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End Use Forecaster

Energy Sales and DSM Potential Analysis:

Reference Guide

(Version 4.1)

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Tables & Figures

I. Introduction

End Use Forecaster is a market-segmentation and modeling framework that forecasts the impacts of competitive strategies and market scenarios on sales, revenues, and market shares.

The object of this chapter is to familiarize you with the overall End Use Forecaster modeling structure and to describe how the system relates to common business issues concerning demand forecasting and market assessment. This chapter also serves to explain how the various modules within End Use Forecaster relate to one another. Subsequent chapters define the contents and features of each individual module.

End Use Forecaster: An Overview

End Use Forecaster, formerly known as Quant.sim, is a market segmentation, competitive assessment, and sales projection application developed to respond to market needs and overcome the limitations of existing demand forecasting and market planning tools. The application, originally developed in 1993, is constructed using SAS software.

We have found that each utility's market structure and competitive environment is unique and that a major shortcoming of other tools has been an inability to accurately capture this diversity. End Use Forecaster's Market Segmentation module provides the ability to update the model to reflect new strategies without writing SAS programming code. Unique market conditions translate into an inherently flexible, dynamic modeling framework that can rapidly adapt to new market conditions.

This flexibility is afforded through a model development approach that separates specific market issues from theoretical modeling constructs:

- ***Logic and theory***, the portion of the system comprised of the programming code and data structures, is stored and managed in one location
- ***Market data***, which are unique for every company and strategy, are stored in a separate location

This structure makes market segmentation and analyses relatively easy tasks compared to adapting spreadsheet models or rewriting "black box" programming code. As an example, consider the "DSM planning" and "competitive assessment" market dimensions in the Table 1 below. The DSM dimensions show a standard end-use forecast model design for the utility industry, while the competitive assessment dimensions illustrate another way to set up End Use Forecaster to analyze new retail competition if retail choice is present in the jurisdiction.

Table 1. Alternative Market Segmentation Designs – Utility Industry Example

Market Dimension	DSM Planning	Competitive Assessment
Dimension 1	Market sector (residential, commercial, industrial, agricultural)	Risk of switching
Dimension 2	Customer type (dwelling, building, industry segments)	Customer value (to energy provider)
Dimension 3	End uses	Products and services
Dimension 4	Fuel types	Provider choices
Dimension 5	Efficiency levels	Product choices

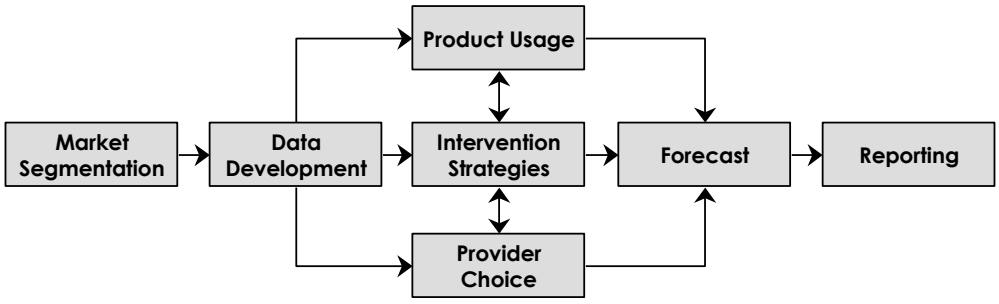
End Use Forecaster has other dimensions that capture factors affecting product demands. Perhaps the most important of these is End Use Forecaster's "vintaging" capability. Vintaging refers to product or service turnover that is a function of either physical lives or contract period. Accurate assessments of product turnover are crucial to obtaining accurate forecasts for any product where purchases are derived from a fraction of the population in the market at a moment of time. An example of vintaging would be accounting for energy-consuming equipment such as motors, boilers, water heaters, chillers, etc., where demand over a given time interval is the sum of demands from new customers plus those customers replacing existing equipment.

The effective use of the inherent multidimensionality of most business forecasting issues is a key strength of the End Use Forecaster framework. Critical dimensions of business issues (e.g., geography, customers, products, competitors, equipment lives, etc.) are included in every forecast, along with dimensions users can modify to resolve a variety of business issues. For example, forecasters may be interested in the price elasticity of demand, marketing staff may want to study market shares across various scenarios, and corporate finance may need the bottom line revenue forecast. All these (and more) are immediately available in every forecast due to the concentration of rich and flexible dimensionality.

Seven primary modules form the heart of the End Use Forecaster framework: Market Segmentation, Data Development, Product Usage, Provider Choice, Intervention Strategies, Forecasting, and Reporting. .

Figure 1 depicts the relationships between these modules. Each is summarized below and in the remaining chapters of this Reference Guide.

Figure 1. End Use Forecaster Modules and Structure



Interface Design

The user interface to the End Use Forecaster model is constructed using SAS/AF (Applications Facility). SAS/AF software provides dozens of predefined “classes” that enabled the development of End Use Forecaster. These classes include a wide selection of both visual and non-visual aspects. The visual classes, or widgets, define objects that are placed on the screen, including icons, push buttons, text boxes tables, etc. The non-visual classes use screen control language (SCL) that define the objects controlling End Use Forecaster behind the scenes. Figure 2 and Figure 3 show the first two screens users see after starting End Use Forecaster.

Figure 2. Welcome Screen

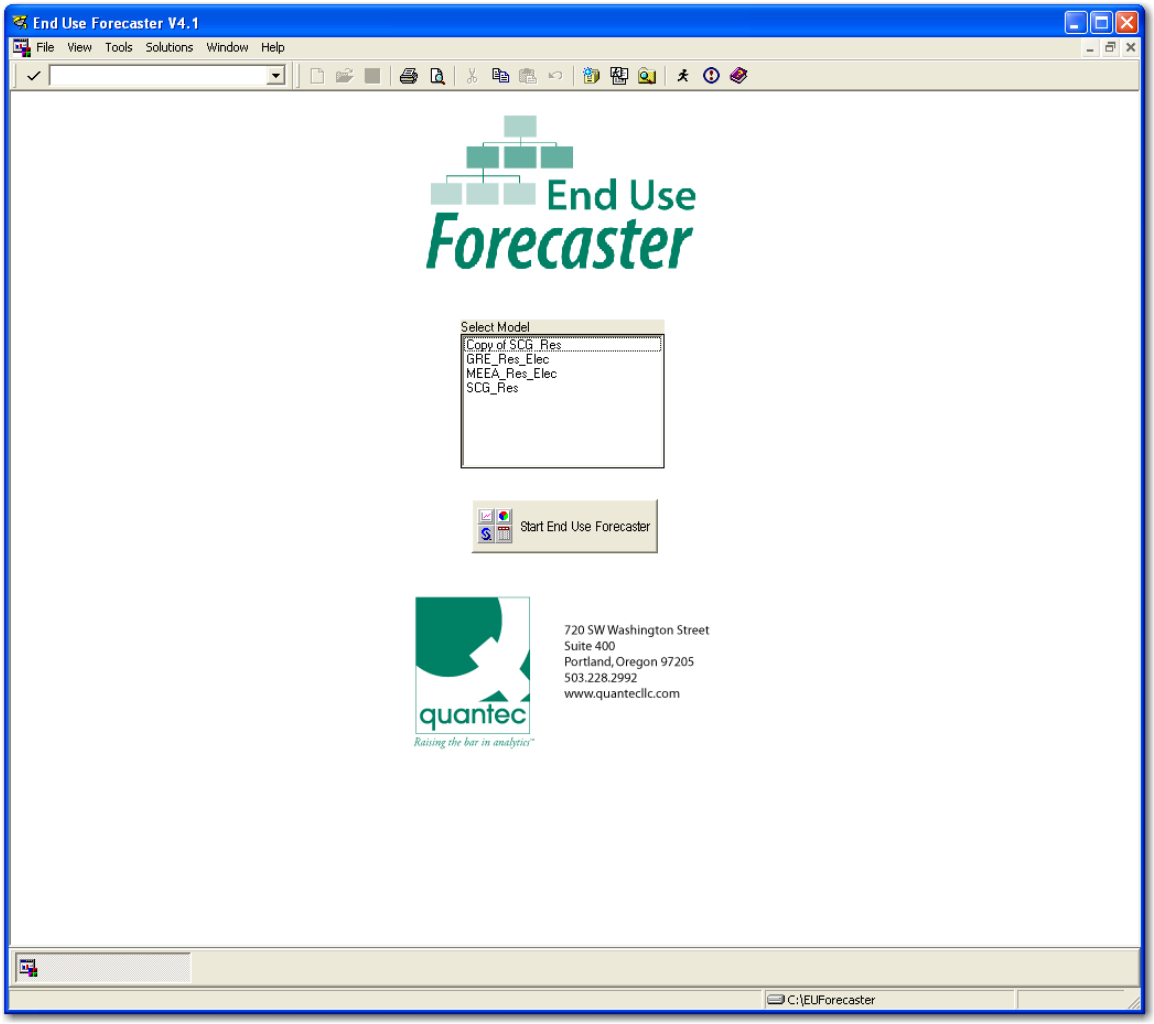
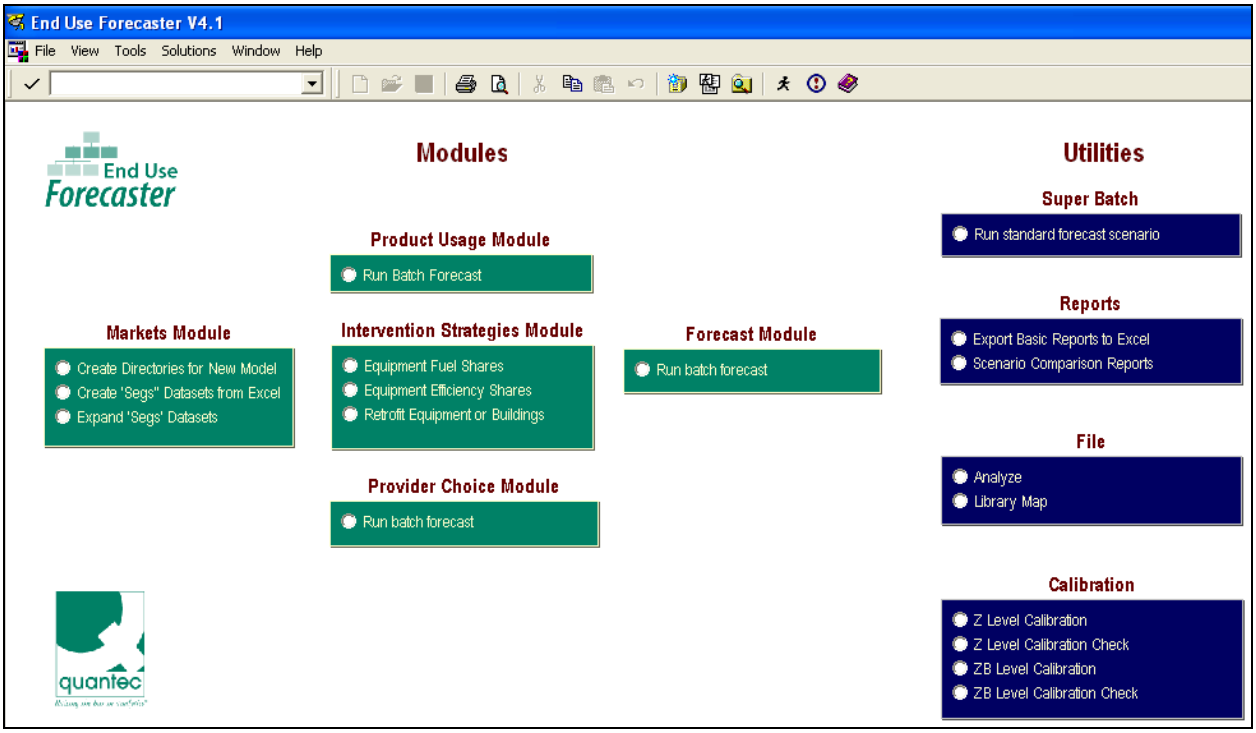


Figure 3. Main Dashboard



The interface is the only part of the End Use Forecaster framework that is compiled. All of the mathematical operations are in open SAS code, and End Use Forecaster's SAS/AF interface can also be edited and recompiled. This is a true "open architecture" design that allows users to modify and extend the End Use Forecaster framework.

In addition to End Use Forecaster's customized sets of tools, there is also a wide variety of data management, analysis, and reporting tools that are packaged with the SAS System.

Data Exchange

End Use Forecaster uses SAS/ACCESS software to provide direct and transparent access to various databases such as:

- DB2 Under UNIX and PC Hosts
- ORACLE
- SYBASE
- SQL/DS
- ODBC
- PC File Formats (Excel, Access)
- SYSTEM 2000 software

Since data access functions are separated from End Use Forecaster's logic, underlying data sources may change, but the model's capabilities will not be affected.

Market Segmentation

Market Segments

The primary goal of any market segmentation design in End Use Forecaster is to disaggregate the overall market into meaningful portions of customer types that behave similarly in terms of product demands and the set of choices they face. These disaggregations are arranged hierarchically, with Dimension 1 at the top of the "tree." Each Dimension 1 class can have one or more Dimension 2 classes, each Dimension 2 class can have one or more Dimension 3 classes, and so on.

