

COGENERATION

NOVEMBER 9, 1983

LEGISLATIVE ANALYST

STATE OF CALIFORNIA

925 L STREET, SUITE 650

SACRAMENTO, CALIFORNIA 95814

STATEMENT BY THE LEGISLATIVE ANALYST  
TO THE JOINT HEARING OF THE ASSEMBLY COMMITTEE ON WAYS AND MEANS  
AND  
SENATE COMMITTEE ON FINANCE  
SAN JOSE, NOVEMBER 9, 1983

MR. CHAIRMEN AND MEMBERS:

COGENERATION--THE JOINT PRODUCTION OF ELECTRICITY AND USEFUL THERMAL ENERGY--HAS CONSIDERABLE PROMISE FOR STATE GOVERNMENT. COGENERATION PROJECTS AT STATE FACILITIES CAN REDUCE THE COST OF PROVIDING SERVICES AND, AT THE SAME TIME, REDUCE THE DEMAND ON SCARCE RESOURCES INVOLVED IN MEETING THE STATE'S ENERGY NEEDS. CONSEQUENTLY, THE ISSUES FACING THE LEGISLATURE DO NOT INVOLVE THE DESIRABILITY OF COGENERATION BUT RATHER

- HOW CAN THE BENEFITS OF COGENERATION BE REALIZED MOST EFFECTIVELY?
- HOW SHOULD THE BENEFITS OF COGENERATION BE DISTRIBUTED?

MY TESTIMONY THIS MORNING HAS TWO PARTS. FIRST, I WILL RESPOND TO EACH OF THE THREE SPECIFIC QUESTIONS WHICH YOU ADDRESSED TO ME IN INVITING ME TO PARTICIPATE IN THIS HEARING. SECOND, I WILL ATTEMPT TO PROVIDE AN ANALYTICAL FRAMEWORK THAT CAN HELP THE LEGISLATURE RESOLVE THE SECOND ISSUE NOTED ABOVE: THE DISTRIBUTION OF BENEFITS.

I. RESPONSES TO SPECIFIC QUESTIONS

MY RESPONSE TO THE THREE QUESTIONS REGARDING THIRD-PARTY  
COGENERATION PROJECTS IS AS FOLLOWS:

WHAT RISK DOES THE STATE TAKE IN ENTERING INTO THIRD-PARTY  
COGENERATION PROJECTS?

IN OUR JUDGMENT, THIRD-PARTY COGENERATION CONTRACTS PRESENT  
VIRTUALLY NO RISK TO THE STATE WHEN THE CONTRACT WITH THE THIRD  
PARTY PROVIDES ADEQUATE ECONOMIC PROTECTION FOR THE STATE. FOR  
EXAMPLE, THE CONTRACT COVERING THE SAN JOSE STATE UNIVERSITY  
(SJSU) COGENERATION PROJECTS PROVIDES FOR THE STATE TO PURCHASE  
STEAM FROM THE COGENERATOR AT A PRICE EQUAL TO SJSU'S COST OF  
PRODUCING STEAM IN THE EXISTING BOILER PLANT. THUS, IN CON-  
TRACTING FOR AN END PRODUCT--STEAM ENERGY--THE STATE ASSUMES NO  
SIGNIFICANT RISK BECAUSE THE PRODUCT CAN BE SUPPLIED READILY BY  
USING THE EXISTING BOILERS AT SJSU. IN EFFECT, THE DEVELOPER  
ASSUMES THE RISKS ASSOCIATED WITH THE UNCERTAINTIES OF CONSTRUCT-  
ING, OWNING, AND OPERATING THE COGENERATION EQUIPMENT.

FURTHER, UNDER THE SJSU CONTRACT, THE UNIVERSITY WOULD  
CONTINUE TO PURCHASE ELECTRICITY FROM THE UTILITY COMPANY AT THE  
CURRENT MARKET RATE. WHILE THE UNIVERSITY COULD PURCHASE ELEC-  
TRICITY FROM THE THIRD-PARTY PLANT IF THE THIRD PARTY AGREED, IN  
NO CASE WOULD THE UNIVERSITY PAY MORE THAN MARKET PRICE FOR THE  
ELECTRICITY IT USED. THUS, THERE IS NO RISK TO THE STATE  
REGARDING PURCHASE OF ELECTRICITY.

