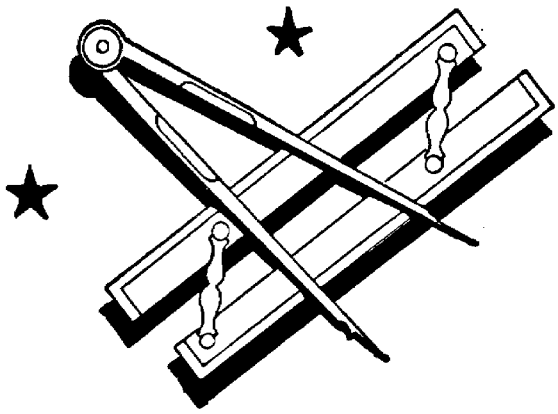
San Diego Gas & Electric
Marketing Programs & Planning
8335 Century Park Court
San Diego, California 92123

1994 & 1995 Nonresidential New Construction Program

Ninth Year Retention Evaluation

March 2004



Study ID Nos. 937 & 973

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1994 & 1995 NONRESIDENTIAL NEW CONSTRUCTION PROGRAM

NINTH YEAR RETENTION EVALUATION

STUDY ID NOS. 937 & 973

Program Description

SDG&E's PY94 and PY95 Nonresidential New Construction (NRNC) Program was called "Savings Through Design." The Savings Through Design Program offered 2 options, Performance and Prescriptive.

The Performance Option was designed to encourage the installation of new construction projects that exceeded California's Title 24 Building Energy Efficiency Standards. SDG&E offered free energy efficiency design review services for commercial projects during the planning or design phase. Cash incentives were available to those willing to revise their building plans to exceed Title 24 standards and achieve energy savings of 10% or greater in cooling, heating, lighting, fans/motors, pumps, and/or hot water.

The Savings Through Design Prescriptive Option encouraged the incorporation of energy efficient technologies into the design of commercial buildings which exceeded building energy efficiency standards, including California's Title 24 Standards. This was accomplished by providing assistance with the review of building plans, by offering cash incentives for standard and custom measures, and by educating target audiences through a variety of communication tactics.

A customer who participated in SDG&E's NRNC Program received a rebate upon building completion. Information regarding customer name, address, phone number, installed measures, measure costs, energy savings and participation date were kept in SDG&E's project tracking system. The retention sample for this study was drawn from this database.

Sampling and Data Collection

The M&E Protocols require that retention studies evaluate the top 10 measures or 50% of the estimated resource value, whichever number of measures is less, excluding miscellaneous measures. For PY94, SDG&E's project tracking system did not carry resource values (and could not be constructed due to changes in data systems) but rather the "incentive basis"(IB) as defined in the shareholder mechanism in place at that time. In accordance with the retroactive waiver attached to the end of this report, SDG&E ranked the PY94 NRNC measures by descending IB. The top six measures account for 54% of non-miscellaneous program IB. For PY95, nine measures constitute 50.7% of resource value. These 15 measures were evaluated for retention.

The M&E Protocols require that PY94 and PY95 program years be combined for retention studies to increase sample sizes for retention measures. Unfortunately, due to the unique measures associated with new construction customers, there is no overlap between PY94 and PY95 measures to be studied.

Forty-three customers installed the 6 retention measures to be studied in PY94. SDG&E's sample design was to conduct an on-site census of all PY94 NRNC participants.

Two hundred and twenty-two customers installed the 9 retention measures in PY95. SDG&E's sample design was to conduct an on-site audit of those customers who installed 2 or more of the 9 measures to be studied. Two additional customers were added to the sample in order to cover all 9 measures. Altogether, a sample of 156 customers of the 222 participants was selected. M&E Table 7 section 1.e. shows the sample coverage of the NRNC participants.