Strategic Information Needs

A secondary goal of the market segmentation design is to designate groups of customers and products for which sufficient data are available to be fed into End Use Forecaster's forecasting framework. It may not be desirable to disaggregate the market into segments for which little or no data are available or where there is little distinction between two or more groups. Every new market segment requires additional disk storage space and more time to assemble the required End Use Forecaster data inputs. The objective should be to ***optimize*** the number of market segments: create enough market sectors to provide differentiation on answers to important questions but not so many that they become a burden to the overall process.

Data Development and Entry

Successful implementation of the End Use Forecaster model relies on highly integrated sets of information. Data entry is closely related to the market segmentation process, and both are addressed in this Reference Guide. Each set of input data uses different dimensions, so highly structured templates were designed to minimize redundancy and eliminate error at the same time.

End Use Forecaster uses market segmentation information and templates to set up all the required SAS datasets such that they are entirely consistent with the segmentation design.

Data Entry Formats

End Use Forecaster's datasets can be populated in several ways. The most common methods are:

- Exporting/importing data using SAS/ACCESS for PC file formats
- Programmatic data entry through simple SAS programs

As users gradually increase the number of distinct market segments from dozens to hundreds to thousands, it is anticipated that they will take advantage of SAS/ACCESS links to other company databases. Such links would allow for real-time forecast updates as database information is updated.

Product Usage Module: Modeling Equipment Consumption

End Use Forecaster tracks consumption of resources (such as natural gas, electricity, water, minutes of telephone or Internet use, gasoline, etc.) through the Product Usage module. This module is only used when there are secondary, derived demands from customers' product choices. For example, a utility would be interested in the use of energy from appliances to generate natural gas or electricity forecasts, but other types of manufacturers may not need this information to develop sales forecasts. If certain parts of the model are not needed in a given application, you may assign default values (usually a 0 or 1) that essentially turn off that portion of the model.

Product usage can vary with a variety of factors such as weather, non-weather seasonal factors, customer characteristics, prices, and other product attributes. Several modeling techniques explain and predict product usage, including scalars (exogenous estimates), econometric functions, and other statistical models.

Regardless of the approach taken, the Product Usage module provides a forecast of the predicted consumption by combining (1) a forecast of consumption factors or drivers (i.e., independent or exogenous variables) and (2) a set of coefficients associated with each exogenous variable.

Provider Choice Module: Modeling Customer Service and Purchase Decisions

Types of Choices: The Provider Choice module analyzes customer choice decisions among competitors and product options. For example, a commercial building operator chooses between fuel (provider) types for HVAC systems, and then from various equipment efficiency levels (product options) within the fuel type. Purchase decisions are represented by a nested structure of provider and product option choices.

Modes of Choice Modeling

The Provider Choice module is designed for two types of modeling: (1) the estimation of choice parameters, and (2) the forecast of market shares given these choice parameters. More specifically, the Provider Choice Module:[1]

- ***Simulates parameter estimates*** relating to customer choice in markets where micro-(customer) level information is not available, but aggregate cost and market share figures are known, or
- ***Uses parameter estimates*** from the application of logistic regression, or other models of customer choice, to micro-level customer data.

[1] The Provider Choice Module can be bypassed in some applications such as DSM potential analysis. In this type of framework, the base line fuel and efficiency shares are held constant and are determined outside the model. The Intervention Strategies Module is then used to view alternate market shares associated with, for example, technical and achievable DSM potential.

If primary market research is used to develop the micro data necessary for parameter estimates, the Provider Choice module essentially transforms a "static" market research report into a dynamic what-if analysis structure. This can significantly extend the usefulness and life of company market research resources.

After model parameters are simulated or input into the Provider Choice Module, it then forecasts the market share associated with each product and service alternative over the planning horizon.

Average versus Marginal Shares

The comparison of average versus marginal shares and associated trends is a key result of incorporating dynamic choice functions in the End Use Forecaster forecasting framework.

For example, the infusion of new energy consumption technologies (such as condensing furnaces) may be reaching 35% of new construction buildings, but if new construction in a given year only represents 2% of the total market, then the total impact on the market is merely 0.7%. As these rates of change accelerate and decelerate through the future, and as simulated what-if scenarios impact these forecasts of consumer choice, markedly different forecasts are possible over the longer term, while at the same time maintaining a realistic short-term profile.

Intervention Strategies Module: Analyzing Marketing Scenarios and DSM Potential

The Intervention Strategies module – a generic term to apply to activities typically associated with demand-side management (DSM) – is intended to capture the impacts of marketing, energy efficiency potential, and other programs designed to influence customer behavior. This module makes available a series of program designs that simulate the "what-if" impacts on the market shares, usage, and the resulting demand forecast. Three general types of program designs are available:

- ***Provider (fuel) substitution scenarios***. These scenarios modify the forecasted choices or market shares among provider (fuel) sources. Separate sets of assumptions apply to existing buildings and new construction buildings, permitting different types of programs to be designed.
- ***Product option (equipment efficiency) scenarios***. These scenarios modify efficiency or product option shares. For example, an efficiency program usually favors the highest available efficiency level for each market sector. These impacts affect choices at the point of new construction or replacement of existing end uses, and different assumptions can apply to each market. A technical potential scenario normally assigns a 100% share to the most efficient option. An achievable potential scenario assigns less than a 100% share to the most efficient option, with the level determined by experience with similar program designs or market research.
- ***Usage retrofit program scenarios***. These programs encourage consumers to change their product usage given the equipment they already have (e.g., improve the efficiency of existing equipment by installing efficiency measures or through better O&M procedures).

Examples include measures to tighten residential and commercial building envelopes, industrial process changes, and pipe and duct insulation.

Intervention strategies are incorporated directly into the relevant Product Usage or Provider Choice forecasts.

Forecast Module: Putting It All Together

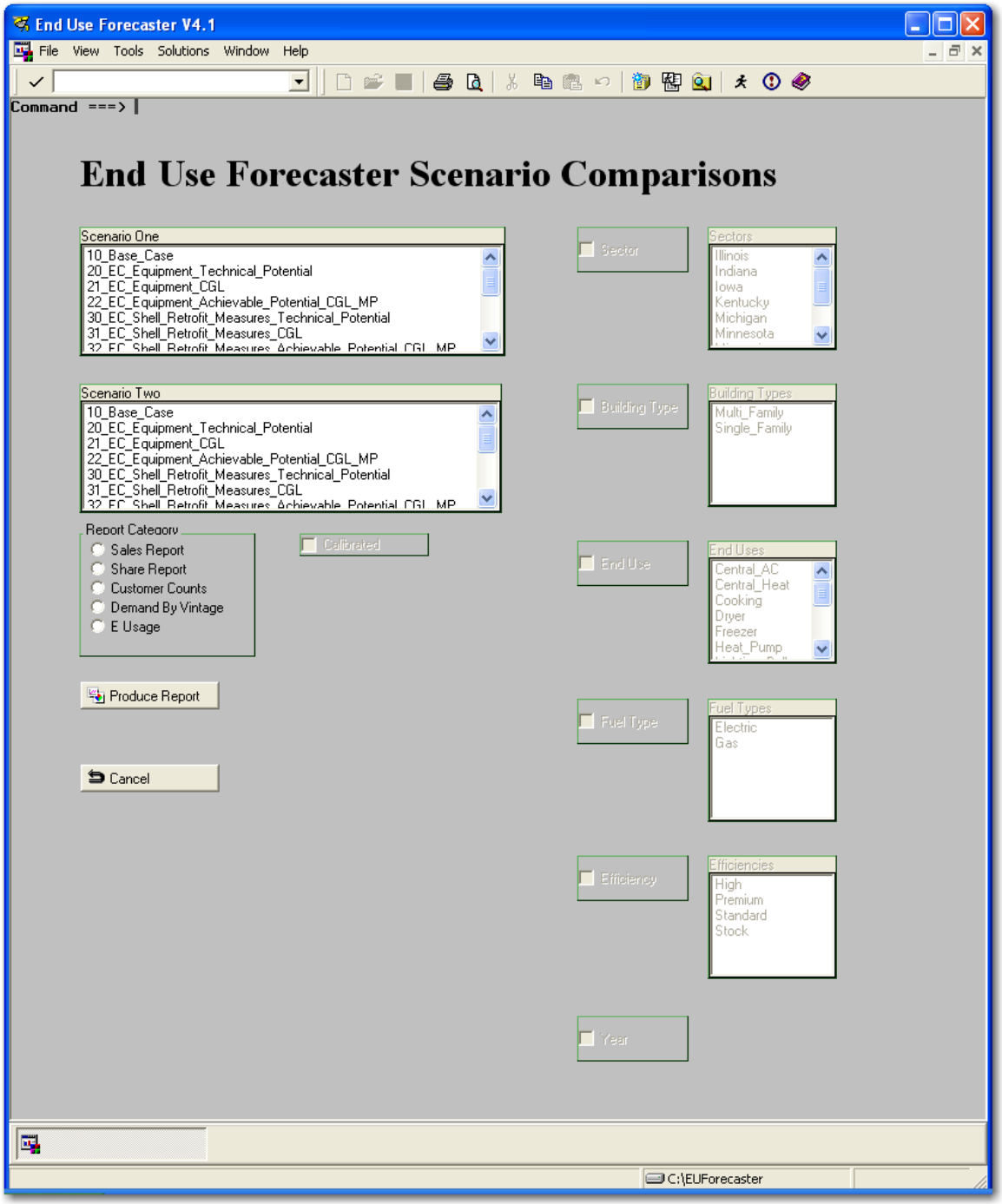
The Forecast Module incorporates all the information compiled from the other modules – Usage, Choice, and Intervention Strategies – related to the overall economic growth of the market segment and equipment lifetime (decay) functions to create the final forecast for a given scenario.

This module produces sales and market share reports that provide quick access to all forecast details. The reports produce forecast outputs in a "flat" matrix format, providing the ability to review the data for reasonability before pronouncing the forecast final.

Reporting: Getting the Projections Out to Decision-Makers

End Use Forecaster also produces reports that can be customized based upon the user's choice of segmentation combinations to analyze. These reports summarize and/or compare forecasts for two forecast scenarios specified by the user in the Scenario Comparison interface, as shown in Figure 4.

Figure 4. Report Customization



The user specifies the Report Category (sales, market share, customer counts or demand by vintage) and, based on the category selected, the user is given the option of selecting different combinations of segments to summarize and/or compare. Additionally, the user is given the option of summarizing the forecast data across all years within the forecast horizon or generating results on a year-by-year basis.

In addition to the SAS-based reports, End Use Forecaster offers the user the opportunity to export the Sales Report data into empty Excel workbooks for ad hoc analyses by the user.

II. Application Structure

A solid understanding of how End Use Forecaster is organized will help users to understand the logic of the model and greatly improve the efficiency with which they use the application. The latest revisions to End Use Forecaster focused almost exclusively on consolidating libraries and datasets to make the model easier to use; the model's logic, repeatedly validated over its history, was left intact. Underlying the updates was an emphasis on consistency in the naming and organization of datasets and variables so as to maximize the intuitiveness of the model. This Chapter describes the model's organization with the intent of helping the user be a more effective modeler.

Hardware and Software

End Use Forecaster is a Windows application developed in PC-SAS. The code and datasets can easily be migrated to other platforms (UNIX, etc.), should the user desire, but the interfaces will not provide the same functionality on other systems. If a user desires a non-PC hardware/software solution, Quantec will work with the SAS Institute to ensure compatibility and develop a customized solution.

Hardware

The minimum recommended hardware configuration slightly exceeds SAS Institute requirements to ensure that forecast simulations can be performed in a timely manner. The vast majority of PCs purchased since 2000 exceed these recommendations:

- Pentium 866 MHZ CPU
- 512 MB RAM
- SVGA compatible color monitor
- 10 GB hard disk drive of free space
- CD-ROM drive (for installation purposed only)

End Use Forecaster's performance (i.e., speed) increases significantly if the system is equipped with more advanced processors (e.g., Pentium III or better), additional RAM (1 GB RAM or more), and additional disk space (for storage).

Software

End Use Forecaster is designed for the Microsoft Windows operating system (compatible with Windows 95 and 98, Windows NT Workstation 4.0, Windows XP, and Windows 2000 Professional). It is currently configured for SAS version 9.1 and version 8.2. Seven SAS software products are required:

- Base SAS

- Full Screen Product (SAS/FSP)
- Econometrics and Time Series (SAS/ETS)
- Statistics (SAS/STAT)
- High-Resolution Graphics (SAS/GRAPH)
- Interactive Data Analysis (SAS/INSIGHT)
- Direct Database Access (SAS/ACCESS)

An additional module, Applications Facility (SAS/AF), is used in developing End Use Forecaster's graphical user interface. These modules are based on a special SAS code subset called SAS Control Language (SCL). This portion of End Use Forecaster is stored (compiled) within the model and does not require user modification.

