

CITY OF HAYWARD
AGENDA REPORT

AGENDA DATE 02/06/01
AGENDA ITEM 10
WORK SESSION ITEM _____

TO: Mayor and City Council

FROM: City Manager

SUBJECT: Direction to Staff Regarding Preparation of Agreement Between City of Hayward and Calpine/Bechtel for Proposed Russell City Energy Center

RECOMMENDATION:

It is recommended that the City Council provide direction to staff regarding the preparation of a contract between the Calpine Corporation and the City setting forth mutual obligations and commitments in connection with the proposed Russell City Energy Center.

INTRODUCTION:

As has been evident in recent weeks, the state faces a critical issue with regard to meeting the energy needs of residents and businesses. While the extent and source of the problem is under debate, it is clear that a long-term solution is needed. However, in light of the current fragmented regulatory structure, crafting an effective solution will take time. As noted by the Governor in his State of the State address, part of the solution will necessarily entail increasing the supply of energy.

Recently, a joint venture comprising the Calpine Corporation, headquartered in San Jose, and the Bechtel Corporation, headquartered in San Francisco, expressed interest in locating a 600 megawatt energy facility in the industrial area of Hayward. (For ease of reference, the joint venture will be referred to as Calpine throughout the balance of this report.)

Calling it the Russell City Energy Center (RCEC) in recognition of Hayward's rich history, Calpine proposes to site its facility on a 15-acre, industrially zoned parcel, located across the street from the City's wastewater (sewer) treatment plant on Enterprise Avenue (See attachment A). This site has been selected both because of the industrial character of the area, and its proximity to the treatment plant, as Calpine proposes to utilize recycled water as part of its operation.

According to Calpine, the proposed RCEC will rely on natural gas as its major fuel source, thereby generating electricity in a more efficient and cleaner fashion. The RCEC is similar to the facility proposed for San Jose, which is currently the subject of hearings before the California Energy Commission. For background information, attachment B is a copy of a June

8, 1999 San Jose Mercury News newspaper article. Although the article focuses on the San Jose facility, it also provides a good overview regarding the operation of such facilities.

PROCESSING CALPINE'S APPLICATION:

Recently, City staff met with California Energy Commission staff to understand the process followed by the state when it considers an application for siting a power plant in a community. This session was extremely helpful in understanding not only the overall process, but also in gaining an understanding the role the general public and the City can play during the review process. Attachment C is a document provided by CEC staff. According to CEC staff, although the State has complete authority in licensing power plants, local governments play a critical and important role in the process. Furthermore, even though the final decision with regard to licensing an energy facility rests with the State, it is apparent that a favorable decision is dependent on satisfactorily addressing local issues and concerns. Moreover, given the costs associated with processing a licensing application, it appears unlikely that an applicant will proceed in the face of an unfavorable position on the part of a local jurisdiction. Finally, according to CEC staff, with one exception, the State has never overridden a local jurisdiction's objection to the siting of a plant in its community. The one exception occurred some twenty years ago and involved the location of a transmission line in a rural county.

Throughout the process, the State wants to work cooperatively with the City and the community, according to CEC staff. To this end, the State will hold workshops and formal hearing in the community to make it more convenient for Hayward residents and the general public to participate in the process. Although not governed by the California Environmental Quality Act (CEQA), the CEC is required to prepare a comprehensive document that addresses noise, traffic, air quality, and other related issues. In many respects, the CEC process exceeds the requirements of CEQA.

According to CEC staff, its licensing process typically takes from twelve to eighteen months from start to finish. When reviewing and acting upon an energy siting application, the CEC will hold evidentiary hearings prior to rendering a decision. An evidentiary hearing is more formal than the public hearings conducted by the City and includes submittal of sworn testimony.

Early in the permitting process, the City will be asked to formally indicate if the proposed RCEC is consistent with the local land use regulations. As applications for power generating plants are not commonly filed with the City, Hayward's zoning ordinance does not expressly enumerate this use. Consequently, Calpine will be submitting an application in support of its contention that the proposed RCEC is consistent with the character of the Industrial District, particularly given the surrounding uses at the suggested location on Enterprise Avenue.

This evening, the Council is not being asked to determine if the proposed use is appropriate for the referenced location. Rather, such a determination will be processed in the normal fashion, meaning that following a staff evaluation a recommendation will be submitted to both the

Planning Commission and City Council. In keeping with normal practice, public hearings will be scheduled to provide the community an opportunity to comment. Only following the public hearings, will the Commission and Council be asked to render their decision.

COMMUNITY BENEFITS:

Calpine represents that by improving the supply of energy, especially from the standpoint of reliability and stability, the proposed Russell City Energy Center will provide much needed power to Alameda and San Mateo counties. Moreover, by increasing the supply of energy, this will presumably have a positive effect on the price of energy as well.