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THERE ARE, OF COURSE, MANY WAYS OF STRUCTURING A THIRD-PARTY FINANCING AGREEMENT. OTHER AGREEMENTS MAY DISTRIBUTE RISK DIFFERENTLY FROM HOW IT IS DISTRIBUTED UNDER THE SJSU CONTRACT. THE DEGREE OF RISK ASSUMED BY THE STATE, HOWEVER, IS WITHIN THE STATE'S CONTROL, SINCE IT IS A FUNCTION OF THE TERMS OF THE AGREEMENT THE STATE NEGOTIATES WITH THE THIRD PARTY.

WHAT PROBLEMS MIGHT BE ENCOUNTERED BY THE HOST INSTITUTION?

THE STATE DOES NOT HAVE ANY EXPERIENCE WITH THE ACTUAL OPERATION OF THIRD-PARTY COGENERATION PLANTS, SINCE NO FACILITIES HAVE BEEN COMPLETED USING THIS PROCESS. IT APPEARS TO US, HOWEVER, THAT THE HOST INSTITUTION WILL ENCOUNTER SOME NEW PROBLEMS STEMMING FROM THIRD-PARTY FINANCING AND OPERATION OF THE PLANTS AS WELL AS FROM COGENERATION PLANTS IN GENERAL.

THIRD-PARTY AGREEMENTS. ALTHOUGH THE VARIABILITY OF POSSIBLE ARRANGEMENTS FOR THIRD-PARTY FINANCING AND OPERATIONS MAKES IT DIFFICULT TO DETERMINE WHAT THE IMPACTS OF THESE ARRANGEMENTS MIGHT BE, WE BELIEVE THE HOST INSTITUTION COULD EXPERIENCE PROBLEMS IN THREE MAJOR AREAS:

- LABOR RELATIONS--THE USE OF "PRIVATE ENTERPRISE" TO SUPPLY STEAM AT A SITE MAY BE VIEWED BY STATE EMPLOYEE UNIONS AS A LABOR ISSUE SUBJECT TO THE COLLECTIVE BARGAINING PROCESS. EVEN IF STATE WORKERS PREVIOUSLY ASSIGNED TO STEAM PRODUCTION ARE "REASSIGNED" TO OTHER DUTIES, ANY DIFFERENCES BETWEEN THESE WORKERS' SALARY

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AND WORKING CONDITIONS AND THOSE OF THE THIRD-PARTY EMPLOYEES AT THE STATE SITE COULD PRESENT PROBLEMS TO THE HOST INSTITUTION.

- SECURITY--THE THIRD-PARTY EMPLOYEES WILL NEED TO HAVE ACCESS TO STATE PROPERTY IN ORDER TO SERVICE THE COGENERATION FACILITY. PROVIDING THIS ACCESS MAY BE A PROBLEM WHERE THE SITING INSTITUTION IS A PRISON OR STATE HOSPITAL AND THERE IS A RELATIVELY GREATER NEED TO MAINTAIN SECURITY THAN THERE IS, SAY, ON A UNIVERSITY CAMPUS. IN SUCH CASES, THE THIRD PARTY WOULD HAVE TO ABIDE BY STATE POLICIES CONCERNING SECURITY AT THE SITE.
- RELIABILITY OF THE BACK-UP SYSTEM--WITH A COGENERATION FACILITY IN PLACE, STATE-OPERATED BOILERS MAY NO LONGER BE NEEDED ON AN ONGOING BASIS TO SERVE THE INSTITUTION. THESE BOILERS, HOWEVER, WILL HAVE TO BE MAINTAINED IN GOOD OPERATING CONDITION SO THAT THEY CAN SERVE AS A BACK-UP SYSTEM. SHOULD THE COGENERATION PLANT FAIL, THERE COULD BE SOME DELAY IN BRINGING THE BACK-UP SYSTEM ON LINE. SUCH A DELAY MIGHT BE DETRIMENTAL TO THE OPERATION OF THE INSTITUTION. OBVIOUSLY, FAILURE OF STATE-OPERATED BOILERS COULD LEAVE THE FACILITY IN THE SAME BIND.

