COGENERATION EQUIPMENT INVESTMENTS: THE EFFECTS OF RAPID AMORTIZATION

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INTRODUCTION

In 1980, the California Legislature enacted AB 1404 (Chapter 1328, Statutes of 1980), which shortened the time period over which certain cogeneration equipment can be depreciated for California tax purposes. Specifically, AB 1404 provides that certain cogeneration equipment placed in service before January 1, 1986, can be depreciated over either a one-year or five-year period when the equipment is located in-state, and over a five-year period when the equipment is located out-of-state. Prior to AB 1404, the amortization period for cogeneration equipment corresponded to the useful economic life of the equipment. This could be as much as 20 years or more.

The Legislature's intent in enacting AB 1404 was to stimulate investment in cogeneration equipment by making it more profitable, and thereby make the production and use of energy within California more efficient.

PURPOSE OF THE REPORT

Assembly Bill 1404 also required the Legislative Analyst's office to submit to the Legislature a report on cogeneration activity in California. This report must evaluate the measure's effects on state revenues, general economic activity, and the level of investment in cogeneration facilities, as well as the benefits to taxpayers from the shorter amortization period.

OUTLINE OF THE REPORT

This report is divided into five chapters.

Chapter I presents general background information about cogeneration, including what cogeneration is and how it works, recent trends in cogeneration activity within California, the reasons why cogeneration has become increasingly popular, and the prognosis for cogeneration in the future.

Chapter II discusses the provisions of California tax law that apply to cogeneration investments, and how these provisions differ from those contained in the federal law.

Chapter III discusses the potential economic effects of California's reduced amortization periods, including the potential effects on the level of cogeneration investment in the state.

Chapter IV evaluates the empirical evidence concerning the economic effects of AB 1404 and discusses the implications for state revenues. This chapter relies heavily on the results of a survey we conducted of approximately 200 private and public sector entities that either now use, or have specific plans to use, cogeneration equipment.

Chapter V presents our recommendation to the Legislature regarding the amortization period for cogeneration equipment.

This report was prepared by Jon David Vasche and reviewed by Peter Schaafsma. Marilyn Bybee and Phil Dyer assisted in collecting the survey data presented herein, and Lynn Kiehn was responsible for typing the report.

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EXECUTIVE SUMMARY

In 1980, the Legislature enacted AB 1404 (Chapter 1328), which shortened the time period over which certain cogeneration equipment can be depreciated for California tax purposes. The intent of AB 1404 was to stimulate investment in cogeneration equipment by making such investment more profitable, and thereby make the production and use of energy in California more efficient.

Assembly Bill 1404 also requires the Legislative Analyst to prepare a report on cogeneration for the Legislature, containing an evaluation of AB 1404's effects on state revenues, general economic activity, and the level of investments in cogeneration facilities, as well as an analysis of the benefits to taxpayers from the measure. This report has been prepared in response to that requirement.

Principal Findings

The principal findings of the report are that:

- The shorter depreciation periods provided by AB 1404 have not stimulated significantly cogeneration investments in California, and
- In all likelihood, reducing the depreciation period has cost the state more in tax revenues than it has generated.

Although AB 1404 has made cogeneration investments more attractive by shortening the "payback" periods and raising the rates of return for these investments, these inducements to invest in cogeneration equipment are not very strong. This conclusion is supported on both theoretical and empirical grounds. For example:

- It appears that AB 1404's effects on a typical medium-sized cogeneration project are to shorten its payback period (normally in the range of three to seven years) by only about 35 days, and increase its annual rate of return (normally in the range of 20 percent to 35 percent) by no more than 1.6 percentage points.
- A statewide survey of California cogenerators which we conducted found that only a bit over 5 percent of the respondents specifically attributed their cogeneration investment decisions to AB 1404, over one-third did not even take advantage of AB 1404's provisions, about half were not even aware of the provisions at the time they made their investment decisions, and most ranked AB 1404 relatively low on the list of various economic and regulatory factors that affect cogeneration investment decisions.

Consequently, the main effect of AB 1404 is to increase cogenerators' after-tax income and, because of state-federal tax interactions, redistribute revenues from California to the federal government. This conclusion is supported both by our analysis of the basic economics of cogeneration projects and the results of the statewide survey of California cogenerators which we conducted. Thus, we conclude that AB 1404 has not been successful in encouraging cogeneration investments within California, as intended.

Recommendation

In the absence of data indicating that AB 1404's rapid amortization provisions are a cost-effective means for stimulating cogeneration activity

in California, we recommend that the Legislature not extend these provisions beyond their December 31, 1985, termination date.

CHAPTER I

BACKGROUND

WHAT IS "COGENERATION"?

The term "cogeneration" refers to a process which uses a single fuel source, such as oil or natural gas, to produce--simultaneously--both thermal energy and electricity.

Chart 1 illustrates the several different basic types of cogeneration systems which currently are in use. The most frequently used cogeneration process involves recapturing thermal energy that normally is discharged and lost when steam heat is produced for industrial, commercial and residential applications, such as the heating of buildings. This excess thermal energy can be used to produce electricity which is either consumed directly, sold to a utility company, or sold to some third party.