SDG&E contracted with Xenergy, Inc. to conduct the on-site audits of industrial and military sites in the PY94 and PY95 NRNC program. SDG&E contracted with VIEWtech, Inc. to conduct the on-site audits of commercial customers in the program. The objective of the on-site visits was to verify the number of measures that were still in place and operable – the definition of effective useful life (EUL) per the M&E Protocols. Copies of the on-site data collection forms are provided at the end of this study.

Measures/"Like" Measures

In order to apply any changes in EUL to measures not studied, M&E Protocols require that the utility identify any "like" measures within the program. For SDG&E's PY94 and PY95 NRNC Program, the "like" measures are in the HVAC and lighting end uses. M&E Protocols Table 6 in this report identifies those measures that are determined to be "like" measures (those measures that were not studied but have similar characteristics to measures that were evaluated in this retention study).

Econometric Framework

Retention model for estimating median lifetime

The model for lifetime estimation involves the key concepts of the survivor function, the hazard function, and median lifetime. Once these concepts are established, they will be applied to the data and a maximum-likelihood framework (which brings the concepts and the data together) to produce estimated median lifetime.

The survivor function

For the lifetime of the equipment in question, the survivor function is,

$$S(j) = \text{prob}(\text{lifetime} \geq j)$$

It is the estimated survivor function that allows the formation of an expected median lifetime. Of course, the survivor function must be specified. This is done through a related function: the hazard function.

The hazard function

The hazard function $h(j)$ is the probability of equipment failure (removal, retirement, etc.) in the next unit of time, conditioned on having reached age j. It bears the following relationship to the survivor function.

$$h(j) = -\frac{dS(j)/dj}{S(j)}$$

The hazard function is generally the "intuitive starting point" of any lifetime analysis, since it is structured to reflect the general pattern of equipment failures. The quadratic hazard function

allows for U-shaped and linear hazard curves ($b_2 = 0$, below), as well as an exponential survivor function ($b_1 = b_2 = 0$, below) as special cases:[1]

Equation 1 (The quadratic hazard function)

$$-\frac{dS(j)/dj}{S(j)} = h(j) = b_0 + b_1 j + b_2 j^2$$

Note that the hazard function is actually a differential equation in the survivor curve.

Getting the survivor function from the hazard function

The exact structure of the survivor function can be obtained by solving the hazard function (a differential equation in the survivor function) for $S(j)$, imposing the constraint $S(0) = 1$:

Equation 2 (The survivor function)

$$S(j) = e^{-\left(\beta_1 j + \beta_2 j^2 + \beta_3 j^3\right)} \quad \left(\beta_1 = b_0, \quad \beta_2 = \frac{b_1}{2}, \quad \beta_3 = \frac{b_2}{3}\right)$$

The median lifetime

The median age at failure m is then given by the implicit expression,

Equation 3 (Definition of the median m)

$$S(m) = e^{-\left(\beta_1 m + \beta_2 m^2 + \beta_3 m^3\right)} = \frac{1}{2}$$

We now show the steps necessary to estimate the median lifetime from actual data, by defining the "discrete failure function" and the likelihood function.

The discrete failure function

For uniform periods of time (months), the likelihood of failure at age j (before age j+1) is,

Equation 4 (The discrete failure function)

$$F(j) = S(j) - S(j+1)$$

The data, the likelihood function, and estimation

Consider an equipment sample of size n. Let n_j^F be the number of known failures at age j, and let n^Q be the number of known failures whose age at failure is unknown; then the number of

[1] Lawless, J.F. (1982). *Statistical Models and Methods for Lifetime Data*. New York: Wiley. 252-253.

survivors by observation at age J is $n - n^Q - \sum_{j=0}^{J} n_j^F$. Furthermore, let ω be the likelihood that the age at failure is unknown, given failure. The log-likelihood function (the log of the likelihood of observing the data) is then,

$$L(\beta, \omega) = \sum_{j=0}^{J} n_j^F \log[(1-\omega)F(j)] + n^Q \log\{\omega[1-S(J+1)]\} + \left(n - n^Q - \sum_{j=0}^{J} n_j^F \right) \log S(J+1).$$

The log-likelihood function can be maximized with respect to its arguments just as a sum-of-squares function can be minimized in a standard regression problem. Standard numerical and grid-search methods can be used to maximize the log-likelihood function. Once estimates are obtained for the vector of coefficients β, the median lifetime can be estimated using Equation 3.