If any of the required SAS products are missing from the site license, the software can be added for little additional cost. For organizations that do not yet have SAS, Quantec will be happy to work with the SAS Institute to ensure that you obtain a solution that will allow End Use Forecaster to run smoothly and cost effectively.

Installation of End Use Forecaster is site-specific because it is dependent on the location of SAS on your PCs. However, there is minimal customization. For each user we only need to modify two files in the End Use Forecaster\Config directory: autoexec.sas and EUForecaster.cfg. These files 'point' End Use Forecaster to your SAS installation and take advantage of the hard drive on your computer with the most disk space. These customized files are developed during installation, consistent with the installation of SAS on individual workstations.

Conventions

The majority of the nomenclature in this documentation comes directly from the SAS application in which End Use Forecaster was developed. The various components of SAS and the conventions used in referring to them throughout the documentation are:

- ***SAS libraries***, the logical names that refer to the physical locations where SAS datasets are stored, are referred to using all uppercase letters (CONFIG, MODELCODE, etc.).
- ***SAS code***, which contain the routines for End Use Forecaster's modules, are referred to in normal text using the 'camelBack' syntax with the .sas suffix appended, such as choiceBatch.sas.
- ***SAS datasets*** are referred to using bold-face type using the 'camelBack' syntax, such as **equipmentAge_10**.
- ***SAS variables*** are referred to in italic type using the 'camelBack' syntax, such as *usageEquationStatus*.

End Use Forecaster's modules run user-specified scenarios. To differentiate among these scenarios, scenario-specific datasets have a numeric suffix, such as **priceForecast_10**. In general

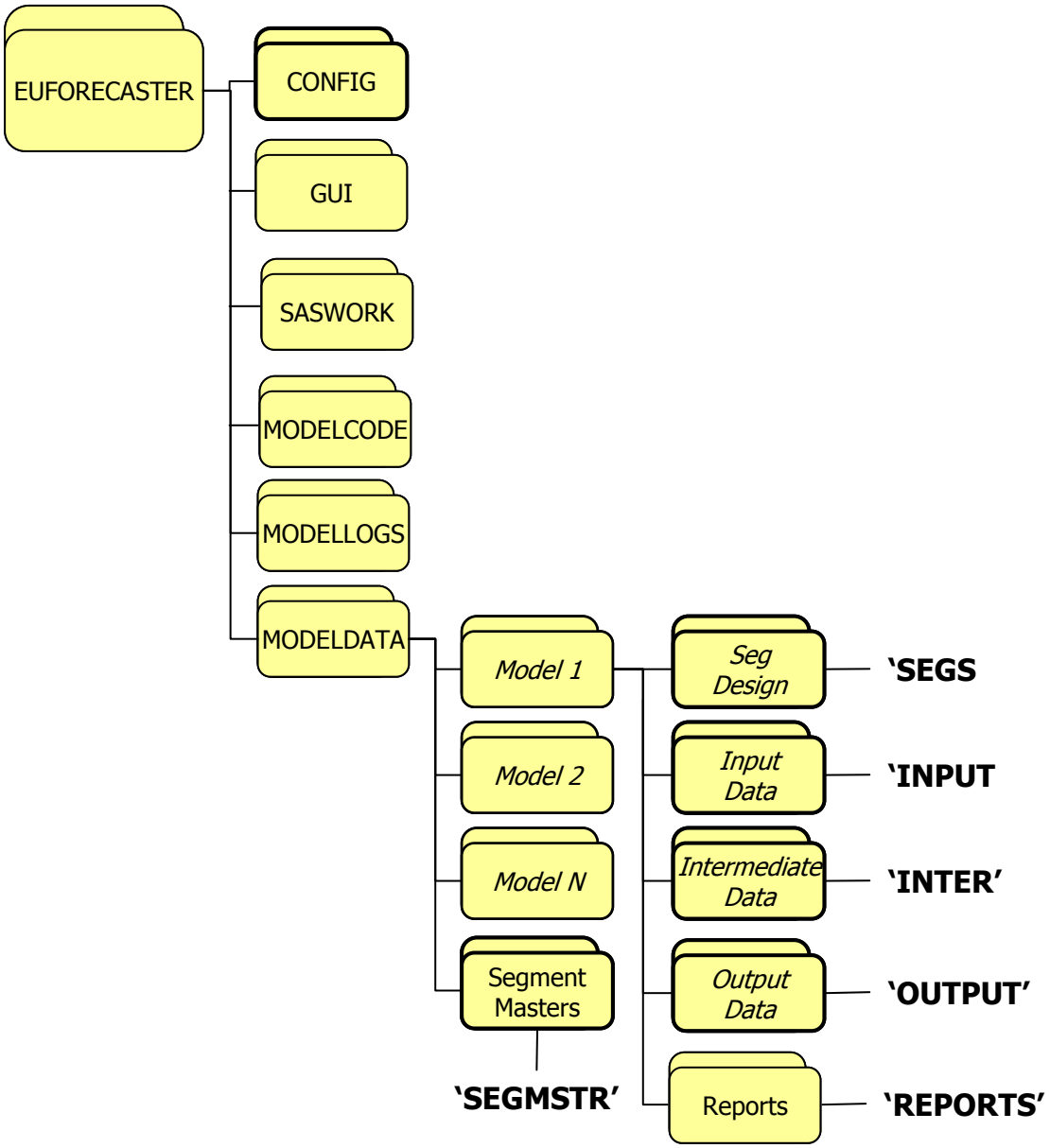
cases, where the documentation does not refer to a specific scenario, datasets are referred to with an **"_xx**" suffix, such as **saturations_xx**.

Model Organization

The logic and theory underlying End Use Forecaster are separated from the data, which vary by individual segmentation design (model). This differentiation drives the structural organization of the model as well, and these two components are stored in different physical locations. The initial organization takes place in the underlying Windows folder structure, which serves as the basis for the SAS libraries that hold both the datasets and catalogs that dictate the model logic and data structure, as well as those datasets specific to individual segmentation designs.

As shown in Figure 5, the folder hierarchy begins with the folder 'EUFORECASTER.' With the exception of the SAS application itself, the entire model – all code, interfaces, and datasets – resides within this folder. Folders with bold outlines represent the physical locations of SAS libraries, the names of which are designated in single quotes. The folders with names in italics – note that they are all within the data folder – represent those libraries that will vary by individual model. The 'MODELDATA' folder will contain individual folders for every model created by a user. Each of these individual model folders will also contain the same set of subfolders as those shown within 'Model 1.' Because these folder serve as SAS libraries, the group of folders that will serve as 'Segs,' 'Input,' etc., will depend on which model the operator happens to be working with in a given session. The data for individual models will not be available at the same time.

Figure 5. End Use Forecaster Folder Structure



This organization can have implications for the user. For example, if a user has a data source that applies to more than one model, the 'MODELCODE' library can serve as a good place to store the raw data to avoid keeping copies in each of the model-specific libraries. Detailed descriptions of these folders and their contents are provided in Table 2.

Table 2. End Use Forecaster Folders

Folder	Full Path	SAS Library	Description
EUFORECASTER	EUFORECASTER	N/A	Root application folder.
GUI	EUFORECASTER\ GUI	App	Folder containing all the underlying application catalogs and GUIs.
MODELLOGS	EUFORECASTER\ MODELLOGS	N/A	Directory where logs of model operations are stored.
MODELCODE	EUFORECASTER\ MODELCODE	N/A	Contains all the SAS code underlying the different End Use Forecaster modules.
CONFIG	EUFORECASTER\ CONFIG	N/A	Contains SAS configuration files in which site-specific modifications are established.
MODELDATA	EUFORECASTER\ MODELDATA	N/A	Contains data for all of the user-created segmentation designs.
"Model_Name"	EUFORECASTER\ MODELDATA \ "Model_Name"	N/A	A folder with all data for a model based on a user-defined name.
SegDesign	EUFORECASTER\ MODELDATA \ "Model_Name" \ segDesign	SEGS	For each model, contains the SAS datasets that establish the specific segmentation design.
InputData	EUFORECASTER \MODELDATA\ "Model_Name"\ inputData	INPUT	For each model, contains all of the user-populated datasets that are necessary to run the different modules.
IntermediateData	EUFORECASTER\ MODELDATA \ "Model_Name"\ intermediateData	INTER	For each model, contains all of the intermediate, model-generated outputs from the usage and choice modules that are necessary to run other modules.
OutputData	EUFORECASTER\ MODELDATA \ "Model_Name"\ outputData	OUTPUT	For each model, contains the various final output sets generated by the forecast module.
Reports	EUFORECASTER\ MODELDATA \ "Model_Name"\ Reports	N/A	Contains the reports and excel files created by End Use Forecaster's Reporting Engine.
SegmentMasters	EUFORECASTER\ MODELDATA \ segmentMasters	SEGMSTR	Contains datasets with all of the necessary variables and structure for every model dataset. A SAS program combines these datasets with a specific segmentation design to generate all the datasets (unpopulated) necessary for a given model.

III. Market Segmentation and Data Entry Modules

End Use Forecaster's Market Segmentation module governs two distinct tasks: 1) the development of customized market segmentation designs; and 2) the population of the model with the necessary data. While the first consists of formal, specific steps, the nature of the second depends on a number of factors, including the complexity of the segmentation design, the format of the various data sources, as even as the technical skills of the operator. This chapter provides extensive detail on the first followed by a brief discussion of issues surrounding the second.

Development of Market Segmentation Design

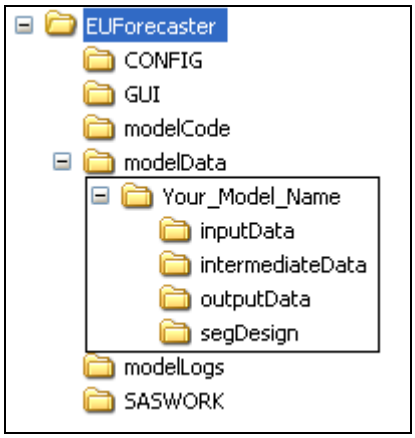
The execution of the first task – creation of a customized market segmentation design – is based on four steps, listed briefly below and then described in greater detail.

1) ***Creation of Model Data Folders*** – Creation of a specific directory structure for each model is necessary to perform subsequent steps.
2) ***Population of the Excel workbook* Seg_Design_Template.xls** – A step to define the various segments and their relationship with one another.
3) ***Creation of the Segs Library Datasets*** – This takes the Excel workbook and populates the "segs" library with the necessary segmentation design data sets.
4) ***Expansion of the Segmentation Design*** – This takes the segmentation design data sets in the "segs" library and merges them with the data set templates in the "segmstr" library, expanding them to create all the necessary – but still unpopulated! – data sets to run the basecase ("10") scenario in End Use Forecaster.

Creation of Model Data Folders

A prerequisite to setting up a new model is the creation of the necessary folders to contain the model-specific segmentation design and data. This means that within the c:\EUForecaster\modelData directory, you must have a folder with your model's name and within that folder you must have four folders called "inputData," "intermediateData," "outputData," and "segDesign," as shown in the interior boxed portion of Figure 6 below.

Figure 6. Data Folder Structure



There are multiple ways to create these folders. First, the user can manually create them in Windows Explorer. Alternately, one can copy the folder for an existing model and rename the root data folder to the preferred name, in which case subsequent steps will overwrite the existing datasets for the from model that was copied. Finally, the interface has an option in the Markets Module called "Create Directories for New Model." Selection of this option will prompt the user to enter the name for the new model and End Use Forecaster will create the desired folders.

Population of Seg_Design_Template.xls

The file ***Seg_Design_Template.xls***, a read-only file located in the root directory for End Use Forecaster (generally C:\EUForecaster) is the starting point for creating a custom segmentation design. It is here where you define the levels for the five primary dimensions that must exist in every segmentation design. While the experienced user will be very familiar with these dimensions, they deserve detailed discussion here. Starting at the top of the hierarchy, Dimensions 1 through 3 identify unique market segments. Dimensions 4 and 5 refer to the available product/service suppliers competing in the marketplace and product/service options, respectively. Although the actual use of these dimensions can vary, in and energy model the general use is as follows:

- Dimension 1: geographic region or sector
- Dimension 2: customer segment (home type, business type, or SIC)
- Dimension 3: end use
- Dimension 4: fuel type
- Dimension 5: efficiency level

In all designs, the first three dimensions define the basic market segmentation structure.

Dimension 1 always refers to geography, customer size, customer behavior, customer class, and/or any other features that separate groups of customers. Note that all of the aforementioned

factors can be used within Dimension 1 (e.g., north-residential, north-commercial, south-residential, south-commercial, etc.).

Dimension 2 is reserved for factors that affect a particular group of customers in a similar manner, such as an exogenous rate of economic growth, building lives, or contract lives. In an end-use model, for example, this dimension might include various types of residential (single family, duplexes, multifamily, etc.) and commercial (office buildings, restaurants, hospitals, etc.) customers.

Dimension 3 refers to the products and services being marketed to each customer type, such as heating, cooling, or water heating. In a telecom model, this dimension would refer to basic service, Internet service, custom calling features, etc. As with the second dimension, each third dimension level has an associated physical or contract life. In an end-use energy model, each equipment type has a life span.

