Application No.: A.06-04-___
Exhibit No.: SDG&E-4
Witness: William V. Torre

In the Matter of San Diego Gas & Electric Company's Application for Authorization to (1) to Participate in the Steam Generator Replacement Project As A Co-Owner of San Onofre Nuclear Generating Station Unit Nos. 2 & 3 (SONGS 2 & 3) ; (2) Establish Ratemaking For Cost Recovery; and (3) Address Other Related Steam Generator Replacement Issues (U 902-E)	Application No. 06-04-___

PREPARED DIRECT TESTIMONY

OF

WILLIAM V. TORRE

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA
APRIL 14, 2006

TABLE OF CONTENTS

PREPARED DIRECT TESTIMONY

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I. PURPOSE OF TESTIMONY

My testimony describes the cost estimates developed by San Diego Gas & Electric Company ("SDG&E" or "the Company") for transmission and substation facilities for two potential sources of replacement generating capacity that could be used by SDG&E to replace its ownership share in the San Onofre Nuclear Generating Station ("SONGS"). I will refer to this SDG&E ownership share as "SONGS-Share." The purpose of my testimony is to describe the cost estimates for transmission system reinforcements ("reinforcements") that would need to be made if the Company were to replace its SONGS-Share with either of the two replacement generating sources analyzed.

R.J. Rudden Associates, a unit of Black & Veatch Corporation ("B&V") conducted transmission planning studies at the direction of SDG&E witness Mr. Richard Sheaffer. Based on these studies Mr. Richard Sheaffer determined the physical changes to the Company's transmission system that would be required to accommodate each of the SONGS-Share replacement alternatives considered by SDG&E witness Mr. Michael Schneider. Mr. Richard Sheaffer then provided descriptions of these system reinforcements to me for the purposes of estimating the costs of the modifications. I provided these cost estimates to Mr. Schneider for inclusion in his comparative generation economics analysis.

II. DEVELOPMENT OF COST ESTIMATES FOR TRANSMISSION AND SUBSTATION COMPONENTS

The cost estimates, for upgrades to existing facilities, developed for this study are considered to be budget class cost estimates. Budget class cost estimates consider the cost of major construction activities including labor, materials, engineering, land procurement, and licensing activities, as well as all applicable overhead costs that could be incurred by SDG&E.

To provide a budget class estimate for the transmission related work, SDG&E will typically first perform document research. This will include researching the pole/tower sizes, existing wire tensions, clearances, etc. to estimate the impact of completing the required work. Any tools available such as Geographic Information System ("GIS") will be used to further assess the project impacts (provides pole locations, residential areas, types of environment, open spaces, etc). A field review of the line of known routes is performed providing information such as regarding access roads, obstructions installed on Right of Way ("ROW"), deteriorated pole replacements necessary, etc.

To provide a budget class estimate for substation related work, SDG&E will perform document research and derive a detailed scope of engineering, procurement, and construction based on the basic project description. In addition to using an extensive up-to-date data base of work scope items, vendors and subject matter experts may be consulted to ensure that large cost items (major equipment and site development) are accurately estimated.

Cost estimates include the latest overhead costs (administrative & general, local engineering), labor rates, material costs, land acquisition, and contingency costs. Contingency percentages and difficulty factors added are typically based on the designers/engineers judgment of potential unknowns that could surface to increase the project total costs. A contingency level of 30% was used for upgrades of both existing transmission and substation components for the

cost estimates provided in this study. A contingency level of 50% was used for new facilities associated with Scenario 2 due to the higher level of uncertainty of project scope.

Cost estimates were developed for two "Replacement Scenarios" (Replacement Scenario 1 and Replacement Scenario 2). The two Replacement Scenarios are described below:

- *Replacement Scenario 1* models the Company's transmission plans under the assumption that its SONGS-Share is replaced by a 541 MW Combined Cycle Combustion Turbine ("CCCT") power plant located at the present Encina site. Cost estimates were developed for the following components for this scenario:

    1. Acceleration of the reconductoring of the Escondido to Felicita 69 kV line to 2015 (identified in the Reference Case as being otherwise needed by 2022), an advancement of approximately seven years. The project would increase the rating of the 69 kV line from 97.5 MVA to 137 MVA using a single 1033 kCMIL aluminum conductor steel reinforced ("ACSR") conductor.

    2. Acceleration of the reconductoring of the Felicita to Ash Tap 69 kV line to 2015 (identified in the Reference Case as being otherwise needed by 2022), an advancement of approximately seven years. The project would increase the rating of the 69 kV line from 97.5 MVA to 137 MVA using a single 1033 kCMIL ACSR conductor.

- *Replacement Scenario 2* models SDG&E's transmission plans under the assumption that the Company substitutes its SONGS-Share from a geothermal power plant that is interconnected to SDG&E's transmission system at the Imperial Valley Substation. Cost estimates were developed for the following components for this scenario:

    1. Addition of a third 500 kV to 230 kV transformer (1120 MVA) at the Imperial Valley Substation in 2010.

    2. Addition of a third 230 kV to 69 kV transformer (224 MVA) at the Sycamore Canyon Substation in 2015.

    3. Acceleration of the reconductoring of the Felicita to Ash Tap 69 kV line (6.2 miles) to 2015 (identified in the Reference Case as being otherwise needed by 2022), an advancement of approximately seven years. The project would increase the rating of the 69 kV line from 97.5 MVA to 137 MVA using a single 1033 kcmil ACSR conductor. Reconductoring of two 69 kV lines, Sycamore to Pomerado 69 kV double circuit line (2 miles), and San Luis Rey to Melrose Tap 69 kV line (4.2 miles) to increase the rating of each circuit to 204 MVA.