In addition to addressing critical energy needs, Calpine is also prepared to provide other community benefits. In particular, Calpine proposes to:

1. Contribute \$15 million and work with the community to establish a foundation to raise an additional \$5 million to build a new main library;
2. Contribute \$100,000 per year for five years to the Hayward Education Foundation;
3. Contribute \$100,000 per year for five years to the Hayward Area Recreation and Park District (HARD) Foundation for youth programs;
4. Work cooperatively with the East Bay Regional Park District and HARD to improve the Bay Trail from the Interpretative Center to San Leandro, a distance of about 4.5 miles;
5. Fund specified improvements at the Wastewater Treatment Plant to provide tertiary recycled water;
6. Provide the equivalent of wholesale power at a discounted rate to the City;
7. Work with the City to establish a pilot project to generate electricity via a renewable resource.

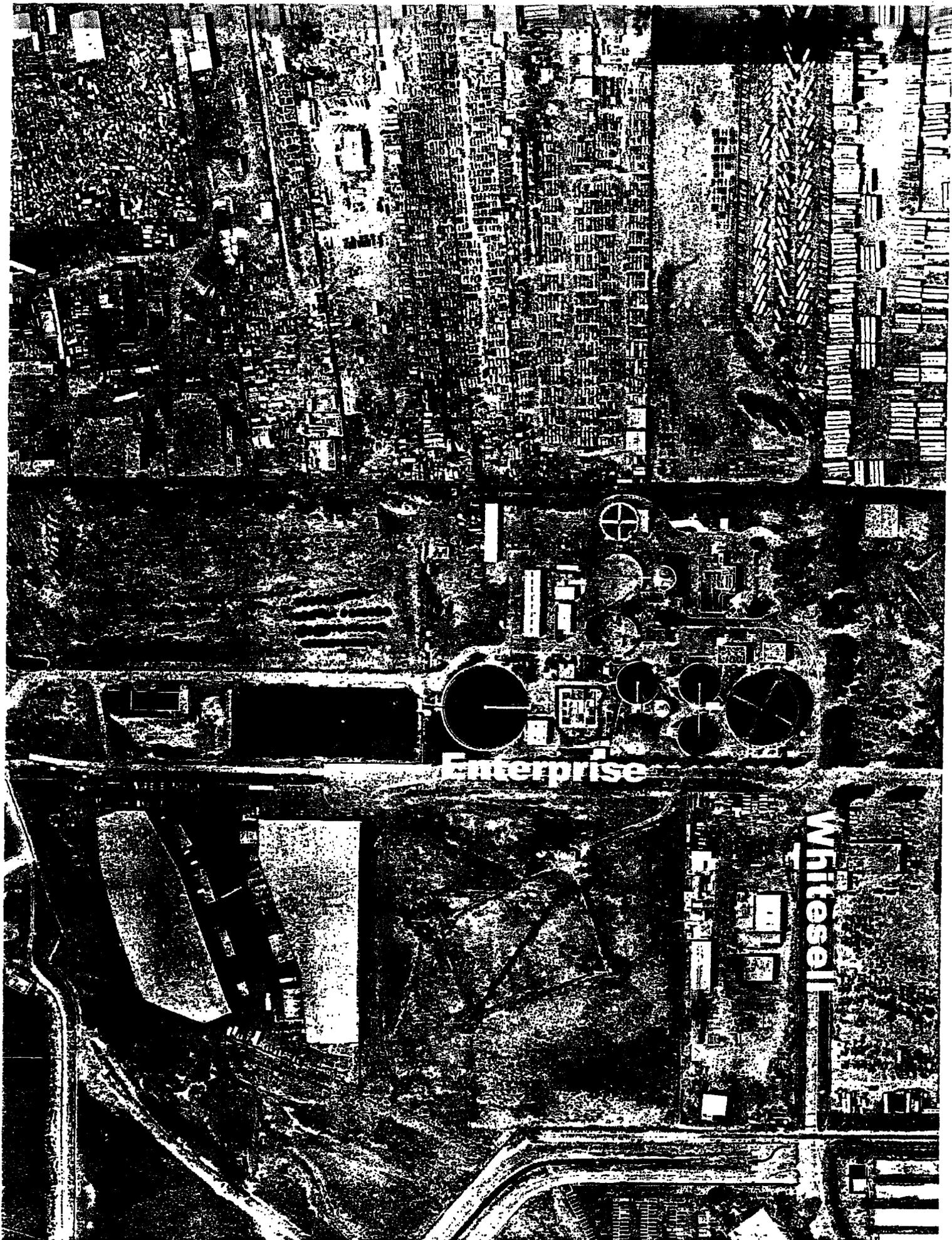
CONTRACT BETWEEN CALPINE AND THE CITY:

The list of community benefits is substantial. Staff believes it is prudent to develop an appropriate contract between the City and Calpine to assure that the noted benefits will indeed be realized. Accordingly, staff seeks Council direction with regard to the preparation of such agreement. In addition, if there are additional elements or issues the Council would like addressed in the context of such agreement, these should be noted as well.

Based on the Council's direction, staff will prepare a draft agreement for consideration at a future meeting. Once an agreement has been developed, staff recommends that a public hearing be scheduled to afford the public an opportunity to comment on it prior to any Council action.


