HAYWARD AREA PLANNING ASSOCIATION

Testimony on Alternatives

by Sherman Lewis on Application for the Eastshore Center by Tierra Energy before the California Energy Commission, Hayward, CA, December 18, 2007, 10 am, delayed to January 14, 2008, 10 am

The Hayward Area Planning Association (HAPA) opposes the Tierra Eastshore Center, as set forth in my letter to the Commission on September 25, 2007 and in my declaration submitted to this proceeding. Our opposition is based on the policies of the CEC presented in the 2007 Integrated Energy Policy Report.

Alternatives.

My frame of reference is macro-policy, not micro-policy. Micro-policy is concerned, for example, with the details of specific pollutants and how much the power plant will cause. You have heard expert witnesses testify at length that hundreds of tons of nitrous oxides. carbon monoxide, particulate matter, reactive organic gases, sulfur oxides, 21 toxic air contaminants, and carbon dioxide will be healthy for us. These witnesses have testified that the air is sufficiently polluted that adding even more is hard to measure and probably doesn't matter. Micro-policy focuses on hard measurements and narrowly focused factual analysis.

Macro-policy, by contrast, requires being honest about how micro-policy is based on assumptions and probabilities. Macro-policy does not yield a hard-edged answer the way micro-policy does, because macro-policy admits that any policy, any policy, has uncertainties, major uncertainties. Macro-policy requires therefore, not the narrow focus of a judge in a judicial proceeding, but the broad focus of a legislator dealing with the long term public interest. Macro-policy requires stepping back and making moral commitments, the kind Al Gore talks about, to deal with global warming. You, the CEC, are either serious about global warming or you are not. Your 2007 policy is serious; your Eastshore Assessment is not.

2787 Hillcrest Avenue, Hayward, CA 94542 (510) 538-3692

DOCKET
08-AFC-8
DATE JAN 1 2008
RECD. FEB 05 2008

Tierra Eastshore is not needed, based on the CEC 2007 Energy Policy. See pages 60-68, 108-11, 120, and 199-200. Why does the report on Tierra then conclude that the plant is needed? To some extent the burden of writing the report falls on the applicant, whose self-interest requires that alternatives not work. The CEC should not require applicants to make findings that would require the CEC to disapprove the application. The CEC should rely more on its own staff, which has recommended against this plant (p. 1-6).

The staff report (Eastshore Energy Center [06-AFC-6] Final Staff Assessment) discusses alternatives on pages 6-12 to 6-14 and could have done better. There is no reference to the CEC 2007 Energy Policy. The Eastshore Assessment is inconsistent with the CEC 2007 Energy Policy. The CEC needs to decide who it is, to choose between its two versions of its policies. Because the CEC ignored its policy in analyzing Eastshore, there is a strong prima facie case that the Eastshore Assessment is inadequate.

The Eastshore Assessment alternatives discussion should consider an estimate of external costs.

In searching a 743 page document I was unable to find any cost-benefit analysis comparing the project with alternatives. This assessment discusses NOTEWORTHY PUBLIC BENEFITS, announced with a heading in full capital letters on p. 1-9, but lacks a section on noteworthy public costs. In fact, the assessment even considers the capital costs to be a benefit, without discussing that the money could be spent on alternative with equal and probably greater benefit. The benefits of Tierra Eastshore have been estimated, but the costs have not been adequately quantified. There are, for example, impacts on the Hayward airport and on aesthetics of high smokestacks—these impacts need to be quantified in some way. The Eastshore Assessment also fails to assess the costs of causing more global warming and reducing the need for alternatives. You should retain Amory Lovins to do an alternatives analysis and cost-benefit comparison including quantification of external costs.

The alternatives discussion also needs to consider the costs and benefits of the proposed project. Such analysis would favor energy efficiency and non-fossil alternatives.

Richard Scott, Professor of Sociology at Stanford University, sets forth some descriptions of power systems in his book, *Organizations* (Fourth Edition, 1998). There is debate about whether modern organizations coordinate the pursuit of rational goals, or use power to delegitimize alternative policies. "The emergence of legitimacy norms deflects the actors' attention from their personal preferences to the requirements of the system and of their roles within it. ... Rules and role requirements replace preferences and choice."

Political science also has some useful concepts to describe how agencies can say one thing and do another. "Symbolic politics" occurs when official and public avowal of progressive policy is undermined by actual decisions going in the opposite direction. For example, the CEC in its words says alternative to fossil fuels can meet our energy needs, and then in its actions approves a fossil fuel plant. "Private government" occurs when special vested interests are able to insinuate their sympathizers into positions of power over an agency, which then fails to carry out its public function to profit corporate interests.