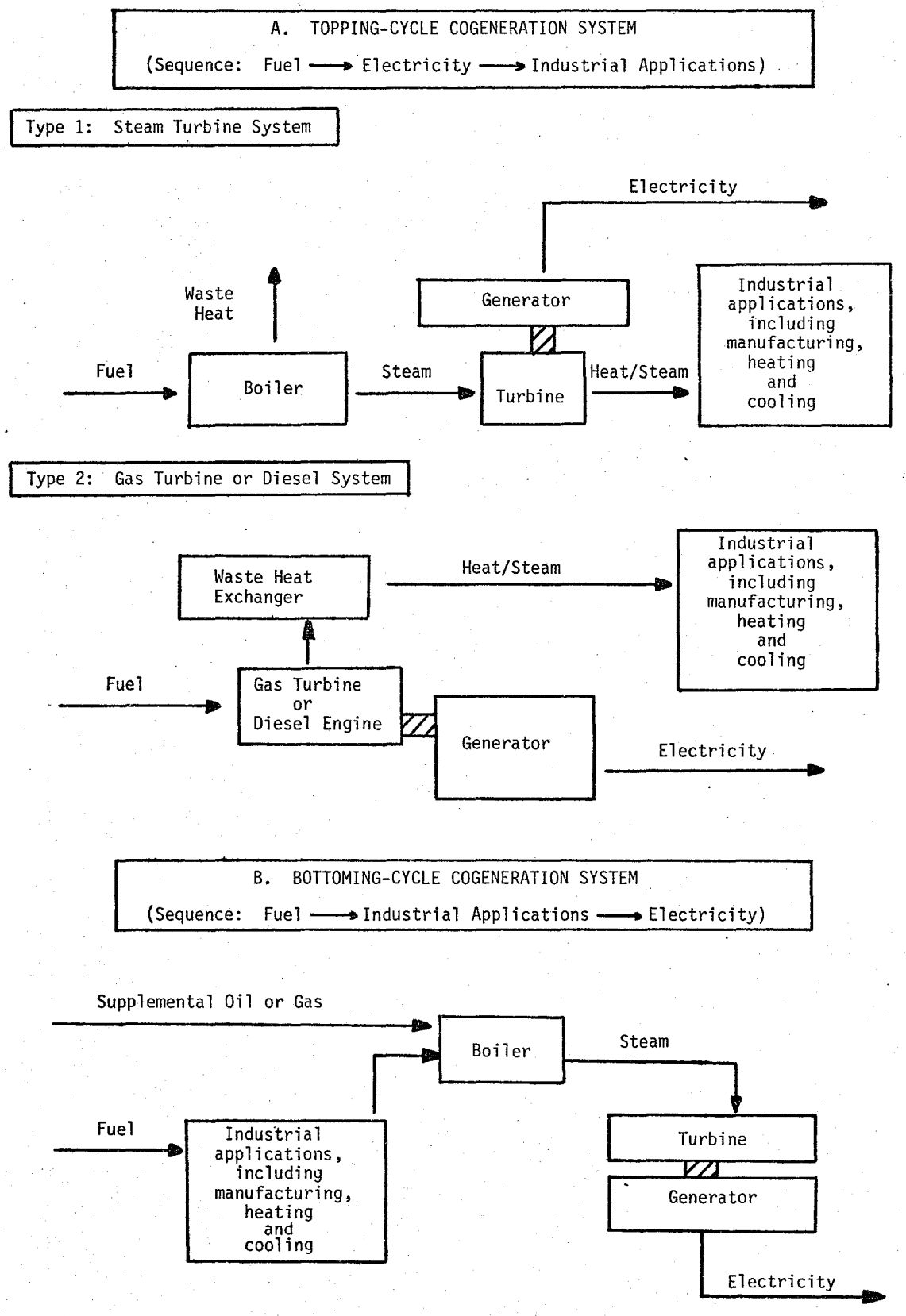
A key feature of cogeneration is its efficiency in producing energy. Cogeneration can produce as much as two-to-three times more combined thermal and electrical energy from a given amount of fuel (such as oil or natural gas) than what would be obtained if the steam heat and electricity were produced separately through independent processes. As a result, cogeneration has the potential to help both conserve scarce fuel supplies and reduce the overall costs of producing energy.

APPLICATIONS, IMPLEMENTATION AND COSTS OF COGENERATION SYSTEMS

In California, cogeneration systems currently are being used for such diverse purposes as walnut processing, winemaking, petroleum recovery, state prison operations, municipal wastewater treatment plants, heating and cooling buildings, and warming swimming pools. Cogeneration systems can be

Chart 1

Alternative Types of Cogeneration Systems



Source: Cogeneration Handbook, California Energy Commission, September 1982.

implemented either by retrofitting existing commercial and industrial plants with cogeneration equipment, or by installing entirely new energy systems from "ground-up." Although many systems are of a large scale, recent technological advances also have led to the development of relatively small, "packaged" cogeneration systems, which are factory-built, modular and mobile.

The costs of cogeneration systems vary considerably, depending on the technical characteristics, application, and size of the system. The capital costs of most cogeneration units currently range from about $800 to $1,200 per kilowatt of electricity-generating capacity, with the total capital costs ranging anywhere from several hundreds of millions of dollars for large industrial operations, downward to $100,000 or less for small-scale commercial applications.[1]

THE CURRENT VOLUME OF COGENERATION ACTIVITY IN CALIFORNIA

The cogeneration industry is large and rapidly growing, both nationally and in California. In 1984 alone, total expenditures on cogeneration-related equipment and services nationwide reached an estimated $2 billion. Moreover, in just three years, cogeneration's share of total U.S. electrical production capacity more than doubled--from around 3 percent in 1981 to 7 percent in 1984--and is expected to reach 15 percent by the year 2000.

1. Capital costs per kilowatt of capacity differ greatly depending on the type of fuel used. For example, the California State Energy Commission estimated that, as of late 1982, these costs ranged from $500 to $900 for oil or gas fuel, $900 to $1,500 for biomass fuel (e.g., wood chips, walnut shells, etc.) and $1,800 to $3,000 for municipal solid waste fuel. In addition, because economies of scale can be realized in cogeneration plants, larger plants typically cost less to build per unit of capacity than do smaller plants.

Identifying precisely the number and total energy-producing capacity of all cogeneration facilities in California is difficult. This is due to the rapid growth that the industry is experiencing, as well as to the fact that many cogeneration facilities are relatively small and difficult to identify, particularly if they do not sell any of their electricity to a utility company. Nevertheless, information on cogeneration activity in California is available from utility companies who are aware of most moderate-to-large cogeneration facilities, industry trade associations, governmental entities such as the California Energy Commission, and private energy research firms.

These sources indicate that at the start of 1984, there were at least 140 cogeneration projects installed and operational in California, having a total energy-producing capacity of 1.2 million kilowatts (1,200 megawatts)--about equivalent to the energy-producing capacity of a large nuclear reactor. This represents a little more than 10 percent of the 11 million kilowatts of capacity in existence nationally. The state's 10 largest cogeneration facilities, which are primarily operated by firms in the oil, paper, and chemical industries, accounted for about one-third of California's capacity. Another 1 million kilowatts of capacity are anticipated to come "on line" in California by 1986, and several hundred other California cogeneration projects appear to be in the active discussion or planning stage at this time.

REASONS FOR COGENERATION'S POPULARITY

Two groups of factors collectively have been responsible for the growing popularity of cogeneration in California and the nation--economic factors and governmental policies.

Economic Factors

Since 1972, energy users have been faced with significant increases in prices for fuels and electricity. For instance, the California Energy Commission reports that between 1977 and 1982, the average price of fuel oil paid by the state's electrical utilities increased by over 175 percent, and prices of electricity to Californians nearly doubled. In addition to rising prices, energy users also have, at times, experienced temporary episodes of oil, natural gas and even electricity supply interruptions as a result of both economic factors and international political developments. Although rising fuel prices and disruptions in fuel supplies are not significant problems at this particular time, the memories of these problems, along with higher fuel and electricity price levels, linger on. Together they have made energy users more interested in conserving fuel, reducing energy costs and becoming more self-sufficient in producing their own energy. This interest, coupled with the inherent economic efficiency of cogeneration equipment, has stimulated demand for this equipment.

Governmental Policies

During recent years, both the federal and state governments have adopted policies that are favorable to investment in cogeneration equipment. These policies include:

- Granting cogenerators certain exemptions from restrictions on the use of oil and natural gas under the nation's Powerplant and Industrial Fuel Use Act.
- Placing cogenerators in the highest-priority industrial category for natural gas use in the state.

- Providing favorable treatment for cogenerators under the state's environmental quality regulations, which helps cogeneration projects to satisfy air emission standards.[1]

However, probably the single most important set of governmental policies responsible for cogeneration's growing appeal is contained in the Public Utility Regulatory Policies Act (PURPA), which was enacted as a part of the 1978 National Energy Act. As implemented by the California Energy Commission, PURPA:

- Requires utilities to purchase electricity from cogenerators--regardless of their need for this power--and to pay cogenerators the "avoided costs" which the utilities otherwise would incur if they sought to obtain electricity from other sources such as new power plant facilities.
- Enables cogenerators to buy back at regular rates and for their own use the electricity they sell to a utility, even though what they originally were paid for the electricity by the utility may exceed the regular rates the utility charges its customers for electricity. That is, utilities are required to let cogenerators "make a profit" by selling and then buying back the electricity they generate.
- Guarantees cogenerators power interconnections with utilities and backup power services from utilities, assures cogenerators of receiving supplemental power from utilities at specified rates whenever they need it, and exempts cogenerators from being

1. For additional discussions of these provisions and those of PURPA (discussed below), see California Energy Commission, Cogeneration Handbook (September 1982), especially Chapters 5 and 6.

regulated as "public utilities" by federal and state agencies, under specified conditions.