Jesús Armas, City Manager

Attachments: Exhibit A - Aerial Map
Exhibit B - San Jose Mercury News Article
Exhibit C - California Energy Commission Document



Enterprise

Whitesell

San Jose Mercury News

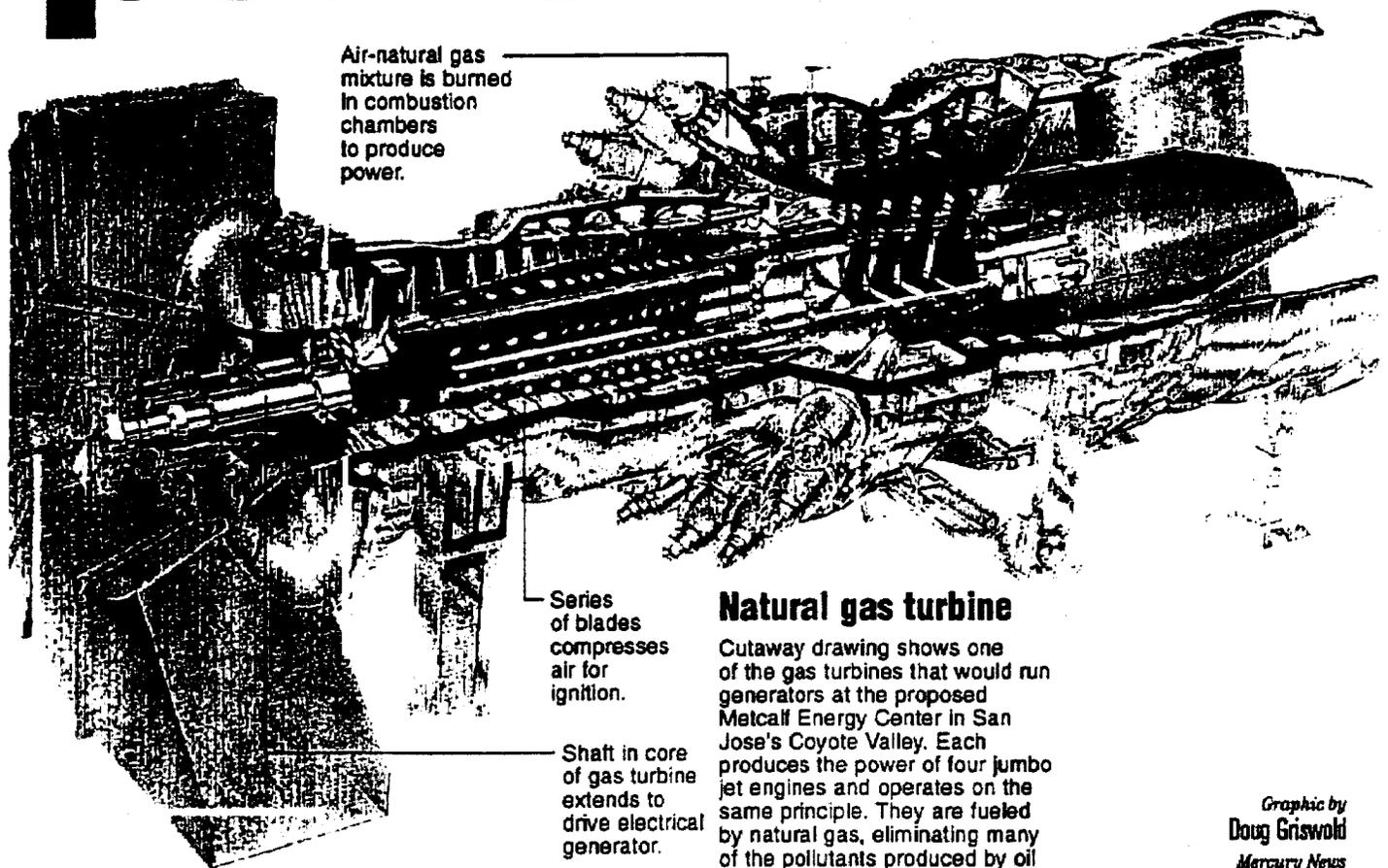
SCIENCE & TECHNOLOGY, Page 1F

Serving Northern California Since 1851

TUESDAY, JUNE 8, 1999

Cleaning up power

A new plant proposed for Coyote Valley would generate electricity more efficiently — and cleanly — than any other in the Bay Area



Air-natural gas mixture is burned in combustion chambers to produce power.

Series of blades compresses air for ignition.

Shaft in core of gas turbine extends to drive electrical generator.

Natural gas turbine

Cutaway drawing shows one of the gas turbines that would run generators at the proposed Metcalf Energy Center in San Jose's Coyote Valley. Each produces the power of four jumbo jet engines and operates on the same principle. They are fueled by natural gas, eliminating many of the pollutants produced by oil or coal fuel.

*Graphic by
Doug Griswold
Mercury News
Staff Artist*

*Story by
Frank Sweeney
Mercury News Staff Writer*

Think of a power plant, and the image that comes to mind is a huge edifice with towering stacks, belching smoke and steam from internal fires that somehow generates electricity. Think Moss Landing on the Monterey coast.

That perception hasn't kept pace with changing technology.

A new generation of power plants is creating more electricity while emitting a fraction of

the air pollution and costing much less to operate for the same output. And all of it comes in a smaller package.

There are no such generating plants in the Bay Area today. But San Jose-based Calpine Corp. and Bechtel Enterprise Holdings Inc. of San Francisco have proposed one in San Jose's Coyote Valley. The 600-megawatt Metcalf Energy Center, which would cost \$300 million

to \$400 million if approved, would provide electricity for Silicon Valley's homes, businesses and industries.