At the Committee Workshop on the 2007 Integrated Energy Policy Report May 7, 2007, Commissioner John Geesman of the California Energy Commission said, "I think we have held ourselves out to a much higher level of performance than we have actually been able to achieve. I think there is an ongoing schizophrenia in state energy policy between what we say we want to do and what we actually allow to happen."

http://www.energy.ca.gov/2007_energypolicy/documents/2007-05-07_workshop/2007-05-07_TRANSCRIPT.PDF pp. 10-11

HAYWARD AREA PLANNING ASSOCIATION

September 25, 2007

California Energy Commission
Ms. Jackalyne Pfannestiel, Chair
by fax to Executive Office at 916-654-4420 and Paul Kramer, Hearing Office, 916-654-3897
by email pdf attachment to Jackalyne Pfannestiel <cgraber @ energy.state.ca.us>

Subject: Russell City Energy, Docket 01-AFC-7C for Sept. 26, 2007

Dear Energy Commission:

The Hayward Area Planning Association has serious concerns about the Russell City (Calpine) and East Shore (Tierra) power plants proposed for the Hayward shorelands. These are huge plants in their size and electrical capacity.

While natural gas peaker plants like East Shore are preferable to oil, coal, or new hydro, we believe there are alternatives preferable to natural gas and the severe peaking of electrical demand on hot summer afternoons and on cold winter evenings.

We support not building these two plants. We support, at a minimum, delaying action until substantive and procedural problems are adequately considered by the public, environmental groups, the City of Hayward, Alameda County, the California Energy Commission, and the Bay Area Air Quality Management District. There has not yet been a chance for public consideration of the details of these plants as currently proposed.

The problems are air pollution, misplaced mitigation, hazards to aviation, visual blight, urban heat island effects, use of fossil fuels, and the exclusion of Alameda County from the planning process.

- These plants will cause severe increases in air pollution--particulates, NOx, CO, ROG, SOx, ammonia, other toxic air contaminants. Hayward has no air quality monitoring stations. The Bay trail and the recently purchased salt ponds are nearby. Air pollution will affect recreational users and the Clapper Rail, Snowy Plover, Salt Marsh Harvest Mouse, Least Tern, and other wildlife found within a few miles of the power plants. If the pollution exists, the impacts exist, and should not be superficially dismissed as insignificant by people who don't care about air quality.

- Mitigation measures are inadequate and misplaced, allowing air in and around Hayward to be degraded while pollution credits are used to benefit other areas.

- A plume of hot gases and exhaust rising up to 1,000 feet from proposed exhaust smokestacks 70 feet (Tierra) to 145 feet (Russell) high will pose a hazard to aviation using the Hayward Municipal Airport and, thus, to the public below.

- These proposed exhaust smokestacks, large industrial buildings with cooling towers, and new transmission towers and lines will cause visual blight close to a natural area.

- These plants are not out in some rural area; they are part of the densely populated East Bay plain. Burning natural gas increases local area heat from generating the power and then using it for air conditioning, both of which increase urban heat island temperatures and lead to demand for even more air conditioning--by those who can afford it.

- Burning natural gas produces more greenhouse gases. California and the nation need to decrease use of all fossil fuels and increase the use of alternatives more consistent with sustainability. Air circulation may sometimes reduce the local heat island effect, but the impact on global warming remains the same.

- So far there has been no application to Alameda County for a plant to be built in part in the county.

These plants, if needed at all, should be built where power demand is increasing the most, in Santa Clara and San Mateo counties. They should not be built in places with less increase in demand. Let those most in need bear the external costs. In fact, if the external costs were internalized, these plants would not be proposed in the first place.

There is, however, a better alternative. Electrical needs can be better met with time-of-day pricing, insulation of buildings, fluorescent light bulbs, solar thermal, solar photovoltaic panels, wind energy, energy-efficient industrial motors and household appliances, transit-oriented development, waste cooking oil, and a multitude of additional cost-effective energy conservation strategies. These alternatives reduce fossil fuel use, peak demand, and the need for electricity in general.

Circumstances have changed substantially since these plants were proposed in the midst of an artificial energy crisis. AB 32 is now law. Also, on October 21, 2006, the Governor signed a bill for "a million solar roofs," increasing the effectiveness of PUC policies already in place. Solar roofs alone can supply 3,000 megawatts in California, far more than the 600 megawatts from the Russell City Plant. The Bay Area will get a substantial part of the 3,000 megawatts, and, combined with pricing incentives, sustainable sources, and conservation, alternatives can meet the need for electricity.

The problem is timing. The energy is not really needed now or we would be having brownouts. In the long run alternatives will work. So the problem is how soon the alternatives can be effective relative to the power plants. We know the power plants can be built in a predictable time frame, while opinions vary about alternatives. We believe that stopping the power plants is essential to develop the political will and prices needed to develop the alternative.

We believe there are no technological problems whatsoever with making the alternatives work. There is, similarly, no excuse for building coal or diesel plants.