4. A double-circuit 230 kV overhead transmission line, 20 miles long, from the step-up substation at the hypothetical geothermal plant to the Imperial Valley 230 kV Substation. Both circuits will use at bundled 1033 kcmil ACSR conductor per phase.

5. At the step-up substation located at the geothermal power plant site, four breaker-and-a-half bays are to be provided for four leads from the 230 kV side of four 13.8/230 kV step-up transformers, and to terminate two 230 kV lines from Imperial Valley, and two spare positions for future connections. A total of ten 230 kV circuit breaker, plus associated buswork and controls are included. Generator circuit breakers and step-up transformers are not included.

6. At Imperial Valley, an extension of the 230 kV main bus, installation of two 230 kV bays to include two line positions and circuit breakers which will accommodate terminating two 230 kV lines from the hypothetical geothermal plant. This will also include two tie positions with breakers, two transformer bank positions without circuit breakers and associated controls.

In both of the two Replacement Scenarios, Mr. Michael Schneider specified the general location of the replacement generation. Mr. Richard Sheaffer through his planning studies provided the determination of the transmission reinforcements required to reliably support the replacement generation on the transmission system.

III. DESCRIPTION OF COST ESTIMATES

The cost estimates for each of these scenarios are summarized in the tables shown below. All costs were estimated in 2006 dollars for use by Mr. Schneider in his economic analysis and escalated by him to the appropriate year. The following Table 1, summarizes cost estimates for Scenario 1 transmission and substation components.

Table 1

Project Name: Scenario 1

Estimate: COST SHOWN IN 2006 DOLLARS X 1,000

Year	Prior Years	2006	2007	2008	2009	2010	Total
Transmission	0	8,147	0	0	0	0	8,147
Substation	0	886	0	0	0	0	886
Total w/o AFUDC	0	9,033	0	0	0	0	9,033
AFUDC	0	858	0	0	0	0	858
Total w/ AFUDC	0	9,891	0	0	0	0	**$9,891**

The following Table 2 provides a summary of the cost estimates for Scenario 2, for the transmission and substation components.

Table 2

Project Name: Scenario 2

Estimate: COST SHOWN IN 2006 DOLLARS X 1,000

Year	Prior Years	2006	2007	2008	2009	2010	Total
Transmission	0	68,839	0	0	0	0	68,839
Substation	0	75,885	0	0	0	0	75,885
Total w/o AFUDC	0	144,724	0	0	0	0	**144,724**
AFUDC	0	13,749	0	0	0	0	13,749
Total w/ AFUDC	0	158,473	0	0	0	0	**$158,473**

A breakdown of the costs of each transmission component is provided in Exhibit 1.

IV. QUALIFICATIONS OF WITNESS

My name is William V. Torre. My business address is San Diego Gas & Electric Company, 8316 Century Park Court, CP52A, San Diego, CA 92123. I am presently employed by San Diego Gas & Electric Company ("SDG&E") as Manager of the Electric Transmission Engineering and Design Section. I have been the manager of Transmission Engineering and Design for approximately 5 years.

I graduated with a Bachelor of Science degree in Electrical Engineering ("BSEE") from The University of Missouri - Rolla in 1976. I later received a Master of Science degree in Electrical Engineering ("MSEE") from the California Polytechnic State University – San Luis Obispo in 1979. I am also a registered Professional Engineer (in the Electrical Branch) in the State of California (No. 10358).

With respect to my professional experience, I worked for Pacific Gas and Electric Company ("PG&E") during the period from 1976 to 1979. I have worked for SDG&E for approximately 22 years.

I have held a number of positions throughout my career involving electric utilities, the majority of which have involved electric transmission planning, construction and engineering. Such positions have involved modeling of the transmission grid for both California and the interconnected system of the Western Systems Coordinating Council ("WSCC"). I have also served as a representative on the WSCC Technical Studies Subcommittee, Pacific and Southwest Transfer Subcommittee, and Rating Methods Task Force. WSCC is now known as the Western Electricity Coordinating Council ("WECC"). I also have written several technical papers for the IEEE and served on several working groups.

I have previously testified before this Commission.

This concludes my prepared direct testimony.

Exhibit 1

Transmission and Substation Cost Estimate Breakdown

EXHIBIT 1
SDG&E Cost Estimates*

*Estimates are in 2006 dollars and include AFUDC.

Project Description	Tie Line Number	ISD	Unescalated Estimate ($ 000)
Transmission Reinforcements Associated w/ Scenario 1:			
Escondido-Felicita Reconductor to 137 MVA	TL 679	2015	$ 4,033
Felicita-Ash Tap Reconductor to 137 MVA	TL 681	2015	$ 5,859
Total Unescalated Cost of Scenario 1 Transmission Reinforcements:			**$ 9,891**
Transmission Reinforcements Associated w/ Scenario 2:			
Imperial Valley Sub. 3rd 500/230kV Bank	-	2010	$ 36,341
Sycamore Canyon Sub. 3rd 230/69kV Bank	-	2015	$ 11,739
Felicita-Ash Tap Reconductor to 137 MVA	TL 681	2015	$ 5,859
San Luis Rey-Melrose Tap Reconductor to 204 MVA	TL 680	2022	$ 3,410
Sycamore Canyon-Pomerado Reconductor to 204 MVA	TL 6915 and 6924	2015	$ 4,125
New Dbl. Ckt. 230 kV Transmission Line Geothermal to IV		2010	$ 62,465
New 230 kV Substation at Geothermal		2010	$ 23,868
I V Upgrade to Interconnect Geothermal 230 kV Lines		2010	$ 10,666
Total Unescalated Cost of Scenario 2 Transmission Reinforcements:			**$ 158,473**