Fueled by natural gas instead of oil or coal, the plant would incorporate the new technology - called combined-cycle - in which two gas turbines and a steam turbine run the generators that produce the electricity.

Air pollution emissions? They would be limited by the clean-burning natural gas fuel as well as by the chemical cleansing of exhaust gases.

But even using advanced technology, the Metcalf plant would still become a major source of the two ingredients that combine to form smog - nitrogen oxide and volatile organic compounds. But consider the big picture, Calpine officials say, and regulators agree: The new plant actually could reduce overall air pollution by becoming a cleaner alternative to older power plants, which would reduce operations.

The new technology is not optional. Without it, the Bay Area Air Quality

Management District, the government agency that regulates stationary air pollution sources in the region's nine counties, will not let the plant operate, said Kenneth Lim, the district's supervising air quality engineer.

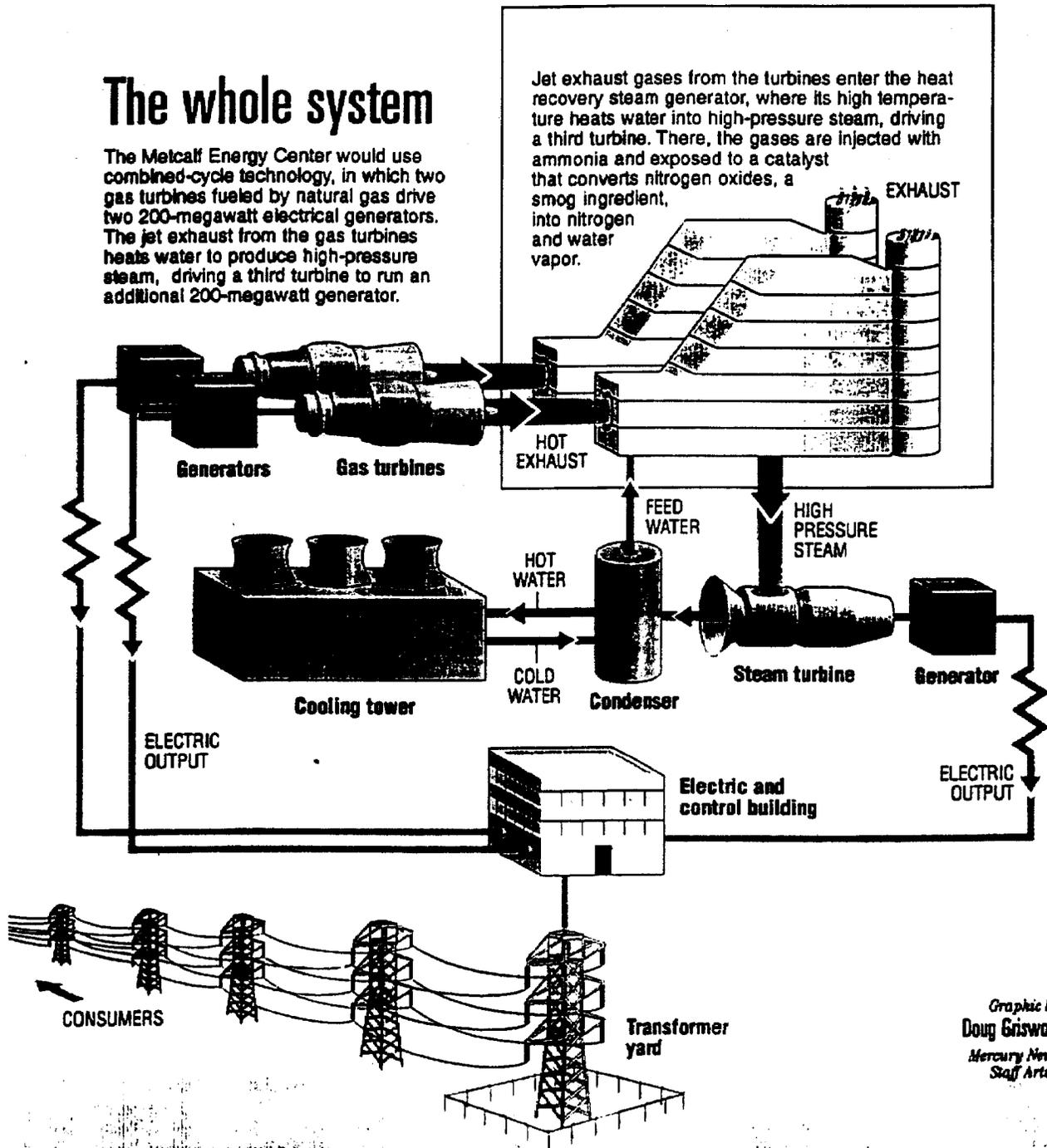
Generating debate

Despite its efficiency, the plant would still be one of the county's biggest polluters

The new power plant's location - now a weedy plot of scrubland littered with

The whole system

The Metcalf Energy Center would use combined-cycle technology, in which two gas turbines fueled by natural gas drive two 200-megawatt electrical generators. The jet exhaust from the gas turbines heats water to produce high-pressure steam, driving a third turbine to run an additional 200-megawatt generator.