Dimensions 4 and 5 describe the product/competitive options within the major market categories that are defined by Dimensions 1 – 3. In an end-use model, fuel types are typically represented as Dimension 4 and various efficiency levels are represented by Dimension 5. In a competitive energy market, the fifth dimension could be used to represent various levels of retail services such as power quality or equipment maintenance offered by a provider.

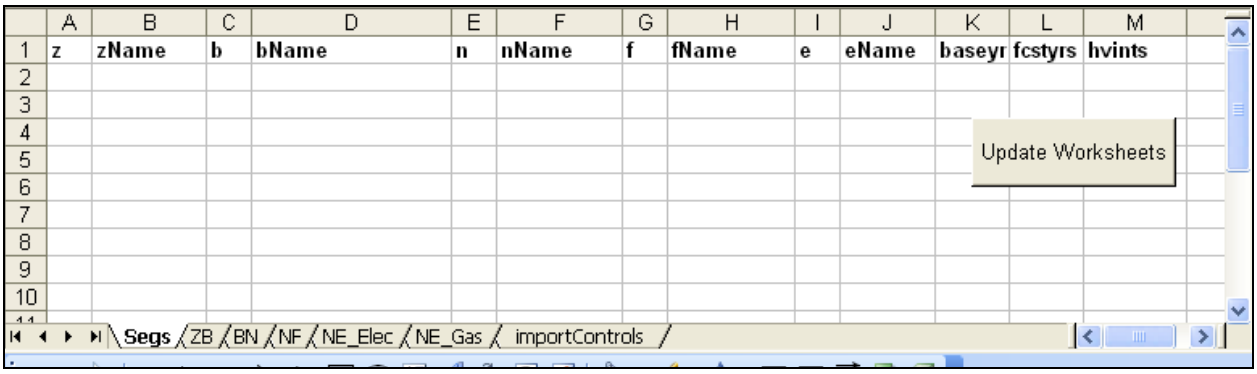
Table 3 summarizes the intended use of each of these dimensions. Note that while the model must include all five dimension, you are not required to use all of them. For example, suppose you want a design with alternative providers at Dimension 4 and do not wish to complicate the model with product/service options. In this case, you would assign only one alternative to Dimension 5, which effectively eliminates this dimension from the analysis. You could assign the same name to the single Dimension 5 alternative as that of the Dimension 4 to signify that in the design, this dimension has essentially been eliminated.

Table 3. End Use Forecaster Dimension Use Summary

Dimension	End Use Forecaster Dimension Name	End Use Forecaster Descriptive Name	End Use Forecaster Function	Special Features	No. Segment Levels in End Use Forecaster
One	z	zName	Factors that separate groups of customers		999
Two	b	bName	Additional factors that separate groups of customers	Building or contract life can be used to allow existing customers to decay over time	999
Three	n	nName	Equipment, products, services potentially purchased by Dimensions 1 – 2	Equipment or contract life can be used to allow existing equipment to decay over time	999
Four	f	fName	Providers of Dimension 3	Provider Choice module forecasts market shares	4
Five	e	eName	Service Options within Dimension 4	Provider Choice module forecasts product option shares	4

Open ***Seg_Design_Template.xls***. Excel will prompt you to either enable or disable macros and ***you will want to enable the macros***. Of the workbooks seven tabs, the first of interest is called "Segs," which is used for the definition of the different dimensions (z, b, n, f, and e) as well as the base year and years in the forecast horizon. That sheet should look like the image below, with no values for any of the dimensions:

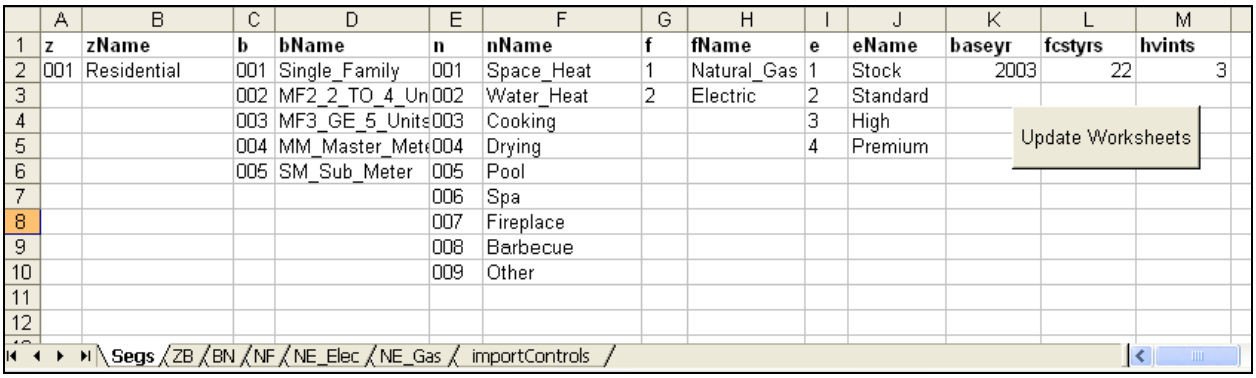
Figure 7. Empty "Segs" Tab in Seg_Design_Template.xls



On this tab, first establish the base year of the forecast, the number of forecast years, and the number of historical vintages in columns K, L, and M below the headers baseyr, fcstyrs, and hvints, respectively. Next, the recommended first step is to fill in the columns for zName, bName, nName, fName, and eName with whatever zones, segments, end uses, fuels, and efficiency levels (or however you want to define the dimensions) that you want to include in the segmentation design. Once you have filled in the desired descriptive names, they then need to have their corresponding model values. ***These format for these is critical***. For z, b, and n the format is three-character numeric values. That is, they are a numeric values from 1 to 999 with leading zeros for all values below 100. In Excel, it is necessary to type an apostrophe (" ' ") prior to entering the value or else Excel will convert the cell to a numeric value and you will lose the leading zeros. For f and e, these are one-character numeric values. That is, they will have value of 1, 2, 3, or 4, but they must be in a character format. Again, a leading apostrophe will tell Excel to make these character. Figure 8 shows a fully populated "Segs" tab.

A Note on Naming Conventions – It is best to restrict the names of the different levels in each dimension used in the segmentation design to valid SAS variable names. According to SAS documentation, these names "can be up to 32 characters long. The first character must be a letter (A, B, C, . . . , Z) or underscore (_). Other characters can be letters, numbers (0, 1, . . . , 9), or underscores. Blanks cannot appear in SAS names, and special characters (for example, $, @, #), except underscores, are not allowed." While it is not an explicit requirement, using these names will greatly facilitate the process of model population because it will allow for the import and manipulation of data using names that need no modification to be applied directly to the model.

Figure 8. Example of Populated "Segs" Tab in Seg_Design_Template.xls



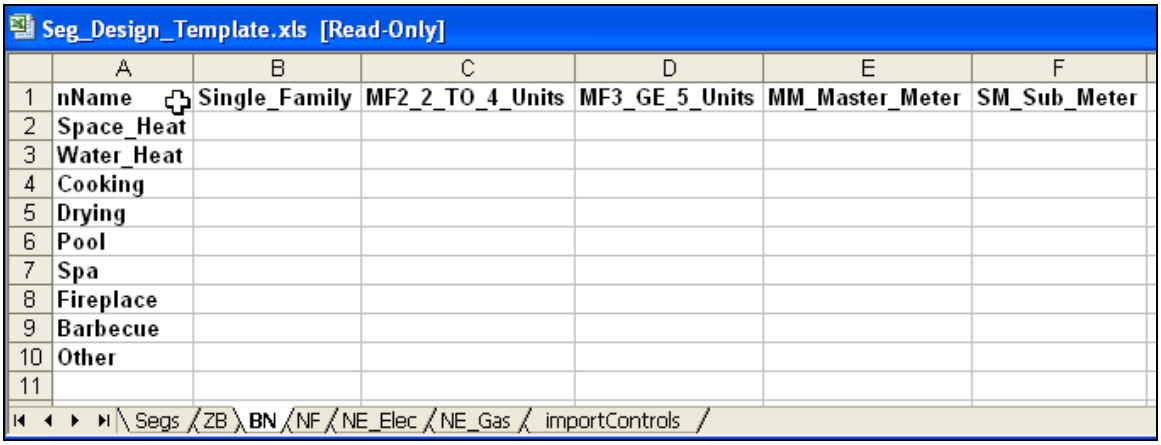
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	z	zName	b	bName	n	nName	f	fName	e	eName	baseyr	fcstyrs	hvints
2	001	Residential	001	Single_Family	001	Space_Heat	1	Natural_Gas	1	Stock	2003	22	3
3			002	MF2_2_TO_4_Un	002	Water_Heat	2	Electric	2	Standard			
4			003	MF3_GE_5_Units	003	Cooking			3	High			
5			004	MM_Master_Mete	004	Drying			4	Premium			
6			005	SM_Sub_Meter	005	Pool							
7					006	Spa							
8					007	Fireplace							
9					008	Barbecue							
10					009	Other							
11													
12													

Update Worksheets

Segs | ZB | BN | NF | NE_Elec | NE_Gas | importControls

Once you have completed the "Segs" tab, selecting the Update Worksheets button will then populate the tabs "ZB," "BN," "NF," "NE_Elec," and "NE_Gas" with the desired segments in the correct format for the user to then fill out. For example, Figure 9 shows the "BN" tab as it will appear after activation of the Update Worksheets button.

Figure 9. Example of Unpopulated "BN" Tab in Seg_Design_Template.xls



Seg_Design_Template.xls [Read-Only]

	A	B	C	D	E	F
1	nName	Single_Family	MF2_2_TO_4_Units	MF3_GE_5_Units	MM_Master_Meter	SM_Sub_Meter
2	Space_Heat					
3	Water_Heat					
4	Cooking					
5	Drying					
6	Pool					
7	Spa					
8	Fireplace					
9	Barbecue					
10	Other					
11						

Segs | ZB | BN | NF | NE_Elec | NE_Gas | importControls

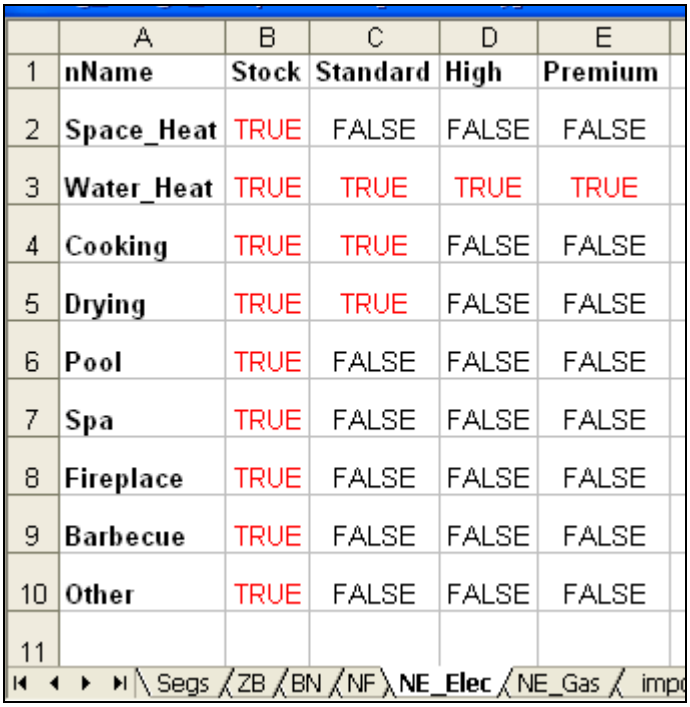
Again, the segmentation is hierarchical. The purpose of the newly-populated tabs ("ZB," "BN," "NF," "NE_Elec," and "NE_Gas") is to allow the specification of which dimensions belong together – starting at the top of the hierarchy and moving down – in the segmentation design. For example, with the ZB tab, the purpose might be to define which building belong in each geographic area. The key here is that the design need not be symmetrical. You might have Z represent two geographic areas, one extremely urban that would not have manufactured housing and rural that would need this home type.

The population of these tabs is based on filling the relevant cells with "TRUE" or "FALSE," with the former indicating where the dimensional relationship should exist in the segmentation design. The relationships defined in these tabs is as follows:

- **ZB –** Define which levels of the second (b) dimension belong in each level of the first (z) dimension.
- **BN –** Define which levels of the third (n) dimension belong in each level of the second (b) dimension.
- **NF –** Define which levels of the fourth (f) dimension belong in each level of the third (n) dimension.
- **NE_Elec –** Define which levels of the fifth (e) dimension belong in each level of the third (n) dimension for the electric fuel type.
- **NE_Gas –** Define which levels of the fifth (e) dimension belong in each level of the third (n) dimension for the gas fuel type.

Figure 10 presents a fully-populated "NE_Elec" tab. Note the pattern of "TRUE" and "FALSE" indicating which of the efficiency levels apply to the different end uses.