The estimated variance of β, on which the standard errors of its elements are based, is a fairly complex calculation and one which will not be expressly derived here, although the calculation is based on the expectation of the second-derivative matrix for the log-likelihood function:

$$VAR(\beta) = -\left(E \frac{\partial^2 L}{\partial \beta \partial \beta'} \right)^{-1}$$

The estimated median is a nonlinear function of β; as such, its standard error can be estimated dependably for large samples, based on $VAR(\beta)$.

Solving data problems--developing independent and dependent failures

Lifetime estimation using maximum likelihood requires the statistical independence of failures. Sometimes equipment failures are indeed independent, as when failures occur due to age or manufacturing weaknesses. However, in many cases failures are not independent--that is, they are "dependent"--as when, for example, a "cluster" or "bank" of lighting measures are jointly removed during a remodeling.

Independent failures can easily be handled using the maximum likelihood framework described above. Fortunately, dependent failures can also be handled in a similar fashion. A cluster of dependent failures can be viewed as an independent failure in its own right, one of numerous observed clusters, each of which is subject to the possibility of independent failure. The maximum likelihood framework can simply be applied to the clustered data.

Modeling and estimating with independent and dependent failures

When any one piece of equipment is subject to both independent and dependent failure, the hazard function can be modified accordingly (ignoring the event of both types of failures occurring jointly):

$$h(j) = h_{ind}(j) + h_{dep}(j)$$

Independent failures are bound to be age-dependent, so that,

$$h_{ind}(j) = b_0^{ind} + b_1 j + b_2 j^2$$

Dependent failures are mostly likely age-independent (with respect to the building-remodeling effect, we expect the age of the equipment to be irrelevant), so that,

$$h_{dep}(j) = b_0^{dep}$$

This yields a new survivor function (and, implicitly, a new median life that can be estimated based on the joint use of independent and dependent failure data):

$$S(j) = e^{-\left[\left(\beta_1^{ind} + \beta_1^{dep}\right) j + \beta_2 j^2 + \beta_3 j^3\right]}$$

The variance matrix for the joint estimation problem can be constructed, as can the standard error for the jointly estimated median lifetime, represented by the expression,

$$S(m) = e^{-\left[\left(\beta_1^{ind} + \beta_1^{dep}\right) j + \beta_2 m^2 + \beta_3 m^3\right]} = \frac{1}{2}$$