COGENERATION PLANTS. THE SITING OF A COGENERATION PLANT MAY PRESENT PROBLEMS, NO MATTER HOW IT IS FINANCED. THE POTENTIAL PROBLEMS INCLUDE:

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- SITING--ADDITIONAL LAND MAY HAVE TO BE ACQUIRED TO ACCOMMODATE A COGENERATION PLANT. FURTHERMORE, PROJECTS WILL HAVE TO BE DEVELOPED IN A MANNER THAT IS COMPATIBLE WITH EXISTING MASTER PLANS AND WITH NEIGHBORING FACILITIES.
- NOISE--COGENERATION FACILITIES USUALLY HOUSE TURBINES OR ENGINES THAT PRODUCE A LOT OF NOISE. THIS PROBLEM USUALLY CAN BE REMEDIED THROUGH APPROPRIATE DESIGN OF THE FACILITY ENCLOSURE.
- AIR EMISSIONS--A COGENERATION PLANT USUALLY WILL CONSUME MORE FOSSIL FUEL (NATURAL GAS OR FUEL OIL) THAN THE INSTITUTION'S BOILERS WOULD. CONSEQUENTLY, EXHAUST EMISSIONS AT THE SITE CAN BE EXPECTED TO INCREASE. THIS PROBLEM ALSO CAN BE OVERCOME THROUGH PROPER DESIGN OF THE FACILITY. THE SITING INSTITUTION, HOWEVER, WILL HAVE TO RELY ON THE THIRD PARTY TO INSURE THAT THE PLANT OPERATES PROPERLY, AND WITHIN ACCEPTABLE AIR EMISSION LEVELS.

ALTHOUGH EMISSIONS AT THE SITE WILL INCREASE, THE OVERALL IMPACT OF THE COGENERATION PROJECT GENERALLY WILL BE A REDUCTION IN EMISSIONS. THIS IS BECAUSE THE SERVING UTILITY WILL BE ABLE TO EITHER REDUCE OR NOT INCREASE THE OPERATION OF FOSSIL FUELED CENTRAL GENERATING PLANTS WHICH OPERATE LESS EFFICIENTLY THAN A COGENERATION PLANT.

THESE PROBLEMS ARE NOT INSURMOUNTABLE. IN MOST CASES, THEY CAN BE OVERCOME BY ADDRESSING THEM IN THE WRITTEN AGREEMENT WITH THE THIRD-PARTY DEVELOPER AND BY ENSURING PROPER DESIGN/OPERATIONS OF THE PLANT. THEY DO NOT DETRACT FROM OUR GENERAL CONCLUSION REGARDING COGENERATION PLANTS AT STATE FACILITIES: THESE PLANTS CAN PROVIDE SIGNIFICANT BENEFITS AT LITTLE OR NO RISK TO THE STATE.

WHAT ARE THE ALTERNATIVES TO THIRD-PARTY FINANCING, AND OF THESE ALTERNATIVES, WHAT IS THE LIKELIHOOD OF THEIR BEING IMPLEMENTED?

THE STATE HAS USED A NUMBER OF FUNDING SOURCES TO FINANCE ENERGY CONSERVATION PROJECTS. THESE INCLUDE THE ENERGY AND RESOURCES FUND, THE CAPITAL OUTLAY FUND FOR PUBLIC HIGHER EDUCATION, AND THE SPECIAL ACCOUNT FOR CAPITAL OUTLAY (ALL OF WHICH RECEIVE TIDELANDS OIL REVENUES) AS WELL AS FEDERAL FUNDS.