Jet exhaust gases from the turbines enter the heat recovery steam generator, where its high temperature heats water into high-pressure steam, driving a third turbine. There, the gases are injected with ammonia and exposed to a catalyst that converts nitrogen oxides, a smog ingredient, into nitrogen and water vapor.

Graphic by
Doug Griswold
Mercury News
Staff Artist

derelict vehicles, dilapidated shacks and rusty equipment - has already generated much debate.

The eucalyptus-bordered, 14-acre site is just west of Monterey Highway near Metcalf Road, making a power plant easily visible from heavily traveled Highway 101. The property is sandwiched between the main line railroad tracks and Tulare Hill, the highest terrain between San Jose and Morgan Hill and the buffer from the closest neighborhood just to the north.

But there are at least two other hot button issues as well:

■ Does the South Bay really need generating capacity in its back yard when electricity zips through the West's power grid at nearly the speed of light, bringing it here from nearly anywhere in an instant?

■ Is the South Bay, with the worst air quality in the region, a proper location for a power plant that would be one of Santa Clara County's biggest sources of air pollution even through it would be one of the cleanest such facilities in the country?

Citizens groups, environmental organizations and the power plant's proponents are already arguing those issues and will continue over the next year as the proposal is reviewed by the California Energy Commission and the San Jose City Council.

If the Metcalf Center wins approval, the present plan calls for it to open in 2002. It would be a "merchant plant," built to provide power for new customers, selling electricity on short-term contracts or on the spot market. Since the electrical industry was deregulated effective spring 1998, major utilities such as Pacific Gas & Electric Co. have been getting out of the power-generating business and focusing their efforts on distribution and sales to consumers.

Calpine would have an edge in selling its electricity, officials say, because the Metcalf Center would be 40 percent more efficient - in terms of fuel burned per kilowatt of electricity produced - than other natural-gas fired plants in the region.

The proposed site is the "ideal place," said Ken Abreu, the project development manager. "It's right next to the Metcalf substation, the electric hub of the South Bay."

That means Calpine would not have to build a long transmission line to link the plant to the state's electrical grid, sav-

ing a small percentage of the energy that would be lost in transmission, Abreu said.

"Electrical demand is growing, but the supply is not. If you can put power where it's used, it's more efficient," Abreu said.

In the past, that wasn't possible; plants had to be located near enormous quantities of water for cooling. But this project would tie into San Jose's recycled water network, using up water that would normally flow into San Francisco Bay.

Generating power

Even the exhaust from its gas-powered turbines is used to produce electricity

Based on interviews with officials of Calpine and of the Bay Area Air Quality Management District, here's how the plant would produce electricity and at the same time minimize pollution:

A pair of gas turbine engines, burning natural gas, would drive huge generators to create two-thirds of the plant's electricity. Each of these turbines, similar to - but much larger than - a jet aircraft engine, would produce the combined power of four engines on a Boeing 747 jumbo jet. Each would drive generators that can produce as much as 200 megawatts of electricity - enough to power 200,000 households at a given moment.

Hot exhaust gases from these turbines would be funneled into a heat recovery steam generator, which, Abreu said, would also act as a "gigantic muffler" for the turbine noise. There, the gases would heat water into high-pressure steam. This steam would drive another turbine, which in turn would run the third 200-megawatt electrical generator.

Air pollutants would be controlled by the gas turbine combustion process and reduced further by a chemical reaction that would break down most of the smog-causing compounds into harmless nitrogen and oxygen.

Natural gas is primarily methane, a compound of carbon and hydrogen, which burns much cleaner than oil or coal that fuels many power plants in other parts of the country.

In combustion, the carbon combines with oxygen to produce carbon dioxide, and the hydrogen combines with oxygen to produce water vapor, explained Lim of the air quality district.

So power plants must be highly tuned, much like an exotic sports car, to burn the gas cleanly to minimize formation of unburned particulates. "Pollution avoidance is the most efficient and cheapest way," Lim said.

Generating pollution

Tight controls on combustion, treating exhaust helps keep emissions in check

The plant design has several systems in place to reduce that pollution.

The gas turbines operate in a two-phase cycle that keeps combustion temperatures below 3,000 degrees Fahrenheit - the level at which nitrogen oxides, a precursor of smog, form in the exhaust gases.

In one part of the combustion chamber, a small amount of very rich fuel mixture - heavy in natural gas and light in oxygen - is burned at a steady rate. In another part of the chamber, a large but extremely lean fuel-air mixture is ignited into a cooler-burning flame. The combination produces the turbine's power, causing its central shaft to turn to run the generator, yet keeps the gases cool enough to inhibit formation of nitrogen oxides.

This process also holds down the emission of volatile organic compounds, another precursor of smog. Most VOCs are burned up in the combustion chamber.

"Good combustion practices take care of volatile organics," said Lim of the air quality district. "You burn them, and monitor through carbon monoxide" measurements in the exhaust plume.

And burning natural gas produces very few particulates - the tiny ash fragments that are spewed from power plants using coal or oil as fuel.

Despite the cleaner-burning fuel, the combustion still creates pollutants that must be removed from the exhaust.