M&E PROTOCOLS TABLE 6

RESULTS USED TO SUPPORT

PY94 THIRD EARNINGS CLAIM

FOR

NONRESIDENTIAL NEW CONSTRUCTION PROGRAM

NINTH YEAR RETENTION EVALUATION

MARCH 2004

STUDY ID NOS. 937 & 973

TABLE 6 for RETENTION STUDIES
PROGRAM: NRNC
YEAR(S): PY94 & PY95

	1. Enduse	1. Measure	*2. ex-ante* EUL	*2. ex-ante* EUL Source	*3. ex-post* EUL from Study	*4. ex-post* EUL for 3rd & 4th claim Per Protocols	*4. ACTUAL* EUL used for 4th claim	5. Standard Error	6. Upper & lower bounds @ 80% Conf Int		7. P Value	8. Realization Rate	9. "Like" Measures to be Adjusted
PY94	HVAC	Energy Efficient HVAC Process	15	**	NA	15.0	15					1.00	1
PY94	LIGHTING	2FO32/1B4T8-2L/1R4-D2	20	***	47.8	20.0	20	48.8	(14.8)	110.4	57%	1.00	2
PY94	LIGHTING	1HP1000	15	***	NA	15.0	15					1.00	3
PY94	HVAC	VSD/ASD for Motors	15	***	NA	15.0	15					1.00	4
PY94	LIGHTING	2FO32/1B4T8-2L/1R4-CNC	9	***	43.0	9.0	9	32.1	1.9	84.2	29%	1.00	5
PY94	HVAC	VFD's on 40HP Sup Fans & 20HP Ret Fans	15	***	NA	15.0	15					1.00	6
PY95	LIGHTING	CF-13Q Hardwire Fxtr	14	***	62.0	62.0	14	22.2	33.6	90.4	3%	4.43	7
PY95	LIGHTING	Opt Refl(4ft/2dlamp)	16	***	38.3	38.3	16	17.4	16.1	60.6	20%	2.40	8
PY95	HVAC	Hi Eff. Chlr, 1-500 ton/2 1000 ton	20	***	NA	20.0	20					1.00	9
PY95	LIGHTING	T-8 El Bal (4ft/2la)	16	*	31.2	31.2	16	3.1	27.3	35.2	0%	1.95	10
PY95	LIGHTING	CF-26 Hardwire Fxtr	14	***	18.9	14.0	14	7.9	8.8	29.0	53%	1.00	11
PY95	HVAC	Chiller: Centrifugal High Eff	20	***	NA	20.0	20					1.00	12
PY95	LIGHTING	Electronic Bal (8ft)	16	*	15.4	16.0	16	7.8	5.4	25.4	94%	1.00	13
PY95	LIGHTING	T-8 El Bal (4ft/4la)	15	****	56.5	56.5	15	17.8	33.7	79.3	2%	3.80	14
PY95	LIGHTING	1HP250	20	***	NA	20.0	20					1.00	15

# above	9. "Like" Measures to be Adjusted	
2	4FO32/1B4T8-4L	PY94
2	2FO32/.5B4T8-4L	PY94
2	2FO32/1B4T8-2L	PY94
8	Opt Refl(8ft/1dlamp)	PY95
9	Centrifugal Chiller Unit 409&410 & 1ASD on 4	PY95
9	Chiller: OTHER	PY95
9	Centrifugal Chiller 800 Ton Unit 408	PY95
10	T-12 El Bal(4ft/2la)	PY95

*M&E Protocols Appendix "F"

**Advice Letter filing 926-E-A/934-G-A: March 23, 1995

*** Custom Job: Engineering Judgement

**** Fourth Year Retention Study, March 1999, Study ID Nos. 936 & 972

Note: NA indicates that no failures were observed

M&E PROTOCOLS TABLE 7

DATA QUALITY AND PROCESSING

DOCUMENTATION

FOR

NONRESIDENTIAL NEW CONSTRUCTION PROGRAM

NINTH YEAR RETENTION EVALUATION

MARCH 2004

STUDY ID NOS. 937 & 973

M&E PROTOCOLS TABLE 7

DATA QUALITY AND PROCESSING DOCUMENTATION

For Nonresidential New Construction Program

Ninth Year Retention Evaluation

March 2004

Study ID Nos. 937 & 973

B. RETENTION STUDIES

1. OVERVIEW INFORMATION

a. **Study Title and Study ID:** 1994 & 1995 Nonresidential New Construction Program – Ninth Year Retention Evaluation, March 2004, Study ID Nos. 937 & 973.

b. **Program, Program Year(s), and Program Description (Design):** Nonresidential New Construction Program for the 1994 and 1995 program years. The Program was designed to encourage the design and installation of new construction projects that exceeded California's Title 24 Building Energy Efficiency Standards.

c. **End Uses and Measures Covered:** Lighting and HVAC end uses. The measures are identified in Table 6.

d. **Methods and Models Used:** See the section of the report entitled Econometric Framework for a complete description of the final model specifications.