OTHER METHODS OF FINANCING ENERGY CONSERVATION PROJECTS ARE AVAILABLE THROUGH THE STATE PUBLIC WORKS BOARD. CHAPTER 1523, STATUTES OF 1982, AUTHORIZED THE BOARD TO:

- ISSUE OVER A TEN-YEAR PERIOD, UP TO \$500 MILLION IN REVENUE BONDS TO FINANCE ENERGY CONSERVATION PROJECTS. (THE BILL EXPRESSES LEGISLATIVE INTENT THAT, PRIOR TO USING REVENUE BONDS, THE BOARD CONSIDER OTHER FINANCING OPTIONS AND THE EFFECT OF THE BOND ISSUANCE ON THE BOND MARKET.)

- ENTER INTO ENERGY SERVICE AGREEMENTS WITH PRIVATE INVESTORS (THIRD-PARTY AGREEMENTS).
- PROVIDE LOANS OR BUDGET AUGMENTATIONS TO STATE AGENCIES FROM FUNDS MADE AVAILABLE TO THE BOARD THROUGH THE ABOVE TWO METHODS.

THE LAW REQUIRES THAT THE BOARD UNDERTAKE PROJECTS OR ENTER INTO CONTRACTS ONLY WHERE IT DETERMINES THAT THE ANTICIPATED OVERALL COST OF THE PROJECT OR CONTRACT WILL BE OFFSET BY SAVINGS IN ENERGY COSTS. TO DATE, THE BOARD HAS NOT USED THE FINANCING OPTIONS AUTHORIZED BY CH 1523.

OTHER MEANS OF FINANCING ENERGY PROJECTS INCLUDE THE USE OF SPECIAL FUNDS OR TRUST FUNDS. IF ENERGY PROJECTS ARE GOOD INVESTMENTS FOR THE PRIVATE SECTOR--THROUGH THIRD-PARTY AGREEMENTS--IT SEEMS LOGICAL THAT MANY OF THESE PROJECTS COULD ALSO BE GOOD INVESTMENTS FOR THE STATE GOVERNMENT. CONSEQUENTLY, THERE IS THE ALTERNATIVE OF USING THE STATE'S INVESTABLE FUNDS TO FINANCE ALL OR PART OF THOSE COGENERATION PROJECTS WHERE THE RETURN ON INVESTMENT IS COMPETITIVE WITH OTHER INVESTMENT OPPORTUNITIES.

IT IS DIFFICULT TO SPECULATE ON THE LIKELIHOOD OF THESE FINANCING METHODS BEING IMPLEMENTED. I RECOGNIZE THAT THERE ARE MANY OTHER DEMANDS ON STATE RESOURCES (INCLUDING ITS ABILITY TO BORROW IN THE CAPITAL MARKET), AND IT MAY VERY WELL BE THAT IN SOME CASES THE LEGISLATURE MAY NOT BE ABLE TO FREE-UP THE MONEY

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NEEDED TO FINANCE COGENERATION BECAUSE OF COMPETING PRIORITIES,  
THIS, OF COURSE, IS A POLICY ISSUE THAT ONLY THE LEGISLATURE CAN  
RESOLVE.

## II. BENEFIT SHARING

CONCEPTUALLY, "BENEFIT SHARING" HAS A LOT OF APPEAL. MOST BUDGET ANALYSTS, AT SOME POINT, HAVE FOUND THEMSELVES TROUBLED BY THE INCENTIVE STRUCTURE THAT IS PART OF THE TRADITIONAL BUDGET PROCESS: AGENCIES THAT FIND WAYS TO REDUCE COSTS HAVE THEIR BUDGETS CUT, WHILE THOSE THAT DO LITTLE TO IMPROVE THE EFFICIENCY OF THEIR OPERATIONS ARE OFTEN ABLE TO MAINTAIN THEIR BUDGETS INTACT. MANY OF US HAVE GIVEN CONSIDERABLE THOUGHT TO WAYS IN WHICH THE PROCESS CAN BE TURNED AROUND SO THAT THE "ANTS" ARE REWARDED AND THE "GRASSHOPPERS" ARE NOT. BENEFIT SHARING IS ONE WAY OF DOING THIS.

THERE ARE, HOWEVER, THREE DRAWBACKS TO BENEFIT SHARING IN PRACTICE.