The shorelands need more protection, not more development. We support conservation, reclamation and preservation of the shorelands in a natural state for habitat, wildlife diversity, and recreational use. HASPA should be strengthened to do its job. Land use designations and zoning should prohibit destructive uses like these power plants.

We need to get off the fossil energy path; we need to get on a sustainable energy path.

Sincerely

Sherman Lewis

Sherman Lewis. President
HAPA
2787 Hillcrest Ave.
Hayward CA 94542
510-538-3692
sherman@csuhayward.us

Using Demand Response to Meet Electric System Peaks

Demand response can play a critical role as a resource in California's electricity planning mix. Price-responsive demand response, coupled with advanced metering infrastructure,[70] improves the level of service provided to electricity customers and has the potential to cost-effectively avoid incremental generating capacity costs, energy production costs, and transmission and distribution capacity costs. Despite its many advantages, price-responsive demand response is expected to reduce peak demand by only 2.2 percent in the summer of 2007, which is less than half of the goal of 5 percent laid out in the *Electricity Action Plan II*.[71]

In addition, reliability-triggered demand response promotes system reliability by providing the California Independent System Operator (California ISO) with tools to manage demand during peak days, as well as prevent brownouts and blackouts during emergency situations.

Potential Savings from Demand Response

The potential reduction in peak demand that can be achieved through price-responsive demand response programs depends on the amount of coincident demand that is reduced per customer and on the number of participating customers. As with energy efficiency programs, it is normal practice to assess three levels of demand impacts: technical potential, economic potential, and market potential.[72]

- "Technical potential" measures the outcome if all customers use the best available demand response technology. In the residential class, this is the gateway system, which allows homeowners to automatically manage electricity consumption at several points of end use, including stereos, appliances, and air conditioning units. The gateway system has the potential for lowering peak demand by 43 percent, as demonstrated by the advanced demand response system subset of the statewide

[70] Advanced metering infrastructure refers to the hardware and software that allow utilities to remotely collect energy usage and status data from customers; transmit and receive information from utility servers to customer sites and potentially to third parties; and bill customers for their usage based on time-differentiated prices.

[71] If reliability-triggered programs are included as well, the utilities are expected to achieve a 5.7 percent reduction in peak demand. However, reliability-triggered programs are not part of the 5 percent target. This is elaborated upon in *The State of Demand Response in California*, by Ahmad Faruqui and Ryan Hledik, a draft consultant report prepared for the California Energy Commission, April 2007. That document is hereafter referenced as *State of Demand Response*.

[72] It should be noted that these projections are in addition to the current peak reductions achieved through reliability-triggered demand response. For a description of the distinction between price-responsive demand response and reliability-triggered demand response programs, see pp. 8–9 of *State of Demand Response*.

pricing pilot. In the commercial and industrial classes, automated demand response programs that control multiple end-use loads and leverage the energy management control system that is installed in most facilities are projected to reduce demand by 13 percent, as demonstrated by work carried out by the Demand Response Research Center. A weighted average over all customer classes leads to an estimate of roughly 25 percent for the technical potential of demand response.[73]

- "Economic potential" measures what would happen if all customers used a cost-effective combination of technologies rather than the best available technologies. This produces an estimate of the economic potential for demand reduction through demand response programs of approximately 12 percent. To illustrate this computation for the residential class: customers in the California experiment without an enabling technology lowered their peak usage by 13 percent. Those with a smart thermostat lowered peak usage by 27 percent, and those with the gateway system lowered peak usage by 43 percent. If 70 percent of the customers chose no enabling technology, 20 percent chose the smart thermostat, and 10 percent chose the gateway system, the result would yield a weighted average estimate of approximately 19 percent for the residential class. Corresponding values for the commercial and industrial classes are roughly 7 percent and 9 percent.
- "Market potential" (or "achievable potential") measures what would happen if a cost-effective combination of technologies is adopted at some assumed level of penetration in the marketplace. It differs from economic potential, which assumes that all customers accept dynamic pricing. Thus, the key unknown in estimating market potential is the number of participating customers. This, of course, depends on the conditions under which dynamic pricing is offered to customers. It is also contingent on the availability of advanced metering infrastructure, which is currently limited to customers above 200 kilowatts, but is likely to be deployed for all customers in the state during the next five years. Experience in other restructured states indicates that if the CPUC makes dynamic pricing the default rate, a larger fraction of customers would stay on it than they would if it were offered on an optional basis. The limited literature on the topic suggests that about 80 percent would stay on dynamic pricing if it is offered as the default rate and that a substantially smaller number, perhaps 20 percent, would select it on a voluntary basis. In its initial analysis, the staff assumes that the actual number is likely to be somewhere in the middle. This yields an estimate of approximately 5 percent. Obviously, programs that achieve greater customer participation will yield greater savings.