e. **Analysis sample size:**

Program Year	Measure	# of Customers in Program	# of Installations in Program	# of Measures Installed in Program	# of Measures in Sample Frame	Date of Retention Studies
PY94	Energy Efficient HVAC Process	1	1	1	1	May ‘98 June '00 June '02
PY94	2FO32/1B4T8-2L/1R4-D2	35	7,039	7,039	7,039	Apr-June ‘98 May-July ‘00 Mar-June ‘02
PY94	1HP1000	1	153	153	153	June ‘98 July '00 August '02
PY94	VSD/ASD for Motors	1	12	12	12	May ‘98 July '00 August '02
PY94	2FO32/1B4T8-2L/1R4-CNC	19	3,694	3,694	3,694	Apr-June ‘98 June-July ‘00 Mar-Aug ‘02
PY94	VFD's on 40HP Sup Fans & 20HP Ret Fans	1	12	12	12	July ‘98 July '00 August '02

Program Year	Measure	# of Customers in Program	# of Installations in Program	# of Measures Installed in Program	# of Measures in Sample Frame	Date of Retention Studies
PY95	CF-13Q Hardwire Fxtr	80	7,859	7,859	6,947	May-July ‘98 May-Aug ‘00 Mar-Aug ‘02
PY95	Opt Refl (4ft/2dlamp)	44	8,842	8,842	8,813	Apr-June ‘98 May-Sept ‘00 Mar-Aug ‘02 May '03
PY95	Hi Eff. Chlr, 1-500 ton/2 1000 ton	1	3	3	3	June ‘98 July '00 May '02
PY95	T-8 El Bal (4ft/2la)	182	40,824	40,824	30,936	May-July ‘98 May-Sept ‘00 Mar-July ‘02 May '03
PY95	CF-26 Hardwire Fxtr	25	3,172	3,172	3,038	Apr-July ‘98 May-Aug ‘00 Mar-July ‘02 May '03
PY95	Chiller: Centrifugal High Eff	5	5	5	5	Apr-May ‘98 June-July ‘00 Apr-Aug ‘02
PY95	Electronic Bal (8ft)	22	8,986	8,986	5,654	May-June ‘98 May-Aug ‘00 Mar-Aug ‘02 May '03
PY95	T-8 El Bal (4ft/4la)	63	11,770	11,770	11,177	May-July ‘98 May-Aug ‘00 Mar-Aug ‘02
PY95	1HP250	1	684	684	684	June ‘98 July '00 May '02

2. DATABASE MANAGEMENT

a. **Data sources:** the data came from the following sources:

- Customer name, address, phone number, installed measures, and participation date from the program tracking database

- Measures were determined to be in place and operable by the on-site data collection described in the section of the report entitled Sampling and Data Collection.

The data were merged together to form the dataset for the econometric analysis leading to the estimated Effective Useful Life

b. **Data Attrition:** There was minimal data attrition. For PY94 measures: a census of all participants was achieved in 1998, 2000, and 2002. For PY95 measures: in 1998, 1 customer in the sampling plan refused to allow the surveyors on-site for safety reasons since major construction was going on at the facility. This customer participated in 3 of the lighting measures to be studied, but his number of installations was very small. The sampling plan called for 6,947 CF-13Q hardwire fixtures – 20 were part of the refusals (0.3%). The plan called for 8,813 optical reflectors (4ft/2dlamp) – refusals were 50 (0.6%). The sampling plan called for 30,936 T-8 Electronic Ballasts (4ft/2la) – refusals were 72 (0.23%). In 2000 and 2002, 11 on-site audits were not completed. These 11 customers were visited in May 2003 and are included in the analysis.

c. **Data Quality Checks:** The data sets for the analysis were merged in SAS by the appropriate key variables. Counts of the data sets before and after the merges were verified to ensure accurate merging.

d. **Unused collected data:** Initially for PY95, T-12 Electronic Ballasts (4ft/2la) were included in the top 50% of resource value. On-site visits repeatedly came back with the report that there are no T-12 Electronic Ballasts (4ft/2la) at the site, but there are T-8 Electronic Ballasts (4ft/2la). This lead to the discovery of a systematic mislabeling in the project tracking system; a code for T-8's was mislabeled as a code for T-12's. After correcting for this, T-12's no longer were a significant contributor of program resource value. However, some sites that were properly labeled T-12's were still visited, but this data was ignored since T-12's no longer were in the top 50% of resource value, while the contribution of T-8's resource value increased significantly (after the correction, T-12's only accounted for 1% of program resource value). This data resides in Excel spread-sheets.