1. IT STRENGTHENS THE INCENTIVES FOR AGENCIES TO INFLATE THE EXPENDITURE BASE, SINCE THE BASE IS THE STARTING POINT FOR MEASURING THE BENEFITS TO BE SHARED. TO SOME EXTENT, A SHARP-EYED BUDGET ANALYST CAN CATCH ATTEMPTS TO ARTIFICIALLY INCREASE THE BASE--PARTICULARLY WHEN THE AGENCY TAKES POSITIVE ACTION TO INFLATE THE BASE, SUCH AS BY OVERESTIMATING UTILITY COSTS. IT IS MORE DIFFICULT, HOWEVER, TO SPOT BASE INFLATION WHEN IT RESULTS FROM AGENCY INACTION--THAT IS, WHEN AN AGENCY'S BASE BUDGET BECOMES INFLATED BECAUSE IT FAILS TO TAKE ADVANTAGE OF WELL-KNOWN EFFICIENCY- OR PRODUCTIVITY-IMPROVING PROGRAMS.

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2. IT IS DIFFICULT TO DRAW THE LINE BETWEEN THOSE SAVINGS THAT ARE NOT EXPECTED, AND THUS SHOULD BE SHARED, AND THOSE THAT ANY COMPETENT MANAGER IS EXPECTED TO ACHIEVE. CLEARLY, ALL MANAGERS EMPLOYED BY THE STATE ARE EXPECTED TO MANAGE PRUDENTLY THE RESOURCES ENTRUSTED TO THEM. IDENTIFYING AND IMPLEMENTING WAYS OF DOING THE PUBLIC'S BUSINESS MORE EFFICIENTLY IS ONE OF THE THINGS ALL OF US ARE PAID TO DO. THUS, THE PROBLEM IS: WHERE DO YOU DRAW THE LINE? THIS MAY NOT BE A SERIOUS PROBLEM IF BENEFIT SHARING IS LIMITED TO THIRD-PARTY COGENERATION PROJECTS, SINCE THESE PROJECTS ARE UNIQUE IN STATE GOVERNMENT. ANY EFFORT TO APPLY THE CONCEPT OF BENEFIT SHARING MORE BROADLY, HOWEVER, WOULD ENCOUNTER PROBLEMS FOR WHICH THERE ARE NO EASY SOLUTIONS. AND IF THE LINE IS NOT DRAWN TIGHTLY, THE LEGISLATURE MIGHT FIND THAT BENEFIT SHARING ADDS, RATHER THAN REDUCES, PRESSURE ON THE STATE BUDGET.

3. BENEFIT SHARING COULD RESULT IN LOWER PRIORITY PROGRAMS BEING AUGMENTED, WHILE HIGHER PRIORITY PROGRAMS ARE CUT BACK. THERE IS NO GUARANTEE THAT THOSE AGENCIES RESPONSIBLE FOR DELIVERING VITAL--RATHER THAN MERELY DESIRABLE--SERVICES WILL BE THE SAME ONES THAT PROFIT FROM BENEFIT SHARING. THUS, HAD A BENEFIT SHARING PROGRAM BEEN IN PLACE DURING 1982-83, IT IS POSSIBLE THAT FUNDING FOR, SAY, THE MARITIME ACADEMY MIGHT HAVE BEEN AUGMENTED AT THE SAME TIME THAT DEEP CUTS WERE BEING MADE IN MEDI-CAL, AFDC, AND COMMUNITY COLLEGES.

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I MENTION THESE PROBLEMS NOT TO SUGGEST THAT BENEFIT SHARING IS UNDESIRABLE, BUT MERELY TO HIGHLIGHT THE DIFFICULTIES THAT THE LEGISLATURE WILL FACE IN MAKING THE CONCEPT WORK AS INTENDED.