Figure 10. Example of Populated "NE_Elec" Tab in Seg_Design_Template.xls



	A	B	C	D	E
1	nName	Stock	Standard	High	Premium
2	Space_Heat	TRUE	FALSE	FALSE	FALSE
3	Water_Heat	TRUE	TRUE	TRUE	TRUE
4	Cooking	TRUE	TRUE	FALSE	FALSE
5	Drying	TRUE	TRUE	FALSE	FALSE
6	Pool	TRUE	FALSE	FALSE	FALSE
7	Spa	TRUE	FALSE	FALSE	FALSE
8	Fireplace	TRUE	FALSE	FALSE	FALSE
9	Barbecue	TRUE	FALSE	FALSE	FALSE
10	Other	TRUE	FALSE	FALSE	FALSE
11					

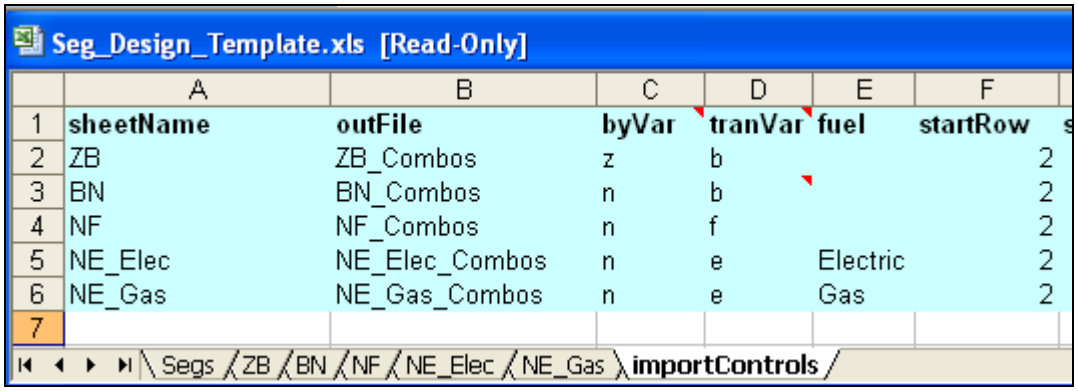
Segs | ZB | BN | NF | NE_Elec | NE_Gas | impo

Note that in filling in all of these sheets, make every effort to keep the data "clean." That is, there can be no data in adjoining rows or columns that is extraneous to the segmentation design. If there has been any work done in cells, it might be best to delete all the rows to the right of the last relevant column and all the rows below the last relevant row.

Finally, the last tab - importControls – tells SAS in the next step how to bring in the data contained on various tabs in the segmentation design workbook. Other than two cells, this entire workbook will populated itself dynamically based on the other tabs. Those two cells are E5 and

E6 – shown in Figure 11 with the values “Electric” and “Gas,” respectively – and the values the contain must be identical to whatever you have specified on the original “Segs” tab. That is, if you’ve called your fuels “Electricity” and “Natural Gas,” the values in those cells must be identical.

Figure 11. A portion of the importControls Tab in Seg_Design_Template.xls



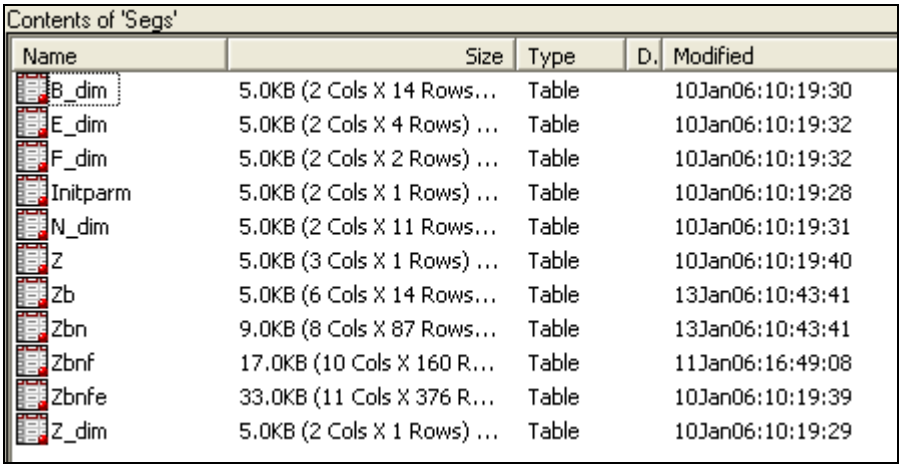
	A	B	C	D	E	F
1	**sheetName**	**outFile**	**byVar**	**tranVar**	**fuel**	**startRow**
2	ZB	ZB_Combos	z	b		2
3	BN	BN_Combos	n	b		2
4	NF	NF_Combos	n	f		2
5	NE_Elec	NE_Elec_Combos	n	e	Electric	2
6	NE_Gas	NE_Gas_Combos	n	e	Gas	2
7						

Once you are done populating Seg_Design_Template.xls, you will have to save the workbook with a very specific name in the data folder for the model under creation (C:\EUForecaster\modelData*yourModelname*). That name must be whatever your model name is with “_Segments” appended at the end. For example, if you’ve created the a model for small commercial customers for a utililty’s end-use model, you might call the model “Small_Com.” Accordingly, you’d save the workbook as “Small_Com_Segments.xls.” Again, the file is read-only, so it will prompt you to save it under another name should you try to save it normally.

Creation of the Segs Library Datasets

After completing the Seg_Design_Template.xls and workbook and saving it under another name, the next step is convert this information into the various Segs library datasets. To do this, under the Market Module on the main dashboard, select the “Create ‘Segs’ Datasets from Excel” option. The interface will prompt you to say ‘OK’ or to cancel. If you are confident in your segmentation design, select ‘OK.” To check that this code has run correctly, you should see the all of the segmentation design datasets in the “Segs” library, as shown in Figure 12, and they should all have a modified date reflecting the time when the code was submitted.

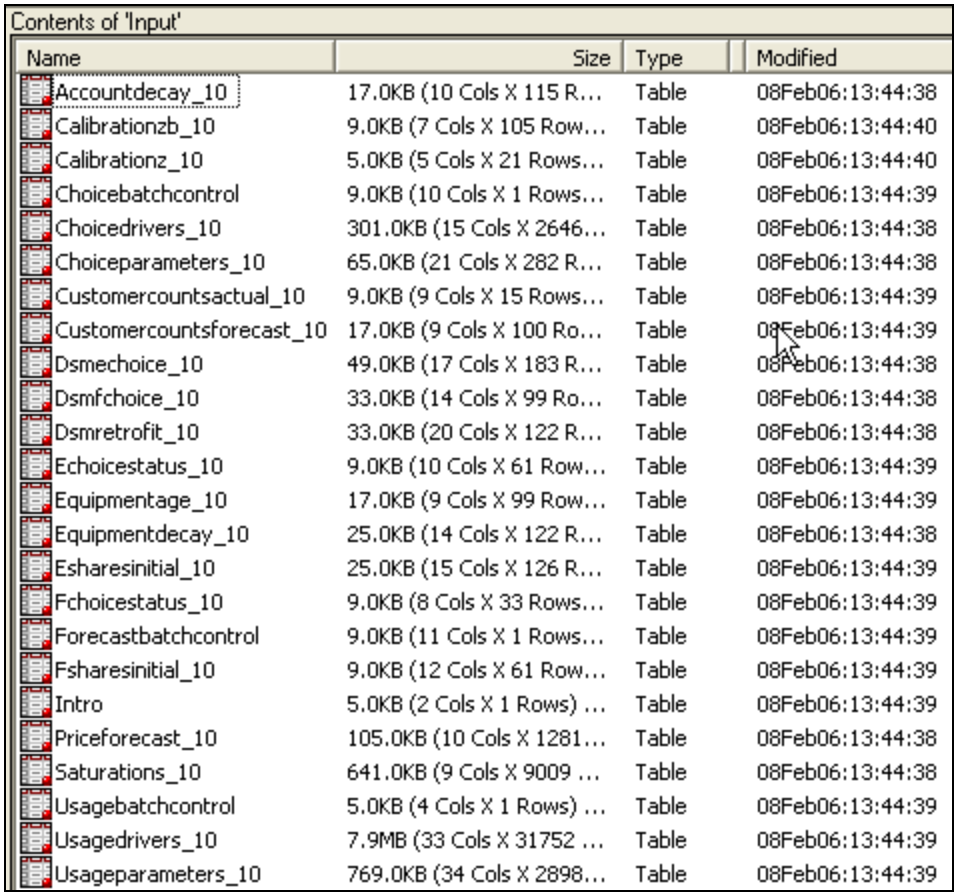
Figure 12. Contents of Segs Library



Expansion on the Segmentation Design

Once the Segs library is populated with the desired segmentation design, the next step is to expand the Segs library datasets to create all of datasets necessary to run the model. Select "Expand 'Segs' Datasets" under the Markets Module on the main dashboard and say 'OK." Once this code has run, you should be able to look in the "Input" library and see datasets it has created, as shown in Figure 13.

Figure 13. Contents of the Input Library



Note that this step will often be used more than once, as it also serves as a means of "refreshing" the model. Throughout the process of populating the model, any number of operator error-based issues can corrupt the structure of these input data sets, which will lead to questionable results during operation of the model. For example, necessary rows might be lost during an incorrect merge or a typo will lead to an incorrect variable name. When this happens, the easiest to way to recover is to perform this step, which will re-create all the datasets in the required structure.

Model Population

Once the starting datasets in the Input library have been created, you must enter data into the SAS datasets that were automatically created by building the segment master. Table 4 shows all the datasets that are created in the INPUT library and the module with which they are associated. The table also provides a brief outline of the information to be entered in each dataset with more detailed information provided in subsequent chapters.

Table 4. Starting Datasets in INPUT Library

Module	Dataset	Contents
Usage	**usageBatchControl**	See Batch Control Usage below
Usage	**usageDrivers_10**	Equipment usage equation forecast drivers
Usage	**usageParameters_10**	Coefficients describing how usage varies by weather, customer characteristics, prices, and other variables
Choice	**choiceBatchControl**	See Batch Control Usage below
Choice	**choiceDrivers_10**	Choice forecast drivers, including capital costs for equipment in existing, conversion, and new construction buildings, plus future availability of each equipment type
Choice	**choiceParameters_10**	Provider Choice function initialization parameters for Dimension 4 and 5 purchase choices
Choice	**eChoiceStatus_10**	A status variable that tells the Choice Module how to model shares for Dimension 5. Set this variable to "1" to hold the initial market shares constant over the forecast horizon.
Choice	**eSharesInitial_10**	Average and marginal market shares for existing, conversion, and new customers for Dimension 5
Choice	**fChoiceStatus_10**	A status variable that tells the Choice Module how to model shares for Dimension 4. Set this variable to "1" to hold the initial market shares constant over the forecast horizon.
Choice	**fSharesInitial_10**	Average and marginal market shares for existing, conversion, and new customers for Dimension 4
Choice	**priceForecast_10**	Fuel, product, or service price forecasts in native units (e.g., therms, kWh, gallons, cubic meters)
Forecast	**ForecastBatchControl**	See Batch Control Usage below
Forecast	**accountDecay_10**	Decay functional form indicator and parameters for existing, conversion, and new accounts
Forecast	**customerCountsActual_10**	Number of existing accounts, non-accounts on main, and non-accounts off main
Forecast	**customerCountsForecast_10**	Forecast of new construction (economic activity driving demand), capture rates, units per account, and number of units (i.e., units are a scale of measurement consistent with results of the usage forecast, such as buildings, square footage, apartments, etc.)
Forecast	**equipmentAge_10**	Mean age of end uses by historical vintage in the baseline (i.e., 0th) year of the forecast, used to initialize the age dimension in the turnover/vintage module
Forecast	**equipmentDecay_10**	Decay functional form indicator and parameters for equipment (end-uses) in existing, conversion, and new buildings
Forecast	**saturations_10**	Saturation (percentage of accounts that have the equipment) independent of fourth dimension market shares
N/A	**calibrationZ_10**	Total actual sales in base year for Dimension 1
N/A	**calibrationZB_10**	Total actual sales in base year for Dimension 2
Intervention Strategies	**dsmEChoice_10**	Exogenous parameters that change Dimension 5 market shares for existing, conversion, and/or new customers through 'what if' intervention strategies
Intervention Strategies	**dsmFChoice_10**	Exogenous parameters that change Dimension 4 market shares for existing, conversion, and/or new customers through 'what if'' intervention strategies
Intervention Strategies	**dsmRetrofit_10**	Exogenous parameters that adjust product usage through 'what if' convention strategies

The method for populating these datasets, however, depends on the interaction of several factors. If the operators SAS skills are limited and the overall segmentation design is simple enough that that datasets do not exceed Excel's row limits, the data can be exported, populated manually, and then re-imported. If the data that will go into the model already exist in an electronic format and the operator has SAS skills that cover basic merges and data manipulation, the datasets can be populated via SAS code. Another option is to create data entry templates that conform to the format of the various data sources that will then be imported into SAS, manipulated to take on the correct format for the model, and then used to populate the datasets via SAS code. The final and best solution will often be a combination of multiple methods.