3. SAMPLING

a. **Sampling procedures and protocols:** The sample was a census for PY94 – all participants with the measures in question were contacted. PY95 sample was based on customers installing 2 or more of measures to be studied. In order to insure coverage of all measures, 2 additional customers were added to the sample. Section 1.e. above shows how the sample covered the participant population.

b. **Survey information:** Copies of the surveys are attached at the end of the report. The survey completed response rate was 100% for PY94 measures for all three data collection intervals. For PY95, 1 customer out of 156 refused to allow the surveyors on-site due to safety concerns with on-going construction in 1998. The response rate for PY95 measures in 1998 was 155 out of 156, or 99.4%. In 2000 and 2002, 11 on-site audits were not completed, giving a response rate of 145 out of 156, or 93%. These 11 customers were visited in May 2003 and are included in the analysis, effectively raising the response rate to 100%.

c. **Statistical Descriptions:** See Failure Distribution Tables provided in Section 4.c

4. DATA SCREENING AND ANALYSIS

a. **Outliers and Missing Data Points:** No outliers and no missing data.

b. **Background Variables:** NA.

c. **Screened Data:** In the following failure distribution tables,

NN = the quantity of the measure studied

NQ = the number of observed failures whose age at failure is unknown

NF = the number of observed failures whose age at failure is known

ND = the number of measures still in place and operable

FAILURE DISTRIBUTION TABLES PER MEASURE

DATUM	DESCRIPTOR	AGE (MONTHS)
9,939	NN95	NA
379	NQ95	81
9,454	ND95	81
106	ND95	89
22_NRNC_IND_T-8 El Bal_4ft-4la.xls (independent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
70	NN95	NA
1	NQ95	77
2	NQ95	83
57	ND95	77
10	ND95	83
22_NRNC_DEP_T-8 El Bal_4ft-4la.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
23,650	NN95	NA
1,574	NQ95	82
22,076	ND95	82
21_NRNC_IND_T-8 El Bal_4ft-2la.xls (independent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
393	NN95	NA
29	NQ95	81
3	NQ95	83
297	ND95	81
84	ND95	83
21_NRNC_DEP_T-8 El Bal_4ft-2la.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
52	NN95	NA
3	NQ95	65
1	NQ95	60
2	NQ95	81
46	ND95	65
20_NRNC_DEP_Opt Refl_4ft_2dlamp.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
17	NN95	NA
2	NQ95	71
1	NQ95	65
1	NQ95	61
13	ND95	71
19_NRNC_DEP_Electronic Bal_8ft.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
28	NN95	NA
1	NQ95	33
4	NQ95	65
1	NQ95	80
22	ND95	80
18_NRNC_DEP_CF-26 Hardwire Fxtr.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
6,795	NN95	NA
152	NQ95	82
6,643	ND95	82
17_NRNC_IND_CF-13Q Hardwire Fxtr.xls (independent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
103	NN95	NA
2	NQ95	54
1	NQ95	61
1	NQ95	83
82	ND95	54
17	ND95	83
17_NRNC_DEP_CF-13Q Hardwire Fxtr.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
35	NN95	NA
1	NQ95	23
34	ND95	23
16_NRNC_DEP_2FO32_1B4T8-2L_1R4-D2.xls (dependent failures)		

DATUM	DESCRIPTOR	AGE (MONTHS)
19	NN95	NA
2	NQ95	76
15	ND95	76
2	ND95	91
15_NRNC_DEP_2FO32_1B4T8-2L_1R4-CNC.xls (dependent failures)		

d. **Model statistics:** See M&E Protocol Table 6.

e. **Specification:**

	Type of Data Used		Type of Specification Used		
Study	Independent Failures	Dependent Failures	Exponential Specification	Linear Specification	Combination Linear/Exponential Specification
NRNC	x	x	x		

1) **Heterogeneity:** See section of the report entitled "Econometric Framework."