---

[73] Much higher responses are possible in specific facilities that have time-flexible production processes, energy storage systems, and back-up generation. Since these are highly facility-specific, they have not been included in staff's estimate of technical potential.

Achieving even a 5 percent peak demand reduction would yield several benefits for California. Three of the benefits can be quantified in a preliminary projection. The first and most significant benefit would be the reduction in necessary peaking generation capacity. This would be a long-run benefit, consisting of the sum of avoided capacity and energy costs. It could be readily estimated based on the capacity cost of a combustion turbine. The second benefit would be the avoided energy cost that is associated with the reduced peak load. Third would be the reduction in needed transmission and distribution capacity.

The aforementioned avoided capacity cost benefit is calculated by quantifying and valuing the amount of capacity that would be avoided by the 5 percent reduction in peak demand. A 5 percent reduction in California peak demand of approximately 61,008 megawatts amounts to 3,050 megawatts of avoided peak demand. The amount of peaking capacity necessary to meet this peak demand can be computed by allowing for a reserve margin of 15 percent and line losses of 8 percent. This amounts to 3,789 megawatts, or roughly the output of 50 combustion turbines.[74] A conservative value of the avoided cost of generation capacity is $52 per kilowatt-year.[75] Thus, the total value of avoided generation capacity costs would be roughly $200 million per year.

Illustratively, the four combustion turbines installed by SCE this summer were more expensive – the same methodology would value that capacity at $101 per kilowatt year.[76] Using this as a benchmark, 3,100 megawatts of avoided generation capacity would be worth $380 million per year.

Using the relationship that was observed between annual generation capacity and energy benefits in a recent PJM Interconnection, LLC analysis of demand response, the annual value of avoided energy costs is estimated at around $20 million.[77]

In addition, there would be a reduction in transmission and distribution capacity needs. While these are system specific and depend on the coincidence between system and

---

[74] These turbines come in sizes generally ranging from 50 megawatts to 100 megawatts.

[75] In R.02-06-001, the CPUC specified a value of $85 per kilowatt year. That value is widely accepted throughout the mainland United States. However, once the revenue stream associated with energy sales from the operation of the turbine is subtracted, a value of $52 per kilowatt year is obtained.

[76] The capital cost of the peakers is estimated at $245 million for 180 megawatts of capacity. We assumed a 7.6 percent discount rate and a 20-year life of the peakers. See *Comparative Costs of California Central Station Electricity Generation Technologies (2007 Update)*, draft staff report, June 2007, CEC-200-2007-011-SD, for the source of the financial assumptions.

[77] Sam Newell and Frank Felder, *Quantifying Demand Response Benefits in PJM*, study report prepared for PJM Interconnection, LLC and the Mid-Atlantic Distributed Resources Initiative, January 29, 2007.

local area peaks, they are unlikely to be zero. A conservative estimate is 10 percent of the savings in generation capacity and energy costs. Using this estimate would yield an estimate of roughly $20 million per year for savings in transmission and distribution costs.

Using the SCE peakers as the capacity benchmark, the benefits would be $470 million per year. Over a 20-year time horizon, the present value of demand response benefits could reach $3 billion or $5.5 billion measured against the SCE peakers.

Most of the barriers to adopting demand response measures are related to rate design issues, such as the need to deal with constraints created by the AB 1X residential rate freeze and customer acceptance issues. There are also analytical issues in this area, such as the need to modify existing cost-benefit methodologies for evaluating demand-side programs; to develop protocols for measuring demand response impacts; and to develop innovative rate designs that incorporate the risks of outages and high peak generation costs. Current efforts by the utilities and commissions to develop workable dynamic rate designs and effective protocols for measuring demand response impacts are steps toward solving these problems.

There is a dearth of customer understanding of the potential benefits from broad adoption of time-varying and dynamic rates, the impacts on their electricity costs from such a change, and the options they have for responding. In fact, the $3 billion calculated earlier as the present value benefit of a 5 percent demand response program can just as easily be seen as a measure of the hidden subsidies, which in the present time-insensitive rate structure provides that 5 percent of electricity demand that comes during peak load hours.

With well-designed rate designs in place, the focus must shift to overcoming the technological barriers to demand response. First is the need to install advanced metering infrastructure throughout the state. This is likely to happen over the next five years. To get the most from the advanced metering infrastructure investment, it may be necessary to equip the customer with enabling technologies and automation to facilitate reducing demand during critical peak times. The use of existing technologies that automate demand response should be integrated into program and tariff offerings, while further development of such technologies should continue.

Second, research has shown that customers provide a significantly higher level of demand response when equipped with enabling technologies that automate the response and facilitate the control of electricity consumption at multiple end-use points. Ultimately, these enabling technologies must be adopted on a large scale for California to approach its potential for demand response.