After the turbine gases create steam, they are funneled through a series of grids where ammonia, similar to the typical household cleanser but much stronger, is sprayed into the flow.

The gases next move through a honeycomb structure the size of a house, where they come in contact with a catalyst, in this case the metal vanadium. The catalyst speeds a chemical reaction started by the ammonia that breaks nitrogen oxides into harmless nitrogen and oxygen - the prime constituents of Earth's atmosphere.

Particulates, which contribute to acid rain in other parts of the country where coal or residual oil fuel electrical power plants, aren't expected to be a major





Artist's rendition shows how Calpine says the Metcalf power plant would look, viewed from the south.

problem, Lim said.

"The best control of particulates is an abundant supply of low-cost natural gas," Lim said. "You don't have the ash, but you don't have zero particles either, so that doesn't mean we ignore it."

The air quality district would install monitors on the power plant's stacks to measure continuously the emissions of carbon monoxide and nitrogen oxides, he said.

"If carbon monoxide is high, it's unacceptable," Lim said. If the carbon in the natural gas fuel isn't burning completely, it forms carbon monoxide rather than carbon dioxide.

Under that circumstance, Lim said, the district may have to limit how many hours a day the plant can operate or how much fuel it can burn.

Generating solutions

Older, less-efficient plants — which create more pollution — are expected to operate less

Despite the advanced technology, the Metcalf plant is still expected to be the seventh-largest producer of nitrogen oxides in the South Bay, generating 186 tons of the compound a year — or slightly more than all passenger vehicles produce on Bay Area highways in one day.

The power plant also would put 80 tons of volatile organic compounds into the air each year, making it the fifth-largest source in the South Bay, according to the air quality district.

So there has to be a trade-off some-

where.

"As soon as our plant is on line, older plants will stop producing as much," Abreu said.

In the competitive deregulated electricity market, power is auctioned every hour, he explained. Buyers and sellers of electricity submit bids to the California Power Exchange, which is responsible for power sales in the state.

The more efficient plants that can produce electricity at the lowest cost will be the winners in the auction, while other less-efficient plants will run less, he said.

"The new plants are cleaner and more efficient per kilowatt produced," said Lim. "so in a competitive market, they would be expected to force out old power plants. If it's a true competitive market, in theory they should win out."

Curtailing operations at the two power plants in San Francisco, or two others in Contra Costa County, will help air quality in the South Bay, Lim said.

"Those pollutants from tall stacks get transported by winds, and are right now contributing to South Bay problems," Lim said. "If the San Francisco plants closed, it would have a direct benefit to residents of San Jose."

Older plants will still operate during peak demand periods on hot summer days, said Gary Rubenstein of Sierra Research, Calpine's air quality consultant. But usually there will be a "megawatt for megawatt reduction," he said. The Metcalf plant's output of 600 megawatts would result in a 600 megawatt reduction spread among the other Bay Area plants, he said.

As a result, Rubenstein said, the new facility would reduce the region's nitrogen oxides emissions by far more than the 186 tons a year it would produce.

"But we don't get credit for it."

Instead, to operate a new power plant, the company must first reduce emissions from within the same air basin by more than the amount that the new plant will add.

These offsets, created when an old source of pollution is shut down or is reduced by installation of new equipment, can be sold to other companies.

The air district requires these offsets to equal 116 percent of the Metcalf plant's pollution output, or about 214 tons a year for nitrogen oxides. Calpine is negotiating to purchase these credits from other sources in the nine-county Bay Area.

"We have to show a regional net benefit," Abreu said.

For environmental organizations, the jury appears to be still out.

"We understand there's an up side and a potential downside, and that's what we will be looking at," said Debbie Ruddock, director of the Loma Prieta Chapter of the Sierra Club, which has taken no position on the plant so far.

"We're very concerned about anything that impacts air quality in that long, narrow valley," Ruddock said. "Bad air gets trapped, and is not easily dispersed."

But, she added, "the technology is certainly cleaner and more efficient than existing technology. If we have the opportunity to replace technologies that are worse in terms of environmental impacts, that's a plus."

**CALIFORNIA
ENERGY
COMMISSION**

**ENERGY FACILITY
SITING PROCESS**

OVERVIEW

BOB THERKELSEN
Deputy Director for
Energy Facilities Siting
and Environmental Protection



**CEC SITING
PROCESS**

PURPOSE

" . . . ensure that a reliable supply of electrical energy is maintained at a level consistent with the need for such energy for protection of public health and safety for promotion or the general welfare, and for environmental quality protection."