2) **Omitted Factors:** None omitted.

f. **Error in Measuring Variables:** NA.

g. **Influential Data Points:** None.

h. **Missing Data:** None.

i. **Precision:** The calculation for the standard error is based on the expectation of the second-derivative matrix for the log-likelihood function.

MEASURE RETENTION SURVEYS

FOR

NONRESIDENTIAL NEW CONSTRUCTION PROGRAM

NINTH YEAR RETENTION EVALUATION

MARCH 2004

STUDY ID NOS. 937 & 973

PY94 and PY95 SDG&E Retention Study
Nonresidential New Construction – Commercial Sector
April – July 1998
May - August 2000
March - August 2002

Site Name=>

Prem ID =>

Program=>

Site Address=>

1. Measure	New Qty	No. Verified	Plus %	No. Operable	No. Removed	Date Removed
Energy Efficient HVAC Process						
2FO32/1B4T8-2L/1R4-D2						
1HP1000						
VSD/ASD for Motors						
2FO32/1B4T8-2L/1R4-CNC						
VFD's on 40HP Sup Fans & 20HP Ret Fans						
CF-13Q Hardwire Fxtr						
Opt Refl(4ft/2dlamp)						
Hi Eff. Chlr, 1-500 ton/2 1000 ton						
T-8 El Bal (4ft/2la)						
CF-26 Hardwire Fxtr						
Chiller: Centrifugal High Eff						
Electronic Bal (8ft)						
T-8 El Bal (4ft/4la)						
1HP250						

VIEWtech

SDG&E NRNC – Military and Industrial Survey for PY94 & PY95

April – July 1998
May - August 2000
March - August 2002

SDG&E PY94 & PY95 NRNC Program - Military and Industrial Sector
Measure Retention Survey

Site_nbr: **Site_sec:** **PART:**
Site_nm:
Rank: **Address:**
Site_Cty:
Bldg_sz: **Bldg_lgt:**
ENDUSE:

Site Contact (DB): _____
Contact Ph: _____

Alternate contact name: _____
Alternate contact phone: _____

Surveyor: _____
Suvey Date: _____

Contract	MSR #	NEW DESC	kWh Sav.	kW Red.	Th. Sav.	MSR LOC	Ins. Qty	Run Hrs	Ver. Schedule (incl.date of change in schedule)

SDG&E PY94 & PY95 NRNC Program - Military and Industrial Sector
Measure Retention Survey

Site_nbr: **Site_sec:** **PART:**
Site_nm:
Rank: **Address:**
Site_Cty:
Bldg_sz: **Bldg_lgt:**

ENDUSE:

Site Contact (DB): _____
Contact Ph: _____

Alternate contact name: _____
Alternate contact phone: _____

Surveyor: _____
Suvey Date: _____

SURVEY DISPOSITION

Audit Completed?: [ ]Yes [ ]No (check one)

Reason for not completed: [ ]
1 = Unable to reach/contact.
2 = Changed mind about participation in study.
3 = Premise closed/not operating.
4 = Site/contact info incorrect and could not find alternate contact.
5 = Requested to call back, could not complete call.
6 = Rescheduled upon arrival at site.
7 = Other: Describe:

DISCREPANCIES

Reason for discrepance in counts (check one and describe if necessary)
[ ]=Removed, not replaced (include date of rernoval:,
[ ]=Never installed
[ ]=Exceeds tracking system counts (describe reasons for additional eqmt, eg, retrofits part of SDG&E Program in 1995).
[ ]=Removed, replace with more efficient equipment
[ ]=other, describe situation fully

Description/Comments:

SDG&E PY94 & PY95 NRNC Program - Military and Industrial Sector

Measure Retention Survey

Site_nbr: **Site_sec:** **PART:**

Site_nm:

Rank: **Address:**

Site_Cty:

Bldg_sz: **Bldg_lgt:**

Site Contact (DB): _____
Contact Ph: _____

Alternate contact name: _____

Alternate contact phone: _____

Surveyor: _____

Suvey Date: _____

Facility Tenancy/Ownership:

Have Tenant and Owner remained the same? [ ] Yes [ ] No (check one)

If NO, what best describes the situation [ ] (select one, describe below)

1. New tenant-same owner.
2. Same tenant-New owner
3. New tenant-New owner
4. Premise closed.

Description/Comments:

Building/Facility Configuration:

Check one box that represents the facility layout (check all that apply, describe below):

[ ] Same as time of installation.
[ ] Same tenant, had tenant improvements
[ ] Same tenant, increased floorspace
[ ] Same tenant, decreased floorspace
[ ] New tenant, no tenant improvements
[ ] New tenant, and had tenant improvements
[ ] New tenant, increased floorspace
[ ] New tenant, decreased floorspace, ie, there is empty floorspace.

Description/Comments:

RETROACTIVE WAIVER

FOR

NONRESIDENTIAL NEW CONSTRUCTION PROGRAM

NINTH YEAR RETENTION EVALUATION

MARCH 2004

STUDY ID NOS. 937 & 973

SAN DIEGO GAS & ELECTRIC
RETROACTIVE WAIVER FOR
1994 RAEI-REFRIGERATOR, CEEI, IEEI, and NRNC PROGRAMS
(Study ID Nos. 915, 924/960, 927/963, and 936/972)
(Study ID Nos. 916, 925/961, 928/964, and 937/973)

Approved by CADMAC on January 24, 2001

REQUEST

SDG&E is requesting a waiver for the PY94 RAEI-Refrigerator, CEEI, IEEI, and NRNC Programs identification of fourth and sixth or ninth year retention measure studies required by Table 9A of the Protocols. Protocol Table 9A defines retention study measures as "the top ten measures, excluding measures that have been identified as miscellaneous (per Table C-9), ranked by net resource value or the number of measures that constitutes the first 50% of resource value, whichever number of measures is less." SDG&E is requesting that (1) commercial measures for PY94 be identified by the top 50% of the "incentive basis" (IB) as defined in the shareholder mechanism in place at that time; and (2) that residential refrigerator measures be identified as the top 50% of gross kWh savings.

BACKGROUND

For PY94, SDG&E's project tracking system did not carry resource values (and could not be constructed due to changes in data systems), but rather the "incentive basis" (IB) as defined in the shareholder mechanism in place at that time. IB was a calculated as follows: IB = Benefits – (Administrative Costs + (.25 * Incentive Costs) + (.5 * Equipment Costs)). SDG&E ranked the PY94 measures by descending IB. PY94 residential programs did not carry the IB value; the refrigerators were ranked by percent of program gross kWh savings. SDG&E believes that the measures required to be included for the fourth and sixth or ninth year retention studies are most likely identified by the substitute criteria. By identifying the top 50% of IB, the measures constituting the greatest shareholder earnings are being evaluated. The number of measures, percentage of non-miscellaneous program IB/kWh savings, and program earnings are presented in the following table.

Program	Number of Retention Study Measures	Percent of Non-Miscellaneous IB	Program Earnings (Millions of $$)
CEEI	8	51.4%	3.413
NRNC	6	54%	1.110
IEEI	11	69%	1.707
RAEI-Refrigerators	1	52%of kWh	.65

CONCLUSION

SDG&E believes that it is reasonable to assume that the identified measures constitute the top 50% of program net resource value. This is a one-time request, has no effect on earnings, and does not affect future earnings claims. Therefore, SDG&E is requesting that it be granted this waiver to identify retention measures for the PY94 CEEI, NRNC, IEEI and RAEI-Refrigerator Programs as described above.