WITH RESPECT TO THE APPLICATION OF BENEFIT SHARING TO THIRD-PARTY COGENERATION PROJECTS, I MAKE THE FOLLOWING SUGGESTIONS:

1. IF THE SAVINGS FROM COGENERATION ARE TO BE SHARED WITH THE HOST INSTITUTION, THE SHARING SHOULD TAKE PLACE REGARDLESS OF HOW THE COGENERATION PROJECT IS FINANCED. I CAN SEE NO ANALYTICAL BASIS FOR REWARDING THOSE INSTITUTIONS THAT DEVELOP COGENERATION THROUGH A THIRD-PARTY ARRANGEMENT, BUT NOT THOSE THAT DEVELOP COGENERATION USING CAPITAL OUTLAY FUNDING PROVIDED BY THE STATE. DOING SO, MOREOVER, WOULD ENCOURAGE INSTITUTIONS TO PROCEED WITH COGENERATION PROJECTS USING A THIRD-PARTY ARRANGEMENT EVEN WHEN THE SAVINGS TO THE STATE WOULD BE GREATER IF CAPITAL OUTLAY FINANCING WAS USED. FOR EXAMPLE, THE \$4 MILLION STATE-FUNDED COGENERATION PROJECT AT SAN DIEGO STATE UNIVERSITY WILL REDUCE UTILITY COSTS BY \$1.9 MILLION IN ITS FIRST YEAR OF OPERATION. IN COMPARISON, THE SAN JOSE PROJECT COULD RETURN \$169,000 TO THE STATE IN ITS FIRST FULL YEAR OF OPERATION (\$8,000 REVENUE, \$50,000 REIMBURSEMENT FOR MONITORING/MAINTENANCE, AND \$111,000 FOR REASSIGNED LABOR).

2. EFFORTS SHOULD BE MADE TO STANDARDIZE THE COST BASE FROM WHICH COGENERATION SAVINGS ARE MEASURED. OTHERWISE, THOSE INSTITUTIONS THAT HAVE BEEN THE MOST AGGRESSIVE IN MINIMIZING THEIR UTILITY BILLS WILL GET CONSIDERABLY LESS THAN THOSE INSTITUTIONS WITH THE POOREST RECORD OF ENERGY CONSERVATION--THE "ANTS/GRASSHOPPERS" PROBLEM. I RECOGNIZE, OF COURSE, THE DIFFICULTIES INVOLVED IN DEVELOPING NORMS THAT COULD BE USED IN CALCULATING THE SAVINGS FROM COGENERATION. IT MAY BE THAT THIS SUGGESTION IS NOT FEASIBLE.

3. THE USE OF SHARED BENEFITS SHOULD BE SUBJECT TO LEGISLATIVE REVIEW. OTHERWISE, THESE FUNDS MAY BE USED TO FINANCE PROJECTS THAT EITHER WERE REJECTED BY THE LEGISLATURE OR WOULD REQUIRE SIGNIFICANT GENERAL FUND SUPPORT IN THE FUTURE. WHILE ONE MAY ARGUE THAT INSTITUTIONS SHOULD BENEFIT FINANCIALLY FROM UNDERTAKING COGENERATION PROJECTS, THEY SHOULD NOT BE ABLE TO USE THE ADDITIONAL FUNDS IN A WAY THAT IS AT ODDS WITH LEGISLATIVE POLICY.

4. THE DEGREE OF BENEFIT SHARING SHOULD BE DETERMINED AS PART OF THE BUDGET PROCESS, RATHER THAN FIXED IN ADVANCE. I RECOGNIZE THAT THIS REMOVES MUCH OF THE CERTAINTY THAT INSTITUTIONS CONTEMPLATING COGENERATION PROJECTS MIGHT CONSIDER A NECESSARY PRECONDITION FOR THEIR PARTICIPATION. SUCH CERTAINTY, HOWEVER, COMES AT THE LEGISLATURE'S EXPENSE, BY LIMITING YOUR OPTIONS FOR MEETING THE STATE'S HIGH PRIORITY NEEDS.

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I HAVE NO ANALYTICAL BASIS FOR ADVISING YOU AS TO WHAT THE  
SPECIFIC BENEFIT SHARING RATIO SHOULD BE. THAT IS A POLICY CALL  
THAT ONLY YOU CAN MAKE.