The reason why PURPA's provisions are so important for cogenerators is that in order to reap the full potential economic benefits from cogeneration, cogenerators must be able to market profitably the electricity they produce but are not able to personally use. PURPA, by guaranteeing cogenerators a market and favorable price for their electricity, has limited the problems that investors in cogeneration systems face in profitably marketing their electricity.

The positive impact which PURPA has had on cogeneration is well-documented. For instance, during just the five-month period immediately after the Supreme Court upheld PURPA's provisions in 1982, commitments for cogeneration projects increased the nation's estimated cogeneration capacity by 25 percent.

Assuming that the provisions of PURPA remain in place and that fuel and electricity prices do not slide back toward their early 1970s levels, it is likely that the recent resurgence in cogeneration will continue, and that the use of cogeneration and its share of total power production will rise in the years to come. This is especially likely if continuing technological improvements in cogeneration equipment reduce the capital costs of implementing cogeneration systems, and provide small-scale energy users--individuals, small firms, and small local governmental entities--with relatively inexpensive and easily installed modular and mobile cogeneration systems.

CHAPTER II

AMORTIZING COGENERATION INVESTMENTS UNDER CALIFORNIA LAW

This chapter summarizes California's tax laws which govern the amortization of cogeneration equipment. The chapter also summarizes, for comparative purposes, federal tax laws governing the amortization of this equipment. Before discussing these provisions, however, it is useful to define what the tax laws mean by the term "amortization."

WHAT DOES THE TERM "AMORTIZATION" MEAN?

For tax purposes, the term "amortization" generally refers to the method and time schedule by which physical assets, such as cogeneration equipment, can be depreciated.

When individuals and businesses compute the amount of their income on which they are required to pay taxes, both federal and state tax laws permit them to deduct the expenses they incur in earning their income. Whenever these deductible expenses involve business-related equipment and facilities, they are referred to as "depreciation deductions." The term "amortization" refers to the exact manner in which these depreciation allowances are claimed, and the term "amortization period" is the number of months or years over which the cost of acquiring and installing equipment and facilities must be "written off."

Once an asset's amortization or depreciation period has been established, the actual dollar amount of depreciation deductions which can be claimed in any given year depends on the type of depreciation method used by the taxpayer. These methods can include, among others,

"straight-line" depreciation (where the depreciation deduction is the same for all years) and "accelerated" depreciation (where depreciation deductions are highest in the early years of an asset's life-span and lower in later years).

FEDERAL TAX PROVISIONS REGARDING THE AMORTIZATION OF COGENERATION EQUIPMENT

Beginning in 1981, new tangible depreciable property such as cogeneration equipment is depreciated for federal tax purposes under what is known as the Accelerated Cost Recovery System (ACRS). Under ACRS, cogeneration equipment that is not public utility property and that has an economically useful life-span of 12 years to 25 years generally is classified as "five-year" property, meaning that its depreciable cost may be "written off" for federal tax purposes over a five-year period.

Prior to the enactment of ACRS in 1981, cogeneration systems, as well as most other capital equipment, generally were depreciated for federal tax purposes according to what is called the Asset Depreciation Range (ADR) system. Under ADR, the applicable depreciation period for most types of cogeneration property ranges from a low of 17.5 years to a high of 26.5 years, and averages 22 years. Thus, ACRS significantly reduced the federal depreciation period for new cogeneration investments--by an average of about 17 years.[1]

1. The applicable asset category under ADR for cogeneration-related equipment is that designated for "industrial steam and electric generation and/or distribution systems." The ADR system still is used for tangible property assets put in place before 1981, and for certain assets put in place after 1980 for which ACRS does not apply.

CALIFORNIA TAX PROVISIONS REGARDING THE AMORTIZATION OF COGENERATION EQUIPMENT

Prior to 1980, California tax law contained no special tax provisions regarding the amortization of cogeneration equipment. Rather, the state's rules for amortizing cogeneration equipment, like its rules for amortizing most other types of tangible property, conformed to the federal depreciation rules under the ADR system described above. California adopted the general federal ADR system (with some modifications) in 1976, and has continued to use it even though the federal government switched to ACRS in 1981.

California, like the federal government, has permitted a variety of methods to be used to compute depreciation deductions in conjunction with the ADR system. These methods include straight-line depreciation, double-declining-balance depreciation, and sum-of-the-years-digits depreciation. Prior to the enactment of AB 1404, cogeneration systems in general qualified for any of these alternative depreciation methods. However, oil or gas-fired boilers, which are a component of many cogeneration systems, were themselves restricted to straight-line depreciation.

California's Current Amortization Provisions (AB 1404)

California's current tax laws regarding the amortization of cogeneration equipment stem from AB 1404, which revised both the amortization period, as well as the method of computing annual depreciation deductions, for cogeneration equipment. Specifically, AB 1404 provides that:

- California taxpayers may elect to depreciate qualified cogeneration equipment over either a one-year or five-year period if the equipment is located within California, and over a five-year period if the equipment is located outside of California. This option is the same as that available to those investing in certified pollution control facilities and certain alternative energy equipment.[1]
- These shortened depreciation periods may be used only for cogeneration equipment placed in service before January 1, 1986, and the actual depreciation allowances claimed under these shortened periods must be computed under the straight-line method.
- In order to qualify for the shortened depreciation periods, cogeneration equipment must satisfy the definition of such equipment contained in Section 25134 of the California Public Resources Code. This section defines cogeneration as the sequential use of energy for the reproduction of electrical and useful thermal energy, in either order, subject to the following two conditions:

1. Both California law and federal law permit certified pollution control facilities to be amortized over five years, with California law also allowing a 12-month amortization option for equipment located in California. In the case of alternative energy equipment, California's amortization provisions are basically the same as those for cogeneration equipment; there is no special federal amortization treatment. However, alternative energy equipment (which some cogeneration systems are classified as) is not eligible for accelerated write-offs if it uses fossil fuel as its primary energy source, which is still the case for most cogeneration projects.

- At least 5 percent of a cogeneration project's total annual energy output must be in the form of useful thermal energy.
- For a cogeneration system where the useful thermal energy is produced after the electricity is produced, the system must meet a minimum level of efficiency in converting fuel to energy.[1]

- The portion of cogeneration equipment costs which may be rapidly amortized depends on the equipment's economically useful life-span. If its life-span is not over 15 years, its entire depreciable cost can be rapidly amortized under the one-year or five-year options. If, however, the equipment's life-span exceeds 15 years, only a portion of this cost can be rapidly amortized--the portion corresponding to the percent that 15 years bears to the total life-span. For example, if the equipment's life-span is 22 years, 68.2 percent (that is, 15 years divided by 22 years) of its depreciable cost can be rapidly amortized. The remaining portion of the equipment's depreciable cost--31.8 percent in this example--is depreciated over 22 years under the regular ADR system generally used for most other tangible personal property in California.

Assembly Bill 1404 also provides that if a taxpayer's cogeneration equipment qualifies for both rapid amortization under AB 1404 and the state's solar tax credit, only one of these tax benefits may be chosen.

1. Specifically, the system's useful annual electricity output plus one-half of its useful annual thermal energy output must be at least 42.5 percent of any natural gas and oil energy input. If a system's efficiency level is lower than this, it cannot qualify for rapid amortization.

That is, rapid amortization is "in lieu" of the solar tax credit. (As a practical matter, this provision is not all that significant since the technical characteristics of cogeneration systems generally do not qualify them for the solar credit.) In addition, taxpayers who elect to use the five-year amortization period may, at any time during the five years, change their mind and switch back to using normal depreciation rules to claim what remains of their equipment's total allowable lifetime depreciation allowance.

CHAPTER III

THE POTENTIAL ECONOMIC AND FISCAL EFFECTS OF REDUCING THE AMORTIZATION PERIOD

In order for a tax incentive such as rapid amortization to yield significant economic effects, the incentive must make individual business investment projects more attractive and thereby stimulate the overall level of investment in these projects.

Decisions to invest in capital equipment, including cogeneration systems, typically are influenced by a wide variety of factors including the total capital costs of the equipment, the terms of financing its acquisition, the future revenue streams and operating and maintenance costs associated with the equipment, and the risks and uncertainties involved in projecting these revenues and costs. In general, however, two criteria dominate most investment decisions:

- A proposed project's payback period (that is, the number of years it takes for the project to "pay for itself" from the net revenues which it generates), and
- A project's after-tax rate of return (that is, the average annual percentage return on the amount of money invested in the project, computed over the project's entire economically useful life-span).

Normally, the shorter the payback period and higher the rate of return, the more attractive an investment project becomes. Thus, understanding the effects of rapid amortization on the payback period and

rate of return for cogeneration projects is the key to evaluating the economic and fiscal effects of AB 1404.[1]

HOW SHORTENED AMORTIZATION PERIODS CAN AFFECT INVESTMENT PAYBACK PERIODS AND RATES OF RETURN

Shortening the amortization period over which depreciation allowances may be claimed for tax purposes improves the attractiveness of investment projects because it both reduces an investment's payback period and increases its rate of return.

It accomplishes this because a shortened amortization period, while not changing the total amount of depreciation allowances which may be claimed over time, does allow these allowances to be claimed "sooner" rather than "later." Since depreciation allowances reduce the amount of taxes paid on an investment's profits, rapid amortization increases the amount of after-tax income realized in the early years of a project's life, which in turn shortens the payback period. This "shifting forward" of after-tax income from later years to earlier years also raises the rate of return. This occurs because, due to the "time value of money," a dollar of after-tax profits realized "sooner" is worth more than the same dollar of after-tax profits realized "later."[2]

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1. Joint application of the rate-of-return and payback-period investment criteria appears to be the practice of many firms involved in California cogeneration activities. For example, a large-scale cogeneration survey conducted for Pacific Gas and Electric Company in 1980 found that California firms investing in cogeneration systems sought rates of return averaging about 26 percent and ranging from 15 percent to 40 percent, along with payback periods of two to three years.
2. Certain entities, such as nonprofit organizations and governmental entities, cannot directly benefit from rapid amortization since they do not pay taxes. However, it is possible for them to benefit indirectly from rapid amortization by such means as acquiring the use of capital facilities through lease arrangements with entities that are subject to taxation and that, because they do directly benefit from rapid amortization, are willing to lower their lease charges.

An Illustrative Example

Table 1 presents an example of how a shortened amortization period for California tax purposes can affect both the payback period and the financial returns on a cogeneration investment project. The example assumes a medium-sized cogeneration project with an initial capital cost of $6 million, an economically useful life-span of 22 years, and financial returns consistent with what past surveys suggest characterize most cogeneration projects.

The table indicates that after accounting for all federal and state tax provisions available to cogenerators except for rapid state amortization, the project has a payback period of 3.53 years and an internal rate of return of 35.2 percent annually.

Next, the table shows that when the effects of California's shortened amortization periods under AB 1404 are considered, the project's payback period drops to a bit under 3.5 years if the five-year amortization-period option is selected, and to slightly over 3.4 years if the one-year amortization-period option is selected. The table also shows that the rate of return rises to 35.9 percent for the five-year amortization-period option and to 36.8 percent for the one-year amortization-period option.[1]

1. Not all cogeneration equipment qualifies for accelerated depreciation under California tax law. For example, those oil or gas-fired boilers which are not classified as "Section 38" property by the Internal Revenue Service (IRS) must use straight-line depreciation in California. If straight-line depreciation is assumed, the maximum effects of AB 1404 in Table 1 become a reduction of 45 days in the payback period and an increase in the rate of return of 1.9 percentage points.

Table 1

How Different Tax Provisions Can Affect the
Financial Returns and Payback Period for a Cogeneration Project
An Illustration

	Average Annual After-Tax Rate of Return	Payback Period	Dollar Value Over Project's Life-span of:[1] After-Tax Profits[2]	State Taxes Paid	Federal Taxes Paid
A. Financial return and payback period for an investment project assuming:[3]					
• $6 million initial capital cost • 22-year economically useful life-span • No federal investment tax credit • Straight-line depreciation claimed over 22 years for both federal and state tax purposes	22.7%	5.28 years	$10,382,830	$1,524,359	$6,603,017
B. Financial return and payback period assuming the following tax provisions are cumulatively applied:					
1. Federal Provisions					
• 10 percent investment tax credit[4]	26.1%	4.76 years	$10,982,830	$1,524,359	$6,003,017
• Accelerated depreciation[5]	28.6	4.39 years	11,360,163	1,524,359	5,625,683
• ACRS depreciation rules[6]	34.8	3.56 years	11,934,885	1,524,359	5,050,962
2. California Provisions					
• Accelerated depreciation[5]	35.2	3.53 years	11,977,365	1,445,693	5,087,148
• Shortened amortization periods under AB 1404[7]					
◦ five-year option	35.9	3.48 years	12,032,254	1,344,046	5,133,906
◦ one-year option	36.8	3.43 years	12,067,464	1,278,843	5,163,899
C. Total incremental effect of tax provisions					
1. Provisions excluding AB 1404	12.5%	-21.0 months	$1,594,535	-$78,666	-$1,515,869
2. AB 1404 provisions	1.6	-1.2 months	90,099	-166,850	76,751
Total, federal and state provisions including AB 1404	14.1%	-22.2 months	$1,684,634	-$245,516	-$1,439,118

1. Details may not add to totals due to rounding. Dollar values are shown in "present value" terms, assuming a constant discount rate of 10 percent per annum.
2. Computed as gross revenues minus operating expenses, maintenance costs, and tax payments. This amount exceeds the net present value (NPV) of the project by $6 million, which is the initial capital cost of the project.
3. Computation assumes an investment project having a fully depreciable initial capital cost of $6 million and no salvage value at the end of 22 years. First-year net revenues are assumed to equal about $2 million, the net effect of $4 million in gross revenues and $2 million in maintenance and operating costs (including fuel costs). Both current-dollar revenues and current-dollar costs are subject to 6 percent inflation per year, whereas "real" (that is, constant-dollar) revenues and costs are assumed to fall and rise, respectively, by 1.5 percent per year due to equipment wear-and-tear and loss-of-efficiency over time. Tax rates are assumed to equal those currently levied on corporations: 9.6 percent for state purposes and 46 percent for federal purposes.

4. Property on which the regular federal investment tax credit (ITC) may be claimed is referred to as "Section 38" property. Section 38 property generally includes tangible personal property; however, it does not include (with certain exceptions) any boiler fueled primarily by petroleum, petroleum products (excluding petroleum coke or pitch), or natural gas. Thus, not all cogeneration projects or components of cogeneration projects automatically qualify for the ITC.
5. State and federal tax laws have permitted several methods of accelerated depreciation in the past, including the double-declining-balance method and the sum-of-the-years-digits method. Figures shown here reflect the latter method, because of any single method for which simulations were run it resulted in the highest present-value investment return for the particular hypothetical investment project shown above. It should be noted, however, that not all cogeneration equipment qualifies for accelerated depreciation. For example, oil or gas-fired boilers which are not deemed "Section 38" property must use straight-line depreciation under current California tax law, and also had to do so under pre-1981 federal law. In the case of federal accelerated depreciation, figures include the effects of the special first-year "bonus depreciation" provision.
6. The Accelerated Cost Recovery System (ACRS), enacted as part of the Economic Recovery Tax Act of 1981, permits cogeneration equipment to be depreciated over a five-year period using percentages of the equipment's depreciable cost basis equal to 15 percent in year one, 22 percent in year two, and 21 percent in years three, four, and five. In addition, ACRS requires that for property placed in service after 1982, either (a) the depreciable basis of the property must be reduced by an amount equal to 50 percent of the regular investment tax credit, or (b) the investment tax credit must be reduced by 2 percentage points (in the above case, from 10 percent to 8 percent). The figures shown in the table assume the first option, since for this particular hypothetical project it maximizes the present-value of the investment return.
7. Because this project's useful economic life-span equals 22 years, approximately 68 percent of the project's capital cost qualifies for rapid amortization under AB 1404. The remaining 32 percent is depreciated over the full 22-year period using accelerated deprecation (in this case, the sum-of-the-years-digits method).

Thus, the example clearly demonstrates that shortening the amortization period for cogeneration equipment does, indeed, reduce the payback period and raise the rate of return on investment projects. However, the example also demonstrates that the magnitude of these effects is relatively small. The reduction in the payback period is a maximum of 35 days, and the increase in the rate of return is no more than 1.6 percentage points. These effects appear especially small when compared to the combined effects of those federal tax provisions shown in the table such as liberalized depreciation methods and investment tax credits. For this reason, the ability of shorter California amortization periods to increase significantly investments in cogeneration facilities and increase the level of economic activity in California would seem to be limited. This is particularly true if a potential investor in cogeneration equipment is only able to select the state's five-year, as opposed to the one-year, amortization-period option.[1]

DOLLAR BENEFITS TO TAXPAYERS AND REVENUE LOSSES TO THE STATE

The hypothetical cogeneration project described in Table 1 also illustrates the dollar magnitudes of the benefits derived by the taxpayer

1. Tax considerations might induce a taxpayer to select the five-year, rather than one-year, amortization option, even though he or she was entitled to select the latter. For example, in the case of the investment project illustrated in Table 1, the one-year amortization-period option would produce a negative state income tax liability of about $217,000 in the first year. Since California generally does not permit the "carrying-forward" of tax losses from one year to the next (except for certain specified "start-up" losses incurred by new small businesses), a one-year amortization period probably would not be used for this project unless the taxpayer had sufficient income from other sources to "absorb" most of the deduction.

and the revenue losses realized by the state as a result of rapid amortization.[1]

The table indicates that prior to considering California's rapid amortization provisions, the dollar value of the after-tax profits that this typical cogeneration project generates during its lifetime is slightly less than $12 million, while the project's owners pay about $1.5 million in state income taxes and $5.1 million in federal income taxes on profits derived from the project. After incorporating the effects of California's rapid amortization provisions, the table shows that:

- The one-year amortization-period makes the lifetime after-tax income from the cogeneration project about $90,000 higher than it would be otherwise (about $5,000 more per year of its life-span). Under the five-year option, lifetime project income is about $55,000 higher (an average of about $2,500 per year).
- In contrast, the cost to the state of permitting rapid amortization in terms of foregone tax revenues, is about $167,000 (an average of about $7,600 per year) under the one-year amortization-period option, and $102,000 (an average of about $4,620 per year) under the five-year option.[2]

1. These dollar magnitudes have been converted into "present value" terms, using an annual discount rate of 10 percent. Tax provisions such as rapid amortization and accelerated depreciation do not generally change the nominal (that is, undiscounted) dollar values of a project's lifetime after-tax returns, depreciation deductions and tax payments. Rather, their effect is to shift the timing of when depreciation deductions are claimed and taxes are paid. This change in timing, however, does change the discounted (or "real") values of after-tax returns, depreciation deductions and tax payments.
2. These costs assume that the cogeneration project would have been undertaken even in the absence of rapid amortization. In contrast, if the granting of rapid amortization results in a new cogeneration project that is not offset by reduced investments elsewhere, Table 1 shows that there would be a gain in state revenues of about $1.3 million.

Both the costs to the state and the benefits to the taxpayer stemming from AB 1404 are concentrated heavily in the early years of a project's life, due to the "shifting forward" of depreciation allowances. (For example, under the five-year amortization option the state revenue loss in the first year alone is about $44,000.[1]) These state costs and taxpayer benefits then are offset by state revenue gains and taxpayer losses in later years, when depreciation will be unavailable because it already has been exhausted. However, despite these offsets, taxpayer benefits and state costs still remain at the end of the project's lifetime. This is because of the "time value of money." That is, taxpayers are better off and the state is worse off when a dollar of taxes is paid "later" rather than "sooner."

The information summarized in the table indicates that the costs to the state of providing rapid amortization for a particular cogeneration project are likely to be considerably greater than the tax savings which the investors in these projects actually realize. This is because a significant share of the reduction in state tax liabilities realized by investors--nearly one half in our example--will be offset by increases in their federal income tax liabilities. This is because state income tax payments can be deducted from adjusted gross income on federal income tax returns, thereby reducing federal tax liabilities. Since rapid amortization reduces state income taxes, it has the effect of raising the

1. The tax losses from first-year depreciation under AB 1404 would amount to about $94,000, assuming a 9.6 percent tax rate and a depreciable asset value of $6 million, of which 68 percent may be rapidly amortized and the remaining 32 percent is depreciated using the sum-of-the-years accelerated method over a 22-year period. In contrast, the tax losses from first-year depreciation under the ADR system using the sum-of-the-years accelerated method amounts to about $50,000.

California Public Utilities Commission (PUC). Altogether, the survey was distributed to approximately 200 private sector firms, nonprofit organizations and governmental entities in California.

SUMMARY OF SURVEY RESULTS

Approximately 45 percent of the surveys which we mailed out to cogenerators were completed and returned. The results of the survey are summarized below.[1]

General Characteristics of Respondents

Approximately two-thirds of the respondents were private sector companies, and the majority had over 500 employees. They reported actual or planned cogeneration investments of over $850 million, and accounted for about 35 percent of total cogeneration electricity-producing capacity in California as of mid-1984. About 58 percent of this cogenerated electricity was directly consumed by the cogenerators themselves, 39 percent was sold to a utility, and 3 percent was sold to some third party. Of the 39 percent which, on average, was sold to utilities, 35 percent (or 14 percent of total cogenerated electricity) was "bought back" by cogenerators, presumably to take advantage of the opportunity that PURPA and the PUC give cogenerators to "make money" on such power exchanges (discussed in Chapter I). The respondents also reported that, while over 70 percent of their cogeneration equipment was purchased from retailers or wholesalers located in California, only 36 percent of the equipment was actually manufactured in California.

1. The survey results discussed below have been calculated, unless otherwise noted, so as to reflect survey responses for the subgroup of respondents answering the specific questions identified. This procedure was used because some respondents did not answer every question on the survey form.

CHAPTER IV

EMPIRICAL EVIDENCE ON THE ECONOMIC AND FISCAL EFFECTS OF AB 1404

The preceding chapter discussed the potential effects of the reduced amortization periods for cogeneration equipment provided by AB 1404. This chapter reviews the available evidence on the measure's actual effects.

The findings reported in this chapter are consistent with the conclusions reached in Chapter III. In short, there is no empirical evidence indicating that AB 1404 has, in fact, had much of an effect on either the level of investment in cogeneration equipment or the level of economic activity generally. Rather, the available evidence suggests that the measure's primary effect has been simply to redistribute income between taxpayers, investors in cogeneration equipment, the state government, and the federal government.

THE AVAILABILITY OF DATA TO MEASURE THE EFFECTS OF AB 1404

Conventional data sources are not of much use in evaluating the effects of AB 1404's rapid amortization provisions for cogeneration equipment. For example, the Franchise Tax Board can provide no data on AB 1404. This is because its data information retrieval system is not able to identify separately those individual and corporate taxpayers that rapidly amortize cogeneration equipment. Likewise, to our knowledge, no governmental or nongovernmental entity has specifically studied, or developed data related to the effects of, rapid amortization of cogeneration equipment.

Because conventional data sources were not helpful in evaluating the effects of AB 1404, we developed our own data for this purpose. We did

this by conducting a survey of California firms and other entities involved in cogeneration activity.

SCOPE AND CONTENT OF THE SURVEY

The survey which we used to collect information from cogenerators on the effects of AB 1404 appears as Appendix I. The questions in this survey cover a variety of topics related to cogeneration activity, including characteristics of the responding entity, characteristics of existing or planned cogeneration facilities, financial returns on cogeneration investments, and the specific effects of AB 1404's rapid depreciation provisions.

We distributed this survey to as many private sector firms, governmental entities and nonprofit organizations as we could identify that were using, or planning to use, cogeneration equipment. At the time we undertook the survey--July 1984--we were not able to obtain from any source a single, totally comprehensive listing of all entities having existing or planned California cogeneration facilities. This is partly because the use of cogeneration equipment has expanded so rapidly in recent years, especially in the case of smaller firms. As a result, we had to develop our survey mailing list using data from several different sources.

We relied on two main sources in compiling our mailing list. The first was a listing of all planned or operational cogeneration projects in the state, developed by the California Energy Commission. The second source involved quarterly reports published by California's electrical utilities, that identified those cogeneration projects from which the utilities are purchasing, planning to purchase, or exploring the possibility of purchasing, electricity, as required by PURPA and the

amount of income that is taxable at the federal level.[1] As Table 1 indicates, the lifetime value of federal income tax liabilities associated with our hypothetical cogeneration project rises by almost $77,000, when California taxpayers select the one-year amortization period. This explains why investors themselves get to "keep" only about $91,000 (or 54 percent) of the nearly $167,000 that it costs the state to provide this tax break.

Thus, if shortened state amortization provisions fail to stimulate a significant amount of new cogeneration investments in California (as is likely to be the case for reasons discussed earlier), they do not simply redistribute income from California taxpayers generally to those cogeneration investors who would have undertaken their projects anyway. They also transfer income from California to the federal government, producing a negative effect on the state's economy.

SUMMARY

In order for tax incentives such as shortened amortization periods to have significant positive economic effects, they must increase the level of investment in cogeneration equipment and facilities above what it would be otherwise. If they do not do so, the primary effect of these incentives is simply to redistribute income--to those investors who do not change their behavior but nevertheless qualify for the incentives, and to the federal government. These "windfall" benefits come at the expense of the State Treasury and California taxpayers who must directly or indirectly pay for them.

1. This assumes that the increase in federal taxable income from reduced state tax liabilities is not offset by increased use of tax shelters.

Shortened amortization periods do serve to both raise the rate of return on a cogeneration investment project and shorten its payback period. These effects, however, are relatively mild for the average cogeneration project, especially when compared to the effects of various federal tax incentives and accelerated depreciation (if available) at the state level. As a result, it appears that there only is limited potential for shortened amortization periods at the state level to stimulate new investment in cogeneration projects within California, and thus to produce such economic benefits as increased income, employment and energy efficiency.

Regarding the financial returns on cogeneration investments reported by our survey's respondents, the average estimated payback period reported was 6.6 years, including 7.3 years for facilities already in operation and 5.3 years for planned facilities. The range of payback periods reported, however, was quite broad and many projects had relatively short payback periods--three years or less. The average annual rate of return reported for cogeneration investments was in the general range of 20 percent to 25 percent. About 38 percent of respondents required cogeneration projects to be more profitable than other types of investments in order to qualify for funding. Lastly, about 26 percent of the respondents were engaged in various lease arrangements, through which entities other than themselves could realize tax-related benefits from cogeneration investments.

Effects of AB 1404

Regarding the specific effects of AB 1404's provisions for rapid depreciation of cogeneration equipment, our survey found the following:

- Awareness of AB 1404's incentives (Question #7 on the survey). Only one-half of the respondents reported that they knew about AB 1404's depreciation benefits when they made their decision to invest in cogeneration equipment. The remaining 50 percent said that they were not even aware of these provisions when they made their investment decision.
- Effect of AB 1404 on cogeneration investment decisions (Question #8 on the survey). Nearly 85 percent of those respondents who were aware of AB 1404's provisions at the time they decided to invest in cogeneration equipment, stated that they would have invested even if AB 1404 had not been enacted. That is, AB 1404

had no effect on their investment decision. In contrast, only 15 percent of such respondents said that they would not have invested in cogeneration had rapid depreciation benefits not been offered. Overall, only a bit over 5 percent of the survey's respondents specifically attributed their decision to invest to AB 1404. Also interesting is the fact that about one-quarter of the survey respondents did not even bother to answer this question.

- Importance of rapid state depreciation provisions relative to other cogeneration incentives (Question #15 on the survey). State tax benefits for cogeneration equipment ranked only sixth out of nine factors in terms of the frequency with which respondents identified them as having made cogeneration a significantly more attractive investment in recent years. Other factors, such as energy prices, fuel prices, and government-imposed requirements that utilities buy cogenerated electricity at "avoided costs," were felt to be considerably more important in making cogeneration attractive.
- Extent to which AB 1404's depreciation provisions are utilized (Question #6 on the survey). Regarding cogeneration equipment in-place as of July 1984, 60 percent of the respondents reported using AB 1404's five-year depreciation option, 37 percent depreciated the equipment over more than 5 years, and only 3 percent used AB 1404's one-year option. The percentages were similar for respondents whose equipment was put in place after AB 1404's January 1, 1981 effective date--65 percent used the

five-year option, 31 percent took more than 5 years to depreciate the equipment, and only 4 percent used the one-year option. In the case of equipment not yet operational, 68 percent of the respondents planned to use the five-year option, 18 percent planned to take more than 5 years, and 14 percent planned to use the one-year option. These figures indicate that AB 1404's five-year depreciation option is extensively used, but that the one-year option is not.[1]

- Extent to which cogeneration investments substitute for other investments (Question #14 on the survey). Thirty-seven percent of the respondents stated that they would have invested in conventional noncogeneration energy-related equipment (such as steam boilers) had they not invested in cogeneration equipment.[2]

Taken together, the survey results clearly suggest that AB 1404 has not significantly affected the level of either cogeneration investments in California or economic activity within California.

1. There are several reasons why not all cogenerators selected AB 1404's five-year or one-year rapid amortization options. One reason is that not all cogeneration systems satisfy the "useful thermal energy" and "minimum efficiency" requirements specified in Section 25134 of the California Public Resources Code, as AB 1404 requires (see Chapter II). Another reason is that not all projects yield sufficient profits to absorb fully the entire allowable lifetime depreciation allowance within five years, let alone one year.
2. In addition, nongovernmental respondents indicated that 60 percent of their cogeneration investments were financed internally (Question #18 on the survey). Such internal investment funds presumably would have been available for other purposes, including noncogeneration energy investments, nonenergy-related investments, or distribution to company owners as income, had they not been used to finance investments in cogeneration equipment. These alternative uses would themselves have generated positive economic effects.

This conclusion is consistent with the views of many individuals we spoke to in the course of our research, including staff members at the PUC, the Department of General Services, and certain utility companies. It is also consistent with the conclusions of numerous research studies which have found it impossible to conclude unambiguously that state energy-related tax incentives, generally, have been effective in stimulating new investments or economic activity overall.[1]

STATE REVENUE EFFECTS OF AB 1404

The net effect of AB 1404 on state revenues depends on two opposing factors:

- First, it depends on the amount of state income tax revenues that are lost due to the fact that some cogenerators would have invested in cogeneration equipment even in the absence of AB 1404 and, therefore, receive "windfall" benefits.
- Second, it depends on the amount of additional income tax, sales tax and other tax revenues collected as a result of investments in cogeneration equipment that would not have occurred without AB 1404. (The size of any such gain depends both on the amount of new cogeneration investments induced by AB 1404, and the extent to which these investments do not simply replace other types of investments.)

Because data regarding the actual number and dollar amount of cogeneration-related depreciation claims made under AB 1404 by California

1. For example, see U.S. General Accounting Office, Studies on Effectiveness of Energy Tax Incentives Are Inconclusive, March 1982, and Leonard Rodbeg and Meg Schauhter, State Conservation and Solar Energy Tax Programs: Incentives or Windfalls? Studies in Renewable Resources Policies, Council of State Planning Agencies, 1980.

taxpayers are unavailable from the California Franchise Tax Board, it is not possible to say exactly what AB 1404's effects are on state revenues. However, given the lack of any evidence that AB 1404 has materially stimulated cogeneration investments and economic activity in California, we believe it is reasonable to conclude that the net overall effect of AB 1404 on state revenues has been negative. This is not to deny that in some individual instances, AB 1404 has generated a revenue gain to the state by being the factor which, "on the margin," causes cogeneration investments to be made. Yet, the available evidence strongly suggests that, in the aggregate, it is most likely that the revenue losses from AB 1404 exceed whatever revenue gains the measure's provisions are able to generate.

Potential Magnitude of State Revenue Losses

A rough illustration--not an estimate--of AB 1404's potential effects on state revenues can be made by assuming that (1) cogeneration investment projects can be represented, on the average, by the hypothetical cogeneration project described in Table 1 (Chapter III), and (2) our survey responses are representative of cogenerators generally when it comes to such factors as the total volume of depreciable cogeneration equipment owned by California taxpayers, the portion of this equipment that is being rapidly amortized, the amount of such equipment which would not have been purchased if AB 1404 was not in effect, and the portion of cogeneration investments that merely displaces other types of energy-related and nonenergy-related investments.

Using this approach:

- The maximum direct state revenue losses attributable to AB 1404 and associated with cogeneration equipment in use as of mid-1984

would be in the general range of $13 million over the life of the equipment, or an average of about $600,000 annually. However, because the revenue losses under AB 1404 are "bunched up" in the early years and not offset until the later years of an asset's life, annual revenue losses to the state could be as much as $5 million during some years. These figures assume that AB 1404 does not induce any new cogeneration investments.[1]

- Assuming that AB 1404 does induce some new investments in cogeneration equipment, the direct gains to the state from increased income and sales taxes associated with such investments would probably amount to somewhere between $7.3 million and $11.7 million over the equipment's life-span, or an average gain of about $330,000 to $530,000 annually. However, because tax liabilities are shifted backwards in time under AB 1404, revenue gains in the early years would be at most around $3 million, or about $2 million less than the $5 million "early-years" revenue loss figure cited above.[2]

Thus, if the hypothetical cogeneration project described in Chapter III and our survey responses are, on the average, representative of the cogeneration industry generally, we estimate that AB 1404 would produce

1. These computations assume statewide cogeneration capacity of 1,200 megawatts, which is equivalent to 180 to 200 cogeneration facilities of the size described in Table 1. The computations also assume that 60 percent of this capacity is depreciated using AB 1404's five-year amortization option and 5 percent is depreciated using the one-year option.
2. These computations assume that 5 percent of cogeneration investments are the direct result of AB 1404, that 70 percent of the capital cost of a cogeneration facility is subject to the California sales and use tax, and that between 20 percent and 50 percent of each dollar invested in a cogeneration project supplants investments which otherwise would have been made in energy-related or nonenergy-related areas.

maximum net revenue losses to California of up to about $5.9 million for cogeneration equipment in place as of mid-1984, or an average of about $270,000 annually.[1] The annual loss, however, would be greater than this during the early years of the equipment's life. In addition, the revenue loss would be larger to the extent that new cogeneration investments increase the physical stock of depreciable cogeneration equipment in the future.

Of course, to the extent that AB 1404 does stimulate a net increase in investment spending in the state, economic activity and state revenues will experience some additional gains due to the well-known "multiplier" effect, caused by the respending of new income. However, even when this factor is taken into account, it is likely that a revenue loss still remains--possibly as much as $3.7 million over the life of cogeneration equipment in place as of mid-1984, or up to an average loss of around $165,000 annually.[2]

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1. Using the above assumptions, the minimum lifetime revenue loss would be in the range of $1.5 million, or about $68,000 annually.
2. These estimates assume an economy-wide macroeconomic multiplier factor for cogeneration investment spending of 2.5 for California (this is somewhat less than the multiplier factor normally used for the nation, due to the significance of interstate trade flows). They also take into account the fact that there is a "negative multiplier effect" associated with the leakage of AB 1404's state tax savings to the federal government in the case of cogeneration investments which would have occurred even in the absence of AB 1404. The $3.7 million loss assumes that, of the cogeneration investments actually induced by rapid amortization, 50 cents of each investment dollar displaces other competing investments in noncogeneration energy-related items. The lifetime revenue loss would be less--up to about $500,000--if a 35-percent displacement factor is assumed. And, if a low 20-percent displacement factor is assumed, lifetime revenue gain--up to $2.9 million, or an average of $132,000 per year--would materialize. A displacement factor of between 35 percent and 50 percent appears to be most consistent with our survey findings.

CHAPTER V

RECOMMENDATION TO THE LEGISLATURE

The principal conclusion of this report is that AB 1404's shortened depreciation periods for cogeneration equipment generally have not stimulated investment in cogeneration facilities within California to any significant extent. Since it appears that the Legislature's fundamental objective in enacting AB 1404 was to encourage cogeneration investments in California, we conclude that AB 1404 has not been successful in meeting its objective. Therefore, in the absence of data indicating that AB 1404's rapid amortization provisions are a particularly efficient or cost-effective means for stimulating California cogeneration activity, we recommend that these provisions not be extended by the Legislature beyond their scheduled December 31, 1985, termination date.

APPENDIX I

California Cogeneration Survey Form

Office of the
Legislative Analyst
July 1984

OPTIONAL INFORMATION

Name of Organization _____

Name of Contact Person _____ **Phone** _____

COGENERATION SURVEY

The following questions may be completed by circling the appropriate answers or by filling-in the blank spaces provided. If a particular question does not apply to you, or if you are either unable to or prefer not to answer it, then please proceed to the next question. If you would prefer to discuss the survey over the telephone, please indicate this so that we may contact you.

1. Do you currently utilize cogeneration equipment (Yes/No) and/or have specific plans to install cogeneration equipment in the future (Yes/No)?

2. Which of the following best describes the type and size of your organization (circle one answer under each heading)?

Type of Organization	Number of Employees
a. Governmental entity	a. 0 to 25
b. Private company	b. 25 to 100
c. Nonprofit organization	c. 100 to 500
	d. over 500

3. Please indicate the approximate capital cost of your existing cogeneration equipment ($_____) and/or planned cogeneration equipment ($_____).

4. What is the approximate electrical production capacity of your existing cogeneration system (_____ megawatts) and/or planned cogeneration investments (_____ megawatts), and the basic type of fuel used for cogeneration (oil/gas/biomass/other_____)?

5. Please indicate the approximate operational date of your existing cogeneration system (_____) and/or planned cogeneration equipment (_____), and the approximate number of months required to plan a cogeneration system and make it fully operational (_____).

6. Over how many years do you depreciate your existing cogeneration equipment for state tax purposes (1 year/5 years/other (specify) _____) or expect to depreciate your planned cogeneration equipment for state tax purposes (1 year/5 years/other (specify) _____)?

7. Were you aware of the state's reduced depreciation period for cogeneration equipment when you first decided to invest in cogeneration (Yes/No)?

8. Would you have still made the decision to invest in cogeneration if the state did not offer a shortened (that is, 12-month or 60-month) depreciation period (Yes/No)?

9. Would you describe the effect of the state's reduced depreciation period for cogeneration equipment on your decision to invest in cogeneration as being (a) negligible, (b) relatively minor, (c) moderately important, or (d) very important?

10. In how many months or years has or will it take for your cogeneration investment to "pay itself off" through such means as energy savings and revenues from selling electricity (_____)?

11. What is the approximate percent of your electrical production capacity from cogeneration which you currently or plan to (a) use directly yourself (_____%), (b) sell to a utility (_____%), or (c) sell to some other party (_____%)? If you sell electricity to a utility, what proportion (if any) of what you sell do you buy back (_____%)?

12. Was or will your cogeneration equipment be purchased from a California retailer or California wholesaler (Yes/No), and was or will the equipment be manufactured in California (Yes/No)?

13. Have you been able to estimate your approximate actual or expected net dollar savings per year from cogeneration (Yes/No) or your rate of return on cogeneration investments (Yes/No)? If so, approximately what do these annual savings amount to ($_____) and what is your annual rate of return on the cogeneration investment (_____%)? Is this savings estimate on a pre-tax basis (Yes/No) or on an after-tax basis (Yes/No)?

14. Had you not decided in favor of past or future cogeneration equipment investments, would you have had to invest anyway in other types of conventional non-cogeneration energy equipment such as new steam boilers (Yes/No)?

15. Please circle the letters corresponding to any of the factors listed below which, in your opinion, have been significant in making cogeneration a more attractive investment in California in recent years:

    a. Ability to automatically sell cogenerated electricity to utilities at prices equal to the utilities' "avoided costs" for electricity
    b. Increased fuel and electricity prices in past years
    c. Improved efficiency, reliability and quality of cogeneration equipment
    d. Favorable price trends for cogeneration equipment
    e. Favorable federal government fuel price regulations for cogenerators
    f. Concerns about future cost and availability of fuel and electricity
    g. Better information about cogeneration equipment and its merits
    h. Federal tax benefits for cogenerators
    i. State tax benefits for cogenerators
    j. Other (please specify) _____

16. Please circle the letters corresponding to any of the factors listed below which, in your opinion, significantly hinder the utilization of cogeneration equipment:

    a. State or federal environmental regulations
    b. County building permit requirements
    c. Costs of power grid interconnections needed to transmit cogenerated electricity to utilities
    d. Lack of favorable federal tax policies for cogeneration equipment
    e. Lack of favorable state tax policies for cogeneration equipment
    f. Excessive costs of cogeneration equipment and/or difficulty in obtaining financing for equipment purchases
    g. Recent trends toward stabilized energy prices
    h. Lack of familiarity with cogeneration technologies
    i. Other (please specify) _____

17. Do you require a higher rate of return and/or a shorter payback period for cogeneration equipment than you do for other types of investments (Yes/No)?

18. How have or will you finance the capital costs of your cogeneration equipment--equity investment on your part (_____% of capital costs) or borrowed monies (_____% capital costs)?

19. Are you involved in a lease-purchase arrangement which enables an entity other than your own to realize tax-related benefits from your cogeneration equipment (Yes/No)?

20. Did/will your cogeneration equipment qualify for the California solar energy tax credit (Yes/No/Uncertain) or the California energy conservation tax credit (Yes/No/Uncertain)?

THANK YOU FOR YOUR COOPERATION. IF YOU WOULD YOU LIKE A COPY OF OUR COMPLETED COGENERATION REPORT, PLEASE CHECK THIS BOX [ ] AND ENTER YOUR MAILING ADDRESS HERE:

_____

_____