The Trans Bay Cable Project:
The case for how San Francisco becomes powered by the sun

The project basics:

1. A 57 mile copper cable trenched into the SF Bay from the City of Pittsburg to the current site of the Potrero switching yard sub-station.
2. Project proposed and financially backed by Australian consulting engineers: Babcock and Brown
3. Project approved by: Cal-ISO, City of Pittsburg, Port of San Francisco, PG&E

Their justification for the project:

1. With the closure of both the Hunter's Point and Potrero Hill power plants there will be a need to supply additional power to SF from an external plant
2. Cal-ISO projects that the demand for electricity in SF will increase to warrant such by 2008
3. Greater reliability - All electricity not produced in SF now being routed only through peninsula transmission cables

The costs of the project:

1. Brown & Babcock estimates that the cost to trench the Bay floor and install the cable to be about $480M
2. The projected **costs over thirty years** according to Babcock & Brown's presentation to the California Energy Commission (8/23/2004) is approx **$1.6B for a 400 MW** transmission and **$2.1B for a 600MW** transmission

Where does the money come from?

California ratepayers

Where does the money go?

1. Government agencies that benefit include the City of Pittsburg: about $20M and the Port of San Francisco about $35.5M over the thirty year plan.
2. Babcock & Brown would be guaranteed a rate of return of 13.5% by FERC for the sale of power running through the cable
3. The cable would be owned by a public power agency, but not San Francisco's power agency
4. The cabling installation contractor – Italian mega-corporation Pirelli
5. The AC/DC converters purchased from German mega-corporation Siemens
6. Energy suppliers through agreement with the City of Pittsburg

The case for going solar:

Serious environmental concerns about this project include:

1. Stirring up latent toxins and heavy metals from trenching the Bay
2. Effects on already stressed SF Bay aquatic life
3. The noise pollution & EMF that the converter substations produce
4. Greenhouse gases due to continued reliance of fossil based fuels
5. The risks of cuprous oxide getting into the bay
6. The use of that much copper – copper mining is one of the most toxic

There are many more environmental concerns that will come up but the justification for not proceeding with this project is as much about economical justice as it is about environmental justice:

Wow! $2.1 Billion! Or even $1.6B, but let's take a look at what $2.1B can do to lessen our dependence on fossil fuels, foreign energy producers and substantially eliminate the green house gases we produce by using fossil fuels for our electricity here in SF. The answer is: Plenty!

Model A: A SF Solar Plant - Codding Enterprises, a real estate developer plans to create a sustainable village in Rohnert Park on 175 acres. They will spend $7.5M to create the largest privately owned solar power plant in Northern California. Their 90,000 square feet of solar panels will be capable of generating 1.14 Mega-watts (MW), enough to power 1,000 homes.

Using that same math, $2.1B would purchase enough solar to power 280,000 homes. There are only about 355,000 housing units in San Francisco. But $2.1B would have more spending power than $7.5M so we're getting very close.

Model B: Redirecting revenue through a solar bond initiative:

If each home only spends an average of $50/month on electricity today what if that money was redirected to repayment of a solar project bond?
355,000 homes in S.F. X $50 would be $17,750,000 per month
12 months X $17,750,000 = $213M per year
30 years X $213M would be an amazing $6.390B
And that's at today' rates –of course, the actual revenues are much, much higher

This is a simplified model that doesn't take into consideration the continued need for some infrastructure to manage, load share, store and maintain.

Still, that's enough money to put a solar system on every home in San Francisco

Beyond the grid – Our perceptions and concepts of producing electricity in huge centralized power plants and shipping that electricity for hundreds of miles needs to evolve. The problems associated with this style of power distribution are well known. A few of the advantages of going to locally produced solar energy are:

- Wasteful line losses across transmission lines are practically eliminated
- Unsightly, expensive to maintain high power transmission systems and troublesome negotiations for new right of ways are phased out
- Problematic centralized, unreliable distribution infrastructure is less relied upon
- Less reliance on out of San Francisco private, foreign energy suppliers who almost exclusively use fossil fuels to produce electricity
- More local jobs - we are virtually exporting local jobs away when importing electricity from out of the area
- Stabilizing the energy economy: The cost of traditional energy production is going to go up, probably way up, maybe beyond our wildest fears. Where will SF be in twenty years on this?

Some problems to overcome:

- The perception that solar panels are unsightly
- Adapting to latest technologies as they become available
- System placements - where would the panels go - homeowners, business roofs? - Liabilities and the permitting process
- Availability of PV cells on a massive scale could drive up the market costs
- Where do traditional suppliers/private utility companies fit in? Do they? How do we keep them from going bankrupt again or should we?
- The useful life of a solar electricity generating system - currently about 30 years.
- Naturally this is not in the existing power companies (or Babcock & Brown or the City of Pittsburg, etc.) best interest. PG&E talks a good game on the renewable energy (Current PR Campaign "Let's Green this City" but when people start installing enough power panels into their own homes, PG&E is in trouble and they know it. They are behind all ideas that channel power through their meters and from a business stand point that makes sense for them.

More good reasons to greet the sun:

1. The offset in carbon emissions for SF from using a non-polluting sun power source (except in cell manufacturing) is astronomical
2. The reliability and convenience of localized solar power production beats out wind farm, hydroelectric and wave power solutions which all require huge centralized distribution system costs
3. The citizens of San Francisco are extremely supportive of alternative energy strategies overwhelmingly voting in favor of Proposition H in November of 2001 for the City to finance and build a 50MW SF based Solar Power facility
4. A "San Francisco powered by the sun" initiative appears to be a good companion to the "Community Choice Aggregation" plan endorsed by the Mayor's office.

Electric Avenues: How do we get there? Naturally there are many complications to work out and resistance from the existing suppliers and distributors is expected but a lot of the heavy lifting has already been done.

1. Increase incentives for low consumption of electricity
2. Float a bond concept to the voters similar to, but much larger than the Proposition B & H Bond voters overwhelmingly approved in 2001. Implementing Prop B & H would be a start in the right direction.
3. Plan that any new developments, major remodels must provide enough local solar power for their needs. Show and help them do that.
4. Work with PG&E on the new reality: Hey, they still get to distribute the natural gas most homes use. We will still need storage and backup (Solar still just works during the day). We'll need (a reduced amount of) load sharing, distribution and meter services. Or not. A City agency could take that over. It's been done in other cities.
5. The Port of San Francisco as an anchor producer – They own and manage huge amounts of property on land in the sunniest quarter of SF. Within the structure of a bond, they could use some of that land to become a major solar power producer.

So we have the citizens behind it, the city and state government is behind it, why aren't we doing it? Is it legal challenges by the existing players? A lack of political will? I believe that this case is an opportunity to demonstrate financially that a forward thinking city can redefine the concepts of public power distribution. Imagine, each home and business providing all (or most all) of their electricity needs through the power of the sun. No umbilical cord from fossil burning power plants strategically placed in locations where more lax pollution controls exist. Each neighborhood or home with their own localized power sources with publicly owned distribution lines there to provide load sharing. California and especially San Francisco prides itself on showing the way. Here's our chance.

Thanks for listening! Comments welcome!

Prepared by: Eddie Bartley 415-355-0450 eddie@naturetrip.com