Batch Control Usage

The INPUT library includes three "batch processing" datasets that describe how various datasets (input scenarios, or the "**_xx**" suffix) are jointly processed within End Use Forecaster forecast output scenarios. These datasets are:

- **usageBatchControl**: selects input scenarios for each set of input files for forecasting equipment purchase choices
- **choiceBatchControl**: "packages" sets of expected market shares as a result of customer service programs with those segments that are unaffected by these activities into one cohesive group
- **forecastBatchControl**: combines chosen product usage equations, usage drivers, and historical vintage adjustment scenarios

End Use Forecaster automatically creates the base case scenario, denoted by "_10," for each of these datasets. Additional scenarios can be designated in each batch dataset by:

- Adding a new row worksheet in each dataset through SAS/FSP and changing the relevant scenario indicators
- Writing SAS code to create the datasets with the desired scenario inputs
- Managing the batch controls in an Excel workbook and importing them via SAS

Batch processing datasets allow the user to specify all the input datasets for a given scenario. The strength of this approach is that it allows the analyst to mix and match datasets from different scenarios, which avoids having to keep identical datasets for different scenarios. Figure 14 presents a hypothetical **choiceBatchControl** dataset. In the example, the user has set up three different scenarios (10, 20, and 30), which pull mostly the same datasets, with a couple of exceptions. First, Scenario 20 pulls an alternate price forecast, ostensibly one with high gas prices. Second, Scenario 30 utilizes the price forecast produced for Scenario 20 and also pulls in an alternate usage forecast.

Figure 14. Example choiceBatchControl Dataset

scenario	choiceDrivers	priceForecast	choiceParameters	usageAnnual	eSharesInitial	fSharesInitial	eChoiceStatus	fChoiceStatus	scenarioName
10	10	10	10	10	10	10	10	10	Base Case
20	10	20	10	10	10	10	10	10	High Gas Price Forecast
30	10	20	10	30	10	10	10	10	Low Usage

IV. Product Usage Module

End Use Forecaster tracks consumption of resources (natural gas, electricity, etc.) through the Product Usage module. The module provides a forecast of the predicted consumption by combining (1) a monthly forecast of consumption factors or drivers (i.e., independent or exogenous variables), stored in the SAS dataset **usageDrivers_xx**, and (2) a set of coefficients associated with each exogenous variable, stored in **usageParameters_xx**.

The Product Usage module merges the **usageParameters_xx** dataset with the usage forecast drivers (**usageDrivers_xx**) and sums the results over all variables in order to obtain usage forecasts at the unit level (e.g., per customer, per square foot). The results then become inputs into the Provider Choice and Forecast modules.

If the *usageEquationStatus* variable in **usageParameters_xx** equals 1, usage is a linear combination of the coefficients and forecast drivers:

(1) $$usageMonthly\_xx_m = \Sigma_c\ usageParameters\_xx_c * usageDrivers\_xx_{cm}$$

where:

- **usageParameters_xx** $_c$ = usage coefficients c, where the default has 21 slots (B0 through B20)
- **usageDrivers_xx** $_{cm}$ is the monthly forecast (m) of each forecast driver (independent variable) associated with coefficient c (X0 through X20)

If *usageEquationStatus* is set equal to 2, then the Product Usage Module assigns a log-log function:

(2) $$usageMonthly\_xx_m = exp(\Sigma_c\ usageParameters\_xx_c * log(usageDrivers\_xx_{cm}))$$

The default structure is a linear model with *usageEquationStatus* equal to 1.[2]

The final step in this module is to aggregate usage to an annual figure (usageAnnual_xx). Both monthly and annual forecasts for a given scenario are stored in the INTER library.

The **usageBatchControl** dataset in the INPUT library has the following variables that define the input datasets associated with each output scenario:

- *scenario*: The Product Usage module output scenario
- *usageParameters*: The input scenario associated with the product usage equations (**usageParameters_xx**)

[2] As discussed further below under Calibration, End Use Forecaster's automatic sales calibration routine is designed to work with the linear model where *usageEquationStatus* is set equal to 1. Calibration routines for more complex usage equation structures defined by the log-log or other status indicators (3, 4, etc.) can be developed by Quantec on request.

- *usageDrivers*: The input scenario associated with the product usage drivers (**usageDrivers_xx**)

Figure 15 shows the program flow, including input and output datasets. Table 5 describes the data sets and their key attributes in more detail.

Figure 15. Product Usage Module Program Flow for "usageBatch.sas"

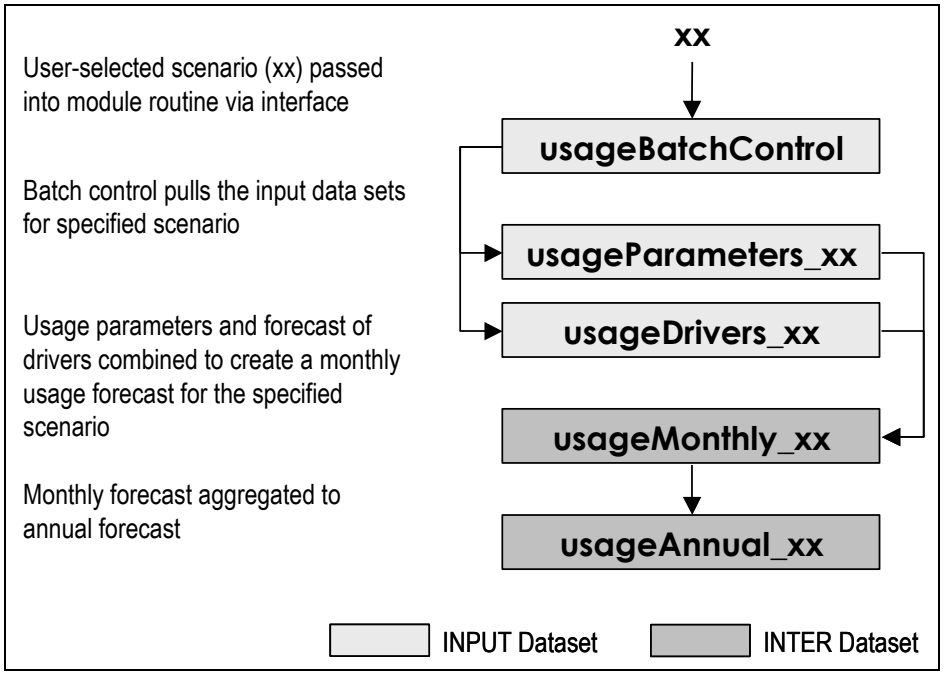


Table 5. Product Usage Module Data Library

Library	Dataset	Description	File/Record Dimensions	Variables/Attributes
INPUT	**usageBatchControls**	Usage forecast input scenarios	1 record per Output scenario	Usage equation input scenario, forecast driver input scenario, vintage adjustment input scenario, output scenario
INPUT	**UsageParameters_xx**	Usage forecast equation parameters	Dimensions 1, 2, 3, 4, 5, and vintage	Usage equation parameters B0 through B0 for input scenario Sxx
INPUT	**usageDrivers_xx**	Usage forecast drivers	Dimensions 1, 2, 3, 4, and 5, year, month	Usage forecast drivers X0 through X0 for input scenario Sxx

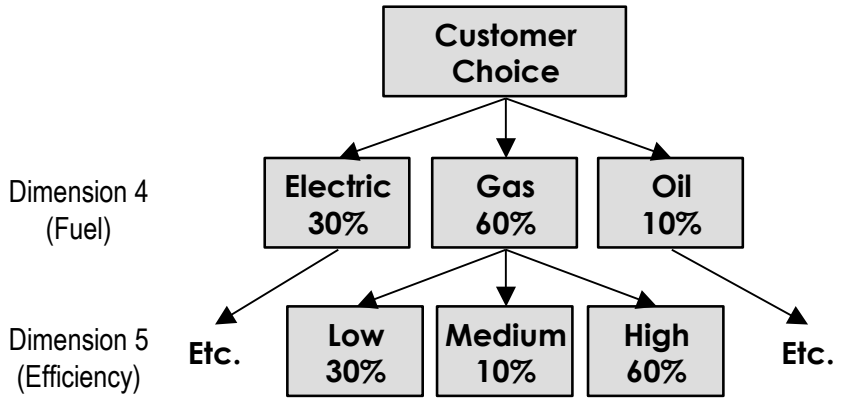
V. Provider Choice Module

The Provider Choice module analyzes customer choice decisions among competitors and product options. For example, customers choose their end-use equipment from various fuel types and efficiency levels. Purchase decisions are represented by a nested structure of provider (fuel) and product (efficiency) option choices.

The nested structure of the Provider Choice module is illustrated in Figure 16 below. This figure represents fourth and fifth dimension choices. The customer in this example faces a choice of gas vs. electricity vs. oil at the fourth dimension, and low vs. medium vs. high efficiency at the fifth dimension. Analysts often think of this problem as "efficiency choice conditional on fuel choice," hence the downward arrows in the figure. But customer choice theory and the Provider Choice Module actually work in the opposite direction, with the fourth dimension conditional upon fifth dimension choices. In reality, the customer makes a simultaneous choice across these dimensions, and the model structure shown in Figure 16 is just a convenient way of modeling this behavior.

The Provider Choice module first estimates the fifth dimension (efficiency) parameters and forecasts its market shares. The model then calculates the weighted average operating and capital costs for each fourth dimension (fuel) alternative, estimates the choice equation coefficients, and then produces a forecast for the fourth dimension.

Figure 16. Provider Choice Module Example



Note that the structure of the tree need not be symmetric. For example, single fuel energy companies and water utilities may want to focus on multiple efficiency levels for customers using their products. A single efficiency level can be specified for the remaining fuels.

The application of choice coefficients and forecast drivers form a discrete choice-type model that is applied to individual customer data. These models are analogous to regression models for equipment usage. The estimated discrete choice model parameters describe how equipment costs, operating costs, equipment characteristics, and customer characteristics affect equipment

choices. For each choice level there are capital and operating cost parameters (called betas) and alternative-specific intercepts (called alphas).

The alphas and betas are developed through one or more of the available Provider Choice algorithms in End Use Forecaster:

1. Using individual customer level survey and equipment usage data, discrete choice models consistent with the segmentation design are estimated. Note that like usage equation modeling, this estimation is conducted outside of End Use Forecaster, but may be conducted using the same SAS procedures as those used by End Use Forecaster.
2. If individual customer data are not available for discrete choice modeling, End Use Forecaster can use aggregate market data to simulate a simple choice model from equipment capital costs and operating costs.
3. If individual customer data are not available for discrete choice modeling, End Use Forecaster can calculated use apply approximate, solutions calculated using Mathematica.

These alternatives are summarized in Table 6.

Table 6. Provider Choice Equation Status Variable Definitions

Status Variable	Description	Beta Parameters	Alpha (Intercept) Parameters	Potential Applicability to Choice Model
1	Exogenous Market Shares Specified	N/A	N/A	Yes
2	Logit: estimated	Estimated Outside End Use Forecaster	Estimated Outside End Use Forecaster	Yes
3	Logit: estimated	Estimated	Starting values: to be calibrated	Yes
4	Logit: simulated	Starting values: to be estimated & calibrated	Starting values: to be estimated & calibrated	Yes
5	Logit: calculated	Calculated	Calculated	Yes

Model Parameterization

Estimation Mode (Status 2 and 3)

Customer choice parameters can be estimated when sufficient micro-level customer choice data are available to estimate regression coefficients for actual consumer decisions. Quantec customizes and estimates choice equations for companies who request this approach or uses choice model parameters from previous research conduct by the company.

The choice equation status variables are set equal to 2 or 3 if this approach is used. If status equals 2, all parameters have been estimated outside the model, and no further calibration is necessary. If status equals 3, a logit functional form has been used to estimate operating and capital cost parameters and the model is being calibrated to base year market shares by adjusting the intercept terms.

Simulation Mode (Status 4)

The simulation of consumer choice is useful when customer-level data are not available. Most users of End Use Forecaster find themselves in this position before they can conduct primary market research. In simulation mode, this module estimates parameters of the choice function based on available data for:

- Operating and capital costs
- Marginal (most recent) equipment market shares
- Customer discount rates
- An estimate of the proportion of customer preferences or "utility" that is related to non-price factors

Provider Choice module coefficients are developed by solving a system of equations within the SAS Model procedure.

Exogenous Mode (Status 1)

If neither micro-level customer choice data nor aggregate data are available, or if poor data quality prevents choice equations from being estimated (simulated), the status variable can be set equal to 1 in order to bypass the Provider Choice Module. In such a cases, market shares are set equal to the values in **fSharesInitial_xx** and **eSharesInitial_xx**.

Forecasting

The Provider Choice model produces forecasts over the planning horizon by applying a forecast of equipment capital costs, equipment energy consumption (from the Product Usage module), and fuel price forecasts to the estimated (simulated) choice parameters.

If modes 2 through 4 are used, these variables will affect market shares over the forecast horizon. If the exogenous mode (status 1) is used, market shares are held constant at their base year values over the forecasting horizon. Exogenous forecasts can also be modified via alternative market share forecast scenarios that are specified in the Intervention Strategies module (see Chapter VI).

Market Availability

End Use Forecaster can adjust forecasted efficiency market shares to reflect changes in regulations by removing the market availability of specified alternatives in the future. In this adjustment procedure, End Use Forecaster shifts any market shares designated for efficiency alternatives to be removed from the market to the remaining alternatives, proportional to their *a priori* market shares. This approach to market availability can also be adapted to situations where an efficiency level has become obsolescent in the market, such as the market availability of alternatives of superior consumer value at lower cost.

End Use Forecaster includes a variable called *available* that is entered in the **choiceDrivers_xx** dataset. *Available* is equal to 1 when the configuration is available on the market and zero when it is no longer available. When the choice model finds an unavailable configuration, it will reassign that configuration's shares (at the efficiency level) to the remaining configurations.

Provider Choice Module Analysis and Data Flow

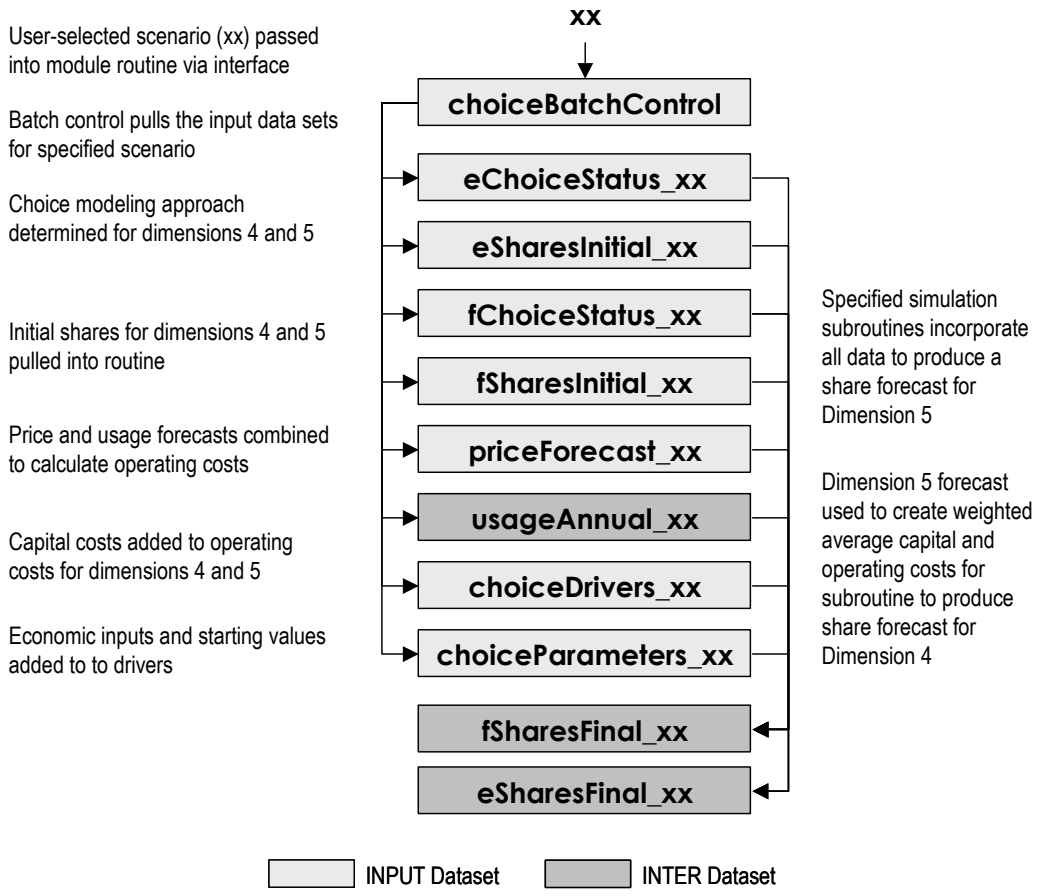
Figure 17 shows the data and analysis flow through the Provider Choice Module.

The dataset **choiceBatchControl** in the input library describes any scenario in terms of the following:

- Equipment capital costs and future availability (**choiceDrivers_xx**)
- Initial simulation (or estimation) parameters (**choiceParameters_xx**)
- Forecasted energy prices (**priceForecast_xx**)
- Product Usage output forecast scenario (**usageAnnual_xx**)
- Initial base-year efficiency (dimension 5) shares (**eSharesInitial_xx**)
- Initial base-year fuel (dimension 4) shares (**fSharesInitial_xx**)
- Indicator for efficiency (dimension 5) choice simulation (**eChoiceStatus_xx**)
- Indicator for fuel (dimension 4) choice simulation (**fChoiceStatus_xx**)

The simulation subroutines in choiceBatch.sas calibrate Provider Choice module coefficients to the baseline market shares in **fSharesInitial_xx** and **eSharesInitial_xx**. The program derives a simultaneous solution for all the qualitative choice coefficients using PROC MODEL from SAS/ETS. The first step in this subroutine is to integrate usage module information (consumption per configuration) with forecasted prices per unit of use to generate forecasted operating costs. Along with forecasted capital costs and other variables used in the qualitative choice models, this information serves as the forecast dataset for choice for each market segment. End Use Forecaster's default choice structure considers up to four alternatives at each level of the nest. Quantec can customize and modify the code if more than four alternatives are needed.

Figure 17. Provider Choice Module Program Flow for "choiceBatch.sas"



Initial Values

The initial value datasets from **choiceParameters_xx** are merged with the other datasets described above. Initial values and other parameters include:

- Equipment life
- Customer discount rate
- Share of customer preferences ("utility") associated with non-price attributes
- Initial values for alternative-specific constants and model coefficients

In some cases, the subroutine can be sensitive to the initial values, particularly for capital and operating cost coefficients. This problem can generally be mitigated by using initial values that are very small numbers, such as $1E^{-8}$.

Single-Alternative Choices

Choice estimation is not required for one-alternative situations; the choice forecasting routine assigns a 100% market share to these single alternative situations in the choice nest.

Confirming Calibration Results (Status 3 or 4)

A final step in the choice calibration process is to confirm that all equation coefficients have been solved correctly and that the coefficient values are reasonable. The nature of "solving" each choice equation for the appropriate coefficients requires an iterative process, where PROC MODEL begins with user-specified starting values of each coefficient and iterates toward a solution based on the input assumptions.

If the coefficient starting values are inappropriate, the calibration process may not reach a solution or it may reach one that is not in an economically feasible region. For example, starting values of coefficients need to be sufficiently low, such that, when they are multiplied by the independent variables, the result is not "out of the ballpark." Additionally, if the relative comparison of operating costs and capital costs are contrary to the user-specified discount rate, the calibration routine may find a solution where one of the coefficients may be positive (i.e., indicating that as costs rise, so do purchases, which is a clearly non-economic decision).

To check calibration results:

- Check the output files shown in the lower panel. Missing values in these forecasted market shares indicate a calibration problem.
- Look for the problem segment(s) in the EUFORECASTER\MODELLOGS directory. The choiceBatch.log file will let you know whether the model was ever "in the ballpark" by noting at what point in the solution-seeking process the SAS/ETS MODEL procedure failed.
- If there is a problem with the scale of a variable, the model will fail at iteration zero and the "hill climbing" optimization never begins.
- If the model fails during subsequent iterations, a systematic change in the initial parameters in **choiceDrivers_xx** is recommended until convergence is achieved. Using the final parameter values from another, similar, segment can help in the calibration process.

Table 7 module summarizes the data files used in this module.

Table 7. Provider Choice Module Data Libraries and Files

Library	Dataset	Description
INPUT	**choiceBatchControl**	Choice parameter input scenario, choice forecast driver input scenario, fuel price input scenario, output scenario
INPUT	**choiceDrivers_xx**	Capital cost equipment replacement, capital cost equipment conversion, capital cost new construction equipment, availability
INPUT	**priceForecast_xx**	Price forecast
INPUT	**choiceParameters_xx**	Description, NumAlternatives, Lifetime, Discount Rate, PriceShare, Alpha, A1-A4, B1-B2
INTER	**usageAnnual_xx**	Usage forecast
INPUT	**eSharesInitial_xx**	Dimension 5 base year average stock share, base year marginal share existing/replacement, base year marginal share conversion, base year marginal share new construction
INPUT	**fSharesInitial_xx**	Dimension 4 base year average stock share, base year marginal share existing/replacement, base year marginal share conversion, base year marginal share new construction
INPUT	**fChoiceStatus_xx**	Indicator for method of estimation/simulation for dimension 4 (fuel).
INPUT	**eChoiceStatus_xx**	Indicator for method of estimation/simulation for dimension 5 (efficiency)
INTER	**fSharesFinal_xx**	Shares forecast for dimension 4 (fuel) for existing, conversion, and new customers
INTER	**eSharesFinal_xx**	Shares forecast for dimension 5 (efficiency) for existing, conversion, and new customers

VI. Intervention Strategies Module

The Intervention Strategies module is intended to capture the impacts of a customer rebate or marketing program. These strategies are modeled as "what-if" scenarios. Depending upon the design of the service or program, these impacts combine specified market acceptance patterns with equipment characteristics to estimate impacts on forecasted choices and per-unit usage.

Substitution Programs

Provider (fuel) substitution strategies encourage consumers to purchase equipment from one provider over other providers. For existing equipment, this change can be done either immediately (early replacement) or at the point of existing equipment retirement (normal replacement). The **dsmFChoice_xx** dataset in the input directory controls how a market intervention will affect shares for a given scenario. The inputs in this dataset, summarized in Table 8, vary by the first, second, and third dimensions and can apply differently to existing, conversion, and new customers.

Table 8. Provider (Fuel) Substitution Program Drivers

Variable	Description	Minimum Value	Maximum Value
yearIntroduced	Year of program introduction activity	1	Last year of forecast horizon
programLife	Duration of program (years)	1	Years in forecast horizon
adoptionPath	Years to Full Adoption	1	7
applicability	Percent of customers to which the program applies	0*	1
marketShare	Percent of market share (%)	0*	1
earlyReplacement	Binary flag for whether early adoption applies to program	0	1
description	Program Description	{text}	{text}

* A zero value implies that the program will have no market impact, so the smallest practical value is 0.01 (1%).

** Early adoption applies to existing buildings only. A value of 1 implies that all applicable consumers (applicability * market share * adoption path %) switch immediately, whether or not the equipment fails. A zero implies that all adoption follows the normal equipment and/or building retirement schedule.

Equipment Efficiency Programs

Product (efficiency) option strategies encourage consumers to purchase a particular option (e.g., equipment with a certain efficiency rating). Either early or normal replacement may apply to existing equipment. Table 9 presents the drivers of purchasing programs and their usage.

Table 9. Product (Efficiency) Program Drivers

Variable	Description	Minimum Value	Maximum Value
yearIntroduced	Year of program introduction activity	1	Last year of forecast horizon
programLife	Duration of program (years)	1	Years in forecast horizon
adoptionPath	Years to Full Adoption	1	7
applicability	Percent of customers to which the program applies	0*	1
eLevel	Efficiency level to which program applies	1	4
marketShare	Percent of market share (%)	0*	1
earlyReplacement	Binary flag for whether early adoption applies to program	0	1
description	Program Description	{text}	{text}

* A zero value implies that the program will have no market impact, so the smallest practical value is 0.01 (1%).

** This represents the maximum efficiency level affected by the program for each end use, and is a supplementary type of applicability factor. The variable EL should be specified to be less than or equal to the maximum number of efficiency levels available for that market sector.

*** This represents the maximum vintage level affected by the program for each end use, and is a supplementary type of applicability factor. The variable V should be specified to be less than or equal to the maximum number of vintages for that market sector. Usually it is set equal to zero to denote an existing building or equipment retrofit strategy.

Equipment Retrofit and Operating & Maintenance (O&M) Service Programs

Usage retrofit strategies encourage consumers to change their product usage given the equipment they already have (e.g., improve the efficiency of existing equipment by installing measures such as weatherization or water heater retrofit kits). Table 10 presents the drivers of these programs.

Table 10. Equipment Efficiency Retrofit and O&M Program Drivers

Variable Name	Description	Minimum Value	Maximum Value
yearIntroduced	Year of program introduction activity	1	Last year of forecast horizon
programLife	Duration of program (years)	1	Years in forecast horizon
adoptionPath	Years to full adoption	1	7
applicability	Percent of customers to which the program applies	0*	1
eLevel	Lowest efficiency level to which program applies	1	4
marketShare	Percent of market share (%)	0*	1
eImprovement	Efficiency improvement (%)	0*	1
MeasureLife	Measure life (years)	1	Years in forecast horizon
vintageApplicability	Applicable vintages***	Lowest vintage	Years (vintages) in forecast horizon
description	Program Description	{text}	{text}

* A zero value implies that the program will have no market impact, so the smallest practical value is 0.01 (1%).

** This represents the maximum efficiency level affected by the program for each end use, and is a supplementary type of applicability factor. The variable EL should be specified to be less than or equal to the maximum number of efficiency levels available for that market sector.

*** This represents the maximum vintage level affected by the program for each end use, and is a supplementary type of applicability factor. The variable V should be specified to be less than or equal to the maximum number of vintages for that market sector. Usually it is set equal to zero to denote an existing building or equipment retrofit strategy.

Intervention Strategies Module Operations

You can create many types of Intervention Strategies programs for all market sectors sequentially and automatically, rather than creating each one manually. This batch processing is done via the following datasets, where the scenario indicator "yy" denotes a scenario that differs from "xx."

- **dsmFChoice_yy** – Dimension 4 (fuel) choice substitution for existing, conversion, and/or new customers, based on user specifications
- **dsmEChoice_yy** – Dimension 5 (efficiency) choice substitution for existing, conversion, and/or new customers, based on user specifications
- **dsmRetrofit_yy** – Equipment retrofit or O&M programs

Each of these files contains a row for each Dimension 1 – 3 combination and data inputs associated with Table 24 (**dsmFChoice_xx**), Table 23 (**dsmEChoice_xx**), or Table 25 (**dsmRetrofit_xx**).

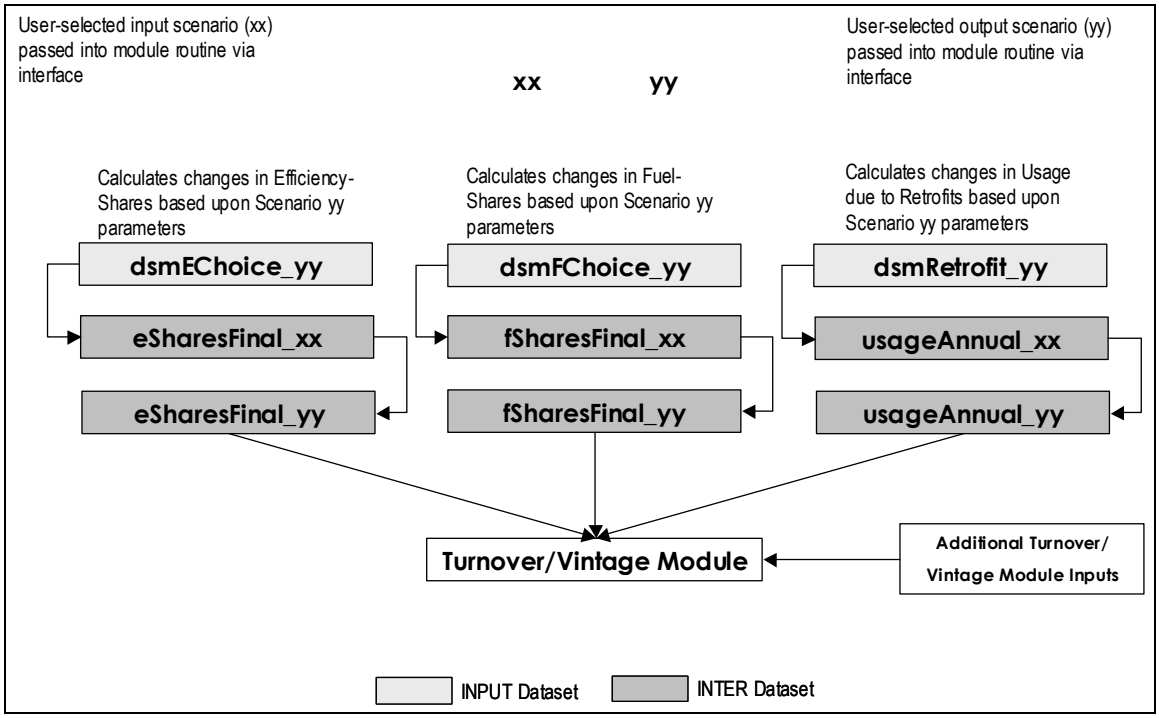
The Market Segmentation module creates base case files ("_10" files) where there is no intervention for each of these program categories. These files serve as templates that allow the user to create different scenarios of interest. To create strategies, you must copy these files to another scenario number and then make changes consistent with the desired intervention strategy over the forecast horizon. It is recommended that these designs be completed by individuals with marketing or demand-side management experience. Alternatively, Quantec can assist with the development of the first set of intervention strategies.

Figure 18 illustrates how the Intervention Strategies module modifies the Product Usage and/or Provider Choice output files and how these outputs are then used to develop an alternative forecast. Table 11 summarizes the data files used by this module.

Table 11. Intervention Strategies Module Data Library and Files

Directory	File Name	Description	File/Record Dimensions	Variables/Attributes
INPUT	dsmEChoice_xx	Existing/New Dimension 5 (efficiency) program parameters	Dimensions 1-4	Year introduced, program life, applicability, market share, adoption path, early adoption
INPUT	dsmFChoice_xx	Existing/New Dimension 4 (fuel choice) program parameters	Dimensions 1-4	Year introduced, program life, applicability, market share, adoption path, early adoption
INPUT	dsmRetrofit_xx	Product Usage retrofit parameters	Dimensions 1-4	Year introduced, program life, applicability, market share, adoption path, measure life, efficiency improvement, efficiency levels affected, vintages affected

Figure 18. Intervention Strategies Module System Diagram



VII. Forecast Module

The Forecast module serves several analytical and system functions, including forecasts of new construction and conversion accounts, decay or turnover of buildings and equipment, integration of Product Usage, Provider Choice and Intervention Strategies module results, and "internal" forecast reports for use by the End Use Forecaster analyst.

The analytical portion of this module uses information on equipment saturation, average and marginal market shares, building and equipment decay, building account stocks and decay, customer conversions, and new construction to determine changes in the usage mix over time. The final forecast is equal to the number of units [indexed by year, building vintage, equipment age, fuel (provider), and efficiency (product)] multiplied by the consumption per the indexed equipment configuration.

Forecast Inputs

There are several sets of inputs in each Turnover/Vintage module forecast, which are described in Table 12 below. Alternative forecast scenarios using new estimates (scenarios) for new construction, account conversion, usage, choice, account decay, building decay, and any combinations of these can be conducted using the Turnover/Vintage module.

Table 12. Turnover/Vintage Forecast Inputs

Input Type	Dataset
Account Decay Parameters	**accountDecay_xx**
Equipment Decay Parameters	**equipmentDecay_xx**
Existing Equipment Age	**equipmentAge_xx**
Dimension 3 (End Use) Saturation	**saturations_xx**
Historical Accounts	**customerCountsActual_xx**
Account Forecast	**customerCountsForecast_xx**
Product Usage Forecast	**usageAnnual_xx**
Dimension 4 (Fuel) Shares Forecast	**fSharesFinal_xx**
Dimension 5 (Efficiency) Shares Forecast	**eSharesFinal_xx**

Historical and New Construction Building Stocks

Historical accounts are segmented into the number of total accounts in the base year and their distribution among the historical vintages as determined by the user in the segmentation design. Accounts are defined in terms of both buildings and building units (i.e., accounts, apartments, square feet, etc.). Building units are the level of measurement at which the Product Usage module estimates are rendered.

The total building stock in any forecast year is not the simple difference between the total building stock in the current year and the previous year because some buildings will have been

destroyed, completely gutted, or removed from the system in the course of a year. The number of existing buildings replaced each year is dependent on the stock of vintages and the overall decay rate.

Forecasting Equipment Stocks

Dimension 3 (i.e., end use) equipment stocks are forecasted through similar methods as buildings. Initial base year equipment stock levels are estimated utilizing equipment saturation estimates for existing and new construction building vintages in the **saturations_xx** dataset. Market shares of new equipment over the forecast horizon are generated in the Provider Choice or Intervention Strategies module and passed to the Turnover/Vintage module via the series of market share forecasts in the **eSharesInitial_xx** and **fSharesInitial_xx** datasets. You may provide the average age of equipment in existing buildings in the base year in order to initialize the equipment age dimension (**equipmentAge_xx**). Generally, this average age is specified as the mean technical lifetime of the equipment.

The forecast simulation then estimates equipment stocks for Dimensions 3-5 (i.e., end use, fuel, and efficiency level) for each Dimension 1-2 combination. The new equipment stock installed each year is dependent on the growth and decay of building stocks, the natural replacement cycle of the equipment, the saturation rates of the end use in new construction, and the market shares of technology types.

End Use Forecaster contains a vintage hierarchy where Dimension 2 (buildings) dominates Dimension 3 (end uses). For example, an older dwelling may have a relatively new furnace and water heater, but these end uses effectively "disappear" if the building is demolished or undergoes a major renovation.

Building and Equipment Decay Functions

The user may specify decay rates of existing stocks of buildings and equipment, as well as new stock constructed or installed in subsequent years. Decay functions and parameters can differ for the existing and new stocks. Some analysts specify different decay functions for existing and new building stocks as the existing base year building stock is an amalgam of unknown vintages and new building stock is tracked as discreet homogenous annual blocks.

There are two datasets with decay rate data for each market segmentation design (**accountDecay_xx** and **equipmentDecay_xx**). In each of these decay data files, there are two sets of information to be entered: decay functions and decay parameters.

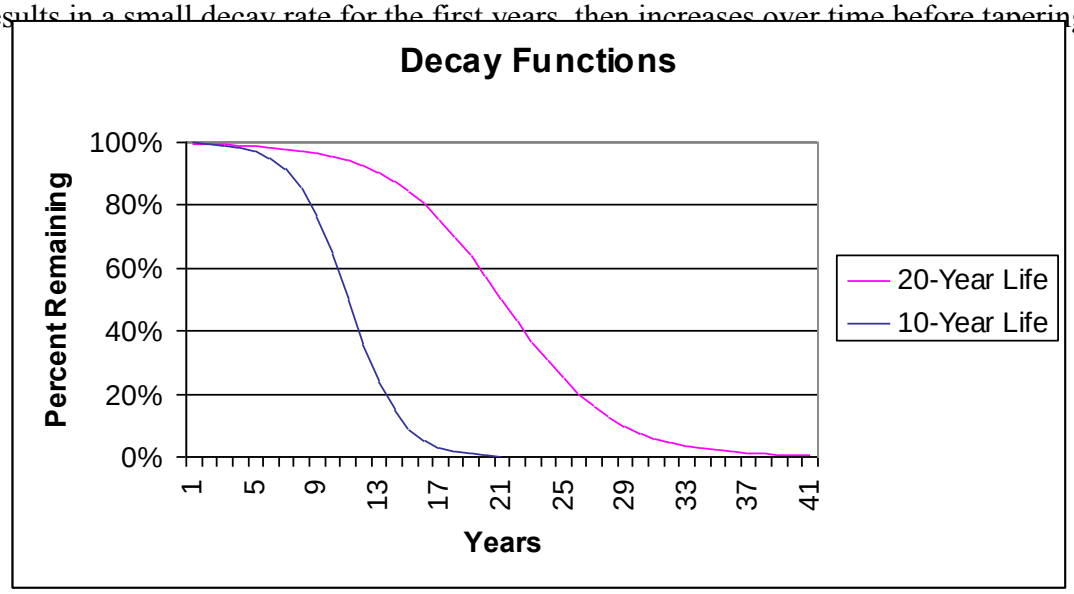
A numeric indicator ranging from 1 to 3 indicates the selected function. Available functions include exponential (1), logistic (2), and Weibull (3). Exponential functions have one parameter, logistic functions have four, and Weibull functions have two.[3] The logistic and exponential functions tend to be the most popular and are described in more detail below. The

[3] These are discrete analogs to the continuous time distributions.

equipmentAge_xx dataset describes the average age of existing equipment in existing facilities. It tells the model where to start the equipment decay function.

Logistic Decay Function

End Use Forecaster uses the logistic function as the recommended decay mechanism for equipment decay construction, as shown in Figure 19. The logistic function is an S-shaped curve that results in a small decay rate for the first years, then increases over time before tapering off.



You may specify the periods and percentages of stock remaining for any two years in the appropriate SAS dataset. For example, to specify that 99% of the building stock remains 20 years after construction and that, 100 years after construction, only 50% of the buildings remain:

- In the SAS dataset, set the functional form indicator to 2
- Set the first parameter to the percent remaining after year X (0.99)
- Set the second parameter to year X (20)
- Set the third parameter to the percent remaining after year Y (0.50)
- Set the fourth parameter to year Y (100)

Exponential Decay Function

An exponential decay function can be used to represent a constant percentage decline for customers, buildings, or equipment. For example, a decay rate of 0.05 would cause 5% of the remaining stock to be removed each year. Since the base becomes progressively smaller, so does the absolute level of decay. If you choose an exponential decay rate:

- Set the functional form indicator equal to 1
- Set the first parameter equal to the specified decay rate
- Set the remaining three parameters equal to zero

Zero Decay

In some cases, decay rates may not be relevant information. This can occur in non end-use End Use Forecaster representations or in certain markets such as "miscellaneous consumption." In these instances, choose the exponential function and set all parameters to zero.

Early Replacement

In some instances, you may specify the "early replacement" of existing equipment within an Intervention Strategies scenario. In these situations, the variable *earadop*, contained in **eChoiceFinal_xx** dataset, will effectively override the equipment decay functions if it is set equal to 1. The default value for *earadop* is zero (no early adoption).

Forecast Operations

The heart of this module is a SAS program called forecastBatch.sas, which completes the following tasks:

