has a 30 year history of such improvements, and apparently very little recognition for such innovative services (e.g. we ~~were~~^{were} ~~weren't~~^{weren't} publicly thanked for our contribution to raising nuclear plant availability from 60% to 90%). Even the utilities have accepted these as routine purchases, even when they are not, and apparently now feel they can defer such SS&T support. This reminds me of the analogous attitude that the public has to "trauma centers" in hospital emergency rooms, where medical miracles are occasionally performed, and the public's chief response is to complain about how much time it took, and the costs. The public is complacent about this "first type" of R&D.

The second type of programs that got support were those that promised an exciting substantial change in the national structure of the energy system. The SS&T program

embodied these. EPRI's coal conversion program was of this type (e.g. Coolwater demo). Many of the SS&T projects had support from the far-sighted utilities, and from public agencies such as PUCs, politicians, and the media. Popular support from the rate-payers has generally been forthcoming. (As a recent example, I have been surprised at the political response to the Super Grid concept --with Paul Grant substituting for me, but without organized promotion or industry push. The SuperGrid is a "far-out promise" that now has spontaneous support of the DOE T&D dept, Oak Ridge and Los Alamos, and Univ.of Ill. [This seems to me to be more an example of the academic and national lab communities lining up for funding than "popular support from rate-payers".]).

The suggestion:

The essence of my suggestion is that the Framework document and the Road Map be the basis of several "second type" programs. They should stress the exciting promise of R&D to provide the U.S. with an electrification network that anticipates (rather than lags) our foreseeable national needs developing during this century, and perhaps beyond. [We are doing this now. One example is the CEIDS initiative which is focused on building a self-healing grid. Selling this program has been a big challenge and provided many insights into how difficult it is to promote advanced technology in today's business climate.] The public understands the enormous social cost of traffic congestion with the growth of a driving population. Similarly, they need to be made aware of the pending intergenerational social cost of electricity congestion resulting from a parallel kwhr demand growth-- unless a farseeing national R&D program is undertaken now, as described in the Framework document.

The Public Message:

Our future intergenerational quality-of-life depends on the vital growth of U.S. electrification, both systems and end-uses; consistent with a balanced regard for environmental ecology . The support of R&D for these multiple objectives is essential now as a continuing long-term multi-generational

Seek commonality of objective from EEI, NRDC, API, Nat Coal, etc with EPRI. Arrange a meeting of their leaders (Kurt Yeager to chair, Ralph Cavanagh or Tom Cochran, Tom Kuhn, etc). Theme: Find the common buttons for coordination vs competition for long-range program (20-50 yr targets). (Realistic objectives, time-line oriented, substitutes for one-shot political visions like the Freedom Car, or one-shot mandated constraints like GHG emissions). Story follows.

1. U.S. energy system (supply to end-use) is a haphazard shambles, a mix of solid development and erratic political fixes. It is a band-aid approach to relieving temporary stresses, with little regard for system consequences or durability or time-dependent multi-generational balance of social costs. (Do we need examples?)
2. All energy systems are sequential interlocked energy conversions. Their components are the result of several R&D technologies, not the result of financial or political exploitations. The latter are opportunistic, available and influential after the technical options are demonstrated.
3. Every new energy system creates its own mix of consequences -- ecological, environmental, economic, social structural, political, and national management.
4. As it takes a long time to make on-going remedial adjustments needed to adapt to existing consequences of past actions (usually not foreseen), the band-aid fixes may be ineffective when the new energy system becomes commonly in use.
5. The "realistic" future technical options that R&D will disclose can only be vaguely envisioned. Both promising surprises and dead-ends may be found. So a long-range program needs to have a broad sweep that covers applied science, technical innovation, small and intermediate scale demonstrations, and eventual full scale trials. In parallel, should be a continuous comprehensive risk analysis (benefit/cost/risk) that would expose the consequence "tree" of the variety of new findings as the work proceed, and be used to give course direction to the R&D.

What am I recommending?

1. A team of the major groups, dedicated to strengthening the intergenerational welfare of our society, establish working groups to undertake the task described in item 5 above.

2. The participants committed to these objectives pool a fraction of their resources to support this program. This includes the government agencies, but they should not be given the management responsibility.

3. The management of the program requires further thought. We are dealing with a spectrum of professionals, ranging from academia and national academies through industrial and political structures. This is a composite of management skills. EPRI has had this experience, and there are others. Depending on the size of the total program, medical research may provide some guidance on organization.

4. The usual question is how much will this cost annually. I can guess at this. It would take about \$50 million per year, and two years to scope the spread of coverage, establish the working groups, and initiate a few early studies. An initial task would be to incorporate in the plans the existing on going work now dispersed among all the energy industries. A sustaining funding for the centralized effort should grow to about \$200 - 400 million per year, supplemented by industrial funds focused on bringing to fruition tasks of special promise to them.

Note: A professional football team costs about \$50 million per year, and produces a few hours of entertainment except when they are incompetent. The recommend team above would be a bargain.