Public Resources Code 25001

CEC SITING PROCESS

JURISDICTION

■ POWER PLANT

- **50 megawatts and above**
- **Thermal**

■ TECHNOLOGY EXAMPLES:

- **Oil**
- **Natural gas**
- **Coal**
- **Biomass**
- **Geothermal**
- **Solar thermal**
- **Nuclear**

■ TRANSMISSION LINES—

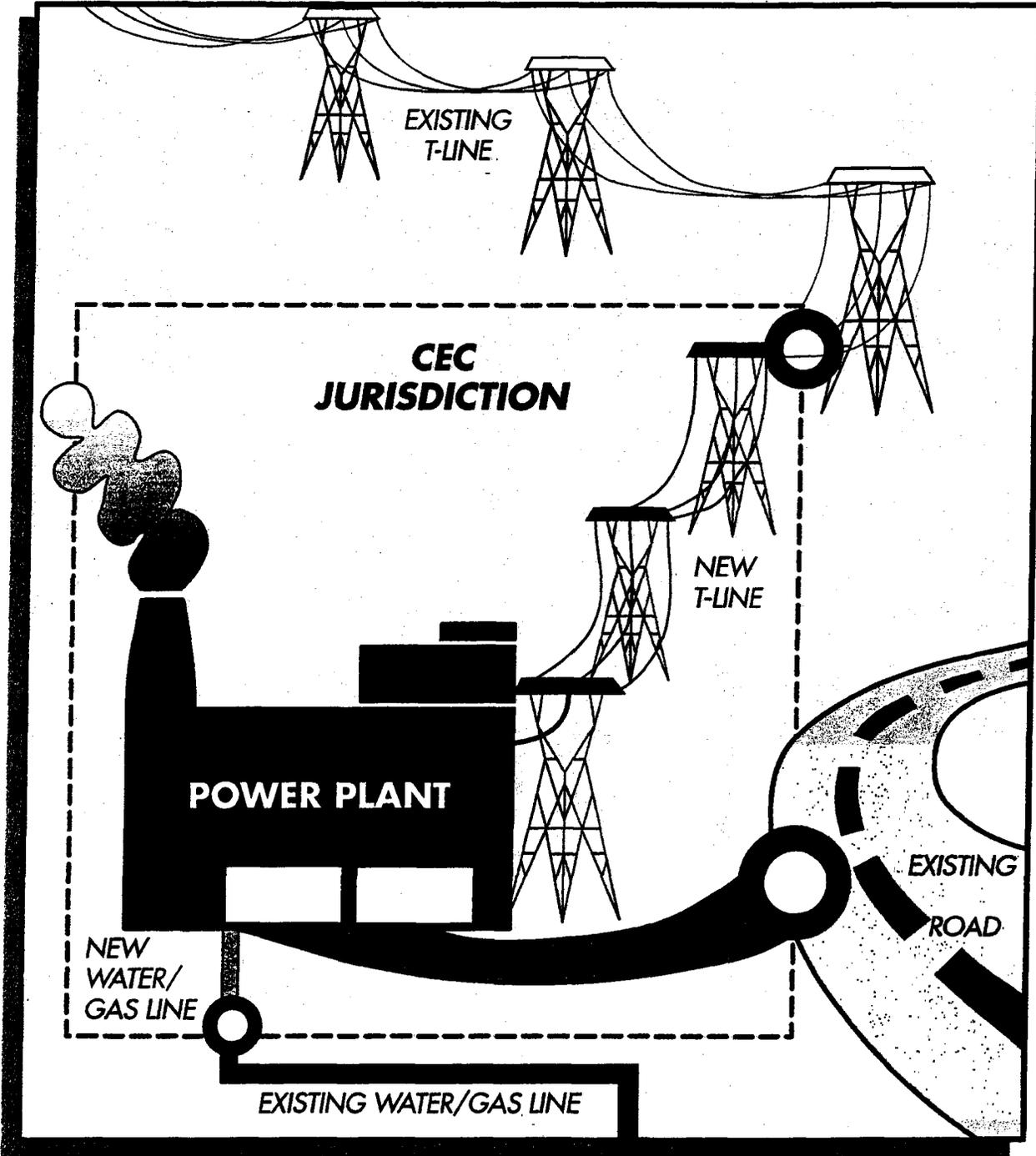
**POWER PLANT to the FIRST
POINT of INTERCONNECTION**

■ RELATED FACILITIES

- **Fuel supply lines**
- **Access roads**
- **Water and waste facilities**

**CEC SITING
PROCESS**

JURISDICTION



- ~~DETERMINE IF PROJECT "NEEDED"~~
- **DETERMINE IF COMPLIES WITH
APPROPRIATE LAWS**
 - **Federal**
 - **State**
 - **Local**
- **DETERMINE IF SIGNIFICANT IMPACTS
ARE MITIGATED**
- **ESTABLISH CONDITIONS OF
CERTIFICATION**

**CEC SITING
PROCESS**

**OPEN PUBLIC
PROCESS**

- **GOALS**
 - **Get public input**
 - **Get public confidence**

- **ALL HEARINGS OPEN**

- **ALL MEETINGS and
WORKSHOPS OPEN**

- **MOST HEARINGS and
WORKSHOPS in COMMUNITY**

- **FORMAL NOTICE to LANDOWNERS**

**CEC SITING
PROCESS**

**BALANCING the
CONCERNS of BUSINESS
and the PUBLIC**

- **COST**
- **REGULATORY
CERTAINTY**
- **JOBS**

- **HEALTH & SAFETY**
- **QUALITY
ENVIRONMENT**
- **COMMUNITY
IMPACTS**

BUSINESS

PUBLIC

**CEC SITING
PROCESS**

CEC SITING PROCESS

APPLICATION FOR CERTIFICATION

TIME (DAYS)	PHASE	ACTIVITIES
?	Prefiling	
-45	Data Adequacy	File AFC Data Adequacy Workshop
0	Discovery	Commission Determination Data Requests Information Hearing Site Visits Workshops
120	Analysis	Prelim. Staff Analysis Workshops Prehearing Conference Final Staff Assessment
210	Hearing	
300	Decision	Draft Proposed Decision Public Comment Period Hearing Commission Decision
365	Compliance	

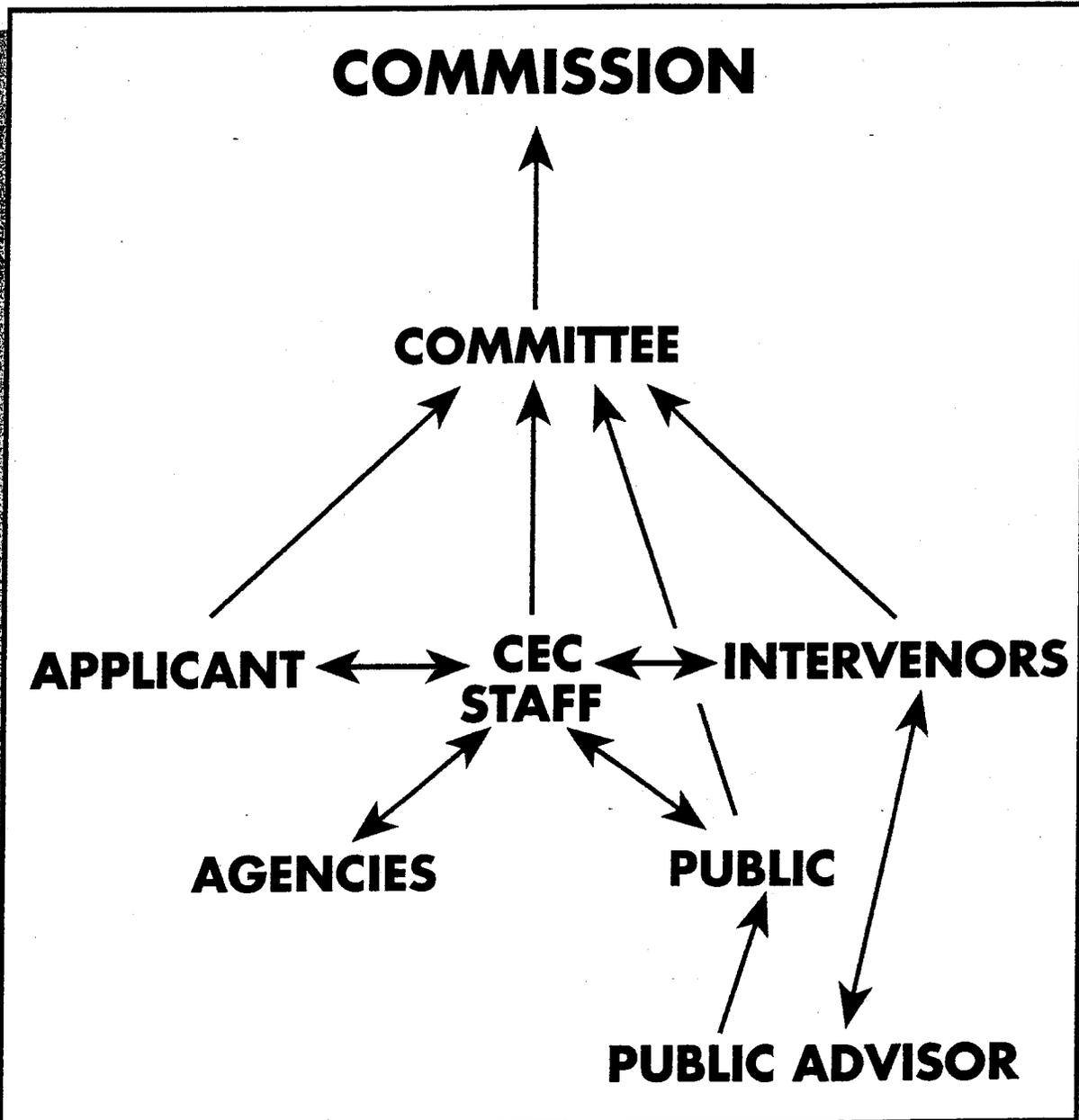
CEC SITING PROCESS

COMPARISON of CEQA and CEC PROCESSES

	CEQA	CEC
Early Notice	YES	YES
Scope		
Natural	YES	YES
Physical	YES	YES
Social	YES	YES
Reliability	NO	YES
Safety	NO	YES
Perspective		
Short-term	YES	YES
Long-term	YES	YES
Cumulative	YES	YES
Document Contents		
Impacts	YES	YES
Mitigation	YES	YES
Alternatives	YES	YES
Public Review	YES (30 Day)	YES (45 Day)
Public Hearing	NO	YES

**CEC SITING
PROCESS**

RELATIONSHIPS



**CEC SITING
PROCESS**

COMPLIANCE MONITORING

"The Commission shall establish a monitoring system to assure that any facility certified . . . is constructed and is operating in compliance with . . . applicable regulations . . . and conditions adopted or established by the Commission."

Public Resources Code 25532