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NO VOTE*

RESOLUTION NO. 2001-7

RESOLUTION OF THE SOUTHERN CALIFORNIA PUBLIC POWER
AUTHORITY AUTHORIZING THE EXECUTIVE DIRECTOR TO EXECUTE AN
AGREEMENT FOR THE DEVELOPMENT OF ROBUST STRATEGIES FOR
ENERGY INVESTMENT PORTFOLIOS WITH RAND
AND PROVIDING FOR ADDITIONAL CONTRIBUTIONS TO THE
AUTHORITY'S REVOLVING GENERAL FUND, AND TAKING CERTAIN
RELATED ACTION
(RESTRUCTURING)

WHEREAS, the Southern California Public Power Authority (the Authority) owns interests in various generation and transmission projects, the output of which has been sold to Members of the Authority; and

WHEREAS, the electric utility industry is being restructured so that the providers of electricity will be in competition with each other; and

WHEREAS, such restructuring has resulted in many changes in the electric utility industry which may affect the Authority generation and transmission projects, and which require Authority Members to change the way they manage their resources; and

WHEREAS, certain of the Authority Members have a need to retain consultants to develop strategies for energy investment portfolios; and

WHEREAS, the Authority is willing and able to retain Rand, and to bill all expenses and costs of retaining such consultant to the Members receiving service; and

WHEREAS, the Board of Directors of Authority, in its Resolution No. 1990-15, established a revolving general fund (the General Fund) for the payment of costs and expenses incurred by the Authority from time to time in carrying out its purposes; and

WHEREAS, the Board of Directors of the Authority, in its Resolution No. 1992-1, provided for the continuation of the General Fund and established a procedure to be followed with respect to additional contributions to the General Fund; and

WHEREAS, the Board of Directors of the Authority, in its Resolution No. 1995-2, provided for a separate bank account (the Joint Planning Account) to hold and disburse the additional contributions to the General Fund with respect to joint planning matters; and

WHEREAS, the Board of Directors of the Authority, in its Resolution No. 1995-13, changed the name of the Joint Planning Account to the Restructuring Account; and

WHEREAS, the Board of Directors of the Authority wishes to provide for additional contributions to the General Fund, and the applicable Members of the Authority are willing to make such additional contributions.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Authority as follows:

1. The Executive Director is authorized and directed to retain Rand, at the request of a Member(s) of the Authority, provided that such Member(s) agrees, in writing, to bear all costs and expenses of such consultant.
2. The Board of Directors hereby provides for additional contributions to the General Fund. Notwithstanding anything to the contrary in Resolution No. 1992-1, such additional contributions,
 - a) shall be solely for the purpose of paying costs and expenses incurred by the Authority with respect to Rand, and pending application for such purpose the contributions shall not be expended to pay costs or expenses properly allocable to one or more projects as provided in Section 3 of Resolution No. 1992-1;
 - b) with respect to each bill SCPPA receives from Rand, shall be billed to the Members that have received services from Rand with respect to such bill, with the amount of each such Member's bill to be based upon the services performed by Rand for the benefit of such Member; and

- c) shall be billed and collected by adding the amounts provided above to the Authority's Hoover Upgrading Project billings to Anaheim (if applicable), and to the Authority's Palo Verde Project billings to the other applicable Members, with such amounts designated as "Resolution No. 2001-7 Charge".
3. Although the amounts to be contributed under this Resolution and related income shall constitute part of the General Fund, they shall be held and accounted for in a separate subaccount within the existing Restructuring Account. The Executive Director of the Authority is hereby directed to establish a subaccount (the Rand Subaccount) within the Restructuring Account for the purpose of holding contributions and related income, and making disbursements, under this Resolution. The President, Vice President, Secretary, any Assistant Secretary and the Executive Director of the Authority are each authorized to execute checks drawn on the Restructuring Account from time to time.
 4. Amounts contributed to and held in the General Fund and the Rand Subaccount pursuant to this Resolution will not be contributed or held for the purposes of any project for which the Authority has obtained any form of external financing. Such amounts shall not constitute (a) Revenues, or (b) revenues, income, rents or receipts derived by the Authority from or attributable to Authority Capacity (or to the payment of the costs thereof) or the ownership or operation of any Project. As used herein, "Revenues", "Authority Capacity" and "Project" shall have the respective meanings set forth in the indentures of trust and other instruments governing the external financing arrangements entered into from time to time by the Authority.
 5. The President, Vice President, Secretary, any Assistant Secretary, Executive Director and any other officer of the Authority are each hereby authorized to execute and deliver any and all documents and instruments and to do and cause to be done any and all acts and things necessary or proper for carrying out the transactions contemplated by this Resolution.
 6. This Resolution shall become effective immediately.

THE FOREGOING RESOLUTION is approved and adopted by the Authority this 15th day of March, 2001.

PRESIDENT
Southern California Public
Power Authority

ATTEST:

ASSISTANT SECRETARY
Southern California Public
Power Authority

**Robust Strategies for Energy Investment Portfolios:
A Study for the Southern California Public Power Authority**

Proposed by RAND

OBJECTIVE

Using RAND's unique data analysis and planning methodologies under extreme uncertainty, RAND will consider a broad spectrum of future marketplace scenarios and provide each of the municipal utilities of the Southern California Public Power Authority (SCPPA) with the essential data, analysis, options, evaluations, and a portfolio of strategies to effectively plan and execute their energy programs for the next ten to fifteen years. By employing new techniques in exploratory modeling developed by RAND, we are able to better evaluate the potential impact of the wide range of factors that create plausible future scenarios on strategies for portfolio management. This will be done in the aggregate for all the utilities and will identify general strategies that are expected to consistently result in lower risks and costs than could be achieved by conventional approaches.

ISSUES AND APPROACH

The municipalities in SCPPA have been mostly insulated from the power emergencies that have struck the rest of California over the past two months. However, a variety of factors have increased the price of electricity and natural gas in California, and municipal-owned utilities (and their customers) will have to deal with these rising and volatile costs.

Developing an *Energy Investment Portfolio* (EIP) will better control costs and protect against future risk and uncertainty in energy markets. An EIP is a combination of strategies for purchasing electricity from other providers if necessary (in short-term or long-term contracts), investing in the construction or re-powering of municipal-owned generation, and promoting distributed generation and creative energy efficiency programs to customers and to possibly improve the operating efficiency of SCPPA members.

Investing in a single measure will produce the desired result only under a small set of conditions, and potentially leave SCPPA members exposed to undue risk. However, a diverse portfolio of energy investments will enhance the reliability and reduce costs under several future scenarios. For example, investing in efficiency measures reduces demand, but is not an effective use of resources if the price of power drops substantially. Similarly, investing in municipal-owned generation protects against price fluctuations in electricity markets, but becomes a poor investment if fuel prices cause operational costs to increase above those market prices. Instead, a balanced portfolio incorporating a broad range of contingencies is desirable.

Faced with a highly variable energy market and a constantly changing regulatory landscape, it is impossible to suggest a single "best" strategy for energy investment. Due to the great uncertainty of power markets in California, no single scenario can accurately forecast future prices, nor suggest an optimal portfolio. However, using the technique of *exploratory modeling*, we will be able to determine which strategies are *robust*; that is, those strategies that perform best across a wide range of future scenarios. With exploratory modeling, a large number of scenarios are developed that enable us to innovatively utilize available knowledge, data, and assumptions to develop strategies that will be successful regardless of future marketplace conditions. These scenarios are then sampled or searched to extract information to enable us to identify and develop those strategies with the highest probability of success.

DEVELOPING STRATEGIES

To develop the scenarios to determine robust strategies for energy investment, we group the elements of our analysis into three categories: uncertainties, levers, and metrics (see table).

Uncertainties are the major variables in the models, including quantitative and qualitative ones.

Levers are the various actions that could be part of portfolio strategies. A set of choices for these levers defines an investment strategy, although some levers can be adaptive and change over time with the addition of new information.

Metrics are the measures of the outcomes of the models. These metrics will be used to distinguish between the effectiveness of various investment strategies.

Uncertainties	Levers	Metrics
<ul style="list-style-type: none">• demand, availability, and price of electricity and gas• changes in regulations and technology• weather• economic conditions• international considerations	<ul style="list-style-type: none">• build or re-power generation• buy or sell emissions credits• buy or sell electricity• distributed generation• energy efficiency• timing and real-time decision making considerations	<ul style="list-style-type: none">• revenues• operating costs• costs to the consumers• reliability of service• environmental impacts

By combining these elements together and determining the relationships between them, we will be able to generate a wide variety of scenarios to enable us to better evaluate strategies for energy investment. We will also establish 'sign posts' that measure performance and provide advance notice of potential changes in outlooks in critical areas that may trigger modification of strategies ahead of the curve.

DELIVERABLES

The ultimate goal of this particular project will be to lay out future energy markets for SCPPA members and to explain how different alternatives of the future can impact SCPPA members and their operations. To meet some specific concerns of SCPPA members, there will be an interim paper analyzing the possible effects of regulatory changes on the municipal utilities, and suggesting actions that the utilities can take to hedge against these changes. As the regulatory and policy landscape is at the moment still quite uncertain, it will be necessary to consider a wide range of scenarios for both the near and long term. Our tools will use techniques from exploratory modeling to determine the impact of different policy and regulatory futures on the investment and operating plans of the SCPPA utilities. This will help define the different regulatory options that would have the greatest and least impacts on SCPPA members. RAND will produce a white paper on the impacts of different policy alternatives on SCPPA utilities. In this way, RAND can quickly provide vital information that can assist SCPPA in their discussions with policy-makers.

The main focus of the project will be to complete an analysis of the broader set of uncertainties and levers including changes in the demand for and availability of natural gas and electricity, including the regulatory and policy issues along with weather and other uncertainties.

RAND will produce a project report for SCPPA that describes the results from the analysis. The report will include an evaluation of the impacts of different future scenarios on SCPPA and assess the viability of different strategies for developing energy investment portfolios and their costs and benefits for a wide range of future scenarios. RAND will detail the models and assumptions used in this report, note other conclusions that can be drawn, and suggest additional studies.

As a result, SCPPA and its members will be able to make more informed decisions in the development of ultimate strategies and be supported by the use of the RAND reports to support SCPPA positions. RAND will be prepared to continue its support of SCPPA in the implementation of strategies and ongoing measurement of their performance.

We will report on the impact of utility plans on the markets, and in turn the impact of the markets on the utilities. We will address key uncertainties and work with individual utilities to bound those uncertainties. We will provide charts and maps of different alternatives and evaluate a variety of aggregate strategies. We will address "what-if" questions that will be designed by the SCPPA members themselves. It is envisioned that the report will have the contents outlined below. This outline will change and evolve as the project proceeds, both as we develop more information and through our discussions with SCPPA members.

Decision Making Under Uncertainty: Impacts and Implications for SCPPA Members

Character of the Problem – What uncertainties are we facing?

- Natural gas supply, price, and availability
- Electricity supply and price
- Regulatory and policy
- Demand – local and regional
- Actions of other utilities and generators
- New infrastructure

Scenarios of the Future

- Plausible future scenarios for these uncertainties
- Understanding the future landscapes – exploratory modeling maps

SCPPA in 2010

- Expectations of demand and supply of SCPPA in the aggregate

Impacts on SCPPA of Different Futures

- How does SCPPA fare under the different futures?
- What conditions will cause SCPPA rates to stabilize or be reduced?
- What conditions will cause SCPPA rates to rise significantly and how likely is that?
- What conditions will cause SCPPA reliability problems?
- What set of conditions are the 'best' and 'worst' for SCPPA members?

How SCPPA Members Can Influence the Future

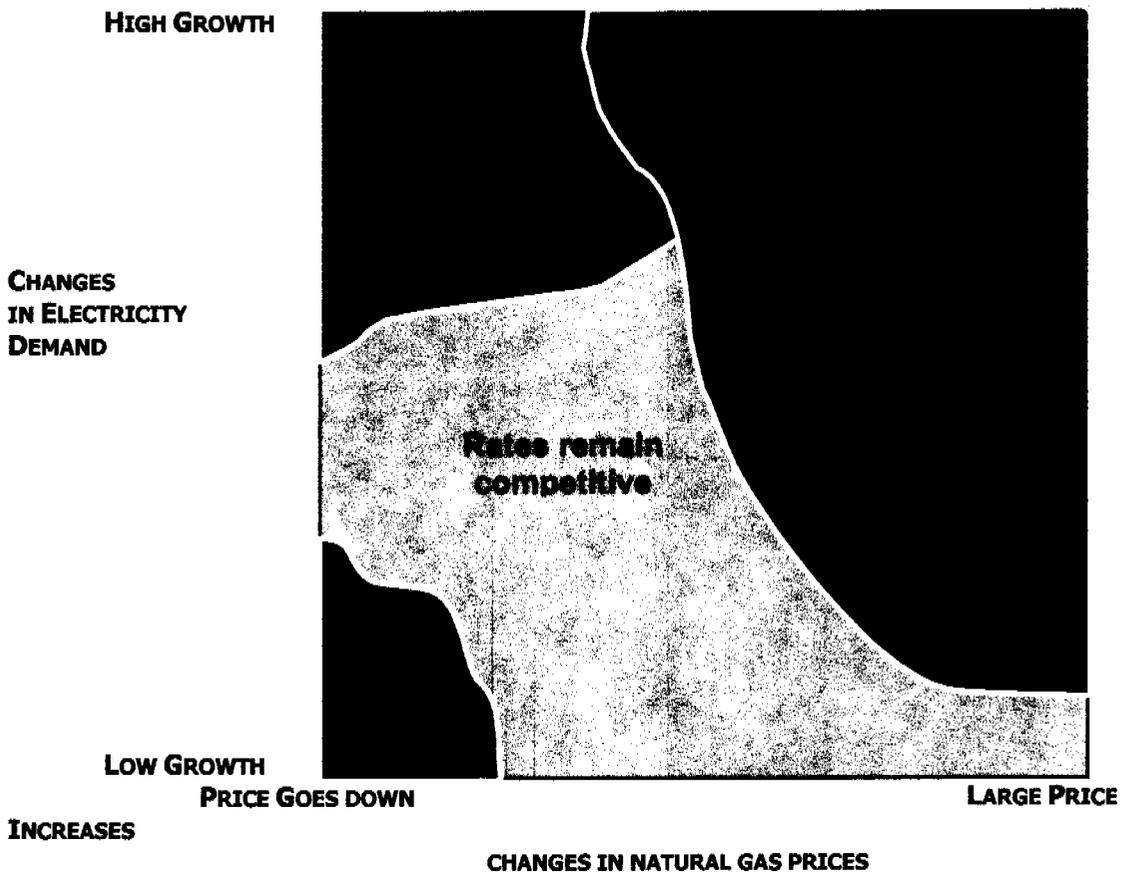
- How can SCPPA members' actions impact future scenarios?
- What energy portfolios reduce the downside risks in the future?
- How does it impact net buyers, versus net sellers?

Following this report, if individual utilities wish to proceed further, we will build customized tools to help utilities evaluate robust strategies under uncertainty. While several decisions on energy investment are made in conjunction with other SCPPA members, each municipality has their own energy situations to consider, and RAND can tailor decision-making tools to their needs. We will

be able to help utilities lay out different future investment and operating portfolios, map them against the uncertainties, and help utilities find robust investment strategies. We will also help show the implications of choosing alternatives if the future moves in a different direction than expected.

SCPPA members get, for a small investment, a more comprehensive picture of the future that allows them to examine their strategies in the face of great uncertainty. Swings in natural gas and electricity prices can make a large difference in the operating costs and financial health of the utilities, which ultimately impacts the rates a utility can charge and the economic health of the municipality. To acquire this valuable information on an individual basis would generally cost each utility over \$200,000. By collaborating, SCPPA members can get the customized support for a fraction of the cost.

ILLUSTRATIVE EXAMPLE: IMPACT ON SCPPA RATES OF CHANGES IN DEMAND AND GAS PRICE



COST AND TIMING

RAND will produce a preliminary report on the work in Stage 1 within a month of project initiation. This will comprise an analysis of policy changes on SCPPA utilities and will be in the form of a project memorandum or white paper. The analysis we develop for SCPPA in Stage 2 will be ready within three months. If requested, we will customize strategies and processes for individual municipal utilities, which will take about one month each, some of which can be done simultaneously.

The cost will be billed on a time and materials basis and for Stages 1 and 2 the cost will not exceed \$150,000. Depending on the size of a utility and the complex nature of its portfolio, the cost of a custom designed analysis would range from \$15,000 to \$50,000.

INFORMATION NEEDED FROM THE MUNICIPAL UTILITIES

A successful project will require interaction with each utility, and we will keep all participants informed as we proceed through the project. A sampling of information that we would require from the utilities include:

- Load profiles of customers (residential, commercial, industrial) and projections of growth
- Electricity contract data (contract lengths, type of generation, when power is provided, special conditions on contracts, etc.)
- Data on existing municipal-owned generation (costs, fuel consumption, generating capacity)
- Plans and data for new and/or re-powered generation (location, startup costs)

RAND staff will assist participants in the information development process to minimize the efforts required of each utility.

RAND understands and respects the sensitivities of the SCPPA members to the confidential nature of some of this data, and researchers at RAND will execute confidentiality agreements in order to work with the project data. In addition, we will justify any and all requests for data to concerned SCPPA members and explain how the data will improve our ability to assist SCPPA in its decisions.

STAFFING

The project will be conducted within the RAND Enterprise Analysis unit at RAND under the overall guidance of Dr. Rae Archibald, Vice President RAND Enterprise Analysis, and will be led by Dr. Mark Bernstein, Senior Analyst and Director of RAND Environment.

RAND

RAND is a private non-profit institution that helps improve policy and decision-making through research and analysis. In the past, RAND has contributed to national energy and environmental discussions on energy efficiency, demand modeling, distributed generation, electric power in developing countries, operations of utility power plants, development of renewable energy sources, and modeling of energy technology change. As a result of this broad range of experience, RAND offers the full resources, credibility, and objectivity of RAND with a wealth of focused experience on energy issues.

RESOLUTION NO. 2001-8

RESOLUTION OF THE BOARD OF DIRECTORS OF SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY AUTHORIZING (I) PREPARATION OF ALL DOCUMENTS NECESSARY OR APPROPRIATE TO SELL AND ISSUE SUBORDINATE SOUTHERN TRANSMISSION PROJECT REVENUE BONDS, PROCEEDS OF WHICH WILL BE USED TO REFUND CERTAIN TRANSMISSION PROJECT REVENUE BONDS, 1992 SUBORDINATE REFUNDING SERIES (SOUTHERN TRANSMISSION PROJECT), AND (II) AUTHORIZING OFFICERS OF THE AUTHORITY TO DO ALL THINGS DEEMED NECESSARY OR APPROPRIATE

WHEREAS, the Finance Committee of the Southern California Public Power Authority (the "Authority") at a meeting held on March 15, 2001 has determined that it is in the best interest of the Authority to proceed with preparing all documents necessary or appropriate to sell and issue subordinate Southern Transmission Project Revenue Bonds (the "2001 Bonds"), proceeds of which will be used to refund certain Transmission Project Revenue Bonds, 1992 Subordinate Refunding Series (Southern Transmission Project); and

WHEREAS, once prepared, drafts of the contracts proposed to be entered into by the Authority in connection with such refunding transaction will be presented for the Board's consideration.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Authority as follows:

1. The Authority's staff and the Authority's team of financing professionals (including the personnel at the Los Angeles Department of Water and Power who work on Authority matters, the Authority's financial manager, the Authority's co-bond counsel and the Authority's financial advisor) are hereby authorized to prepare all documents necessary or appropriate for the sale and issuance of the 2001 Bonds (which are expected to be variable rate demand obligations that are subject to the provisions of an interest rate swap agreement).

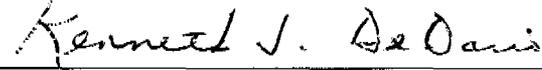
2. UBS PaineWebber Inc. is hereby appointed the underwriter, remarketing agent and swap counterparty for the transaction described above.

3. Curls, Brown & Duran is hereby appointed co-bond counsel for the transaction described above, and the Executive Director is authorized to execute a contract with such firm on terms, including fees, consistent with the prior contract with such firm.

4. Each of the President, Vice President, Executive Director, Secretary and any Assistant Secretary of the Authority, and any other officer of the Authority, is hereby authorized and directed to do and cause to be done any and all acts and things necessary or proper for carrying out the transactions contemplated by this Resolution.

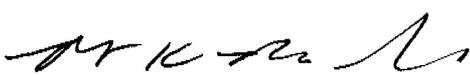
5. This Resolution shall become effective immediately.

THE FOREGOING RESOLUTION is approved and adopted by the Authority this 15th day of March, 2001.



PRESIDENT
Southern California Public
Power Authority

ATTEST:



ASSISTANT SECRETARY
Southern California Public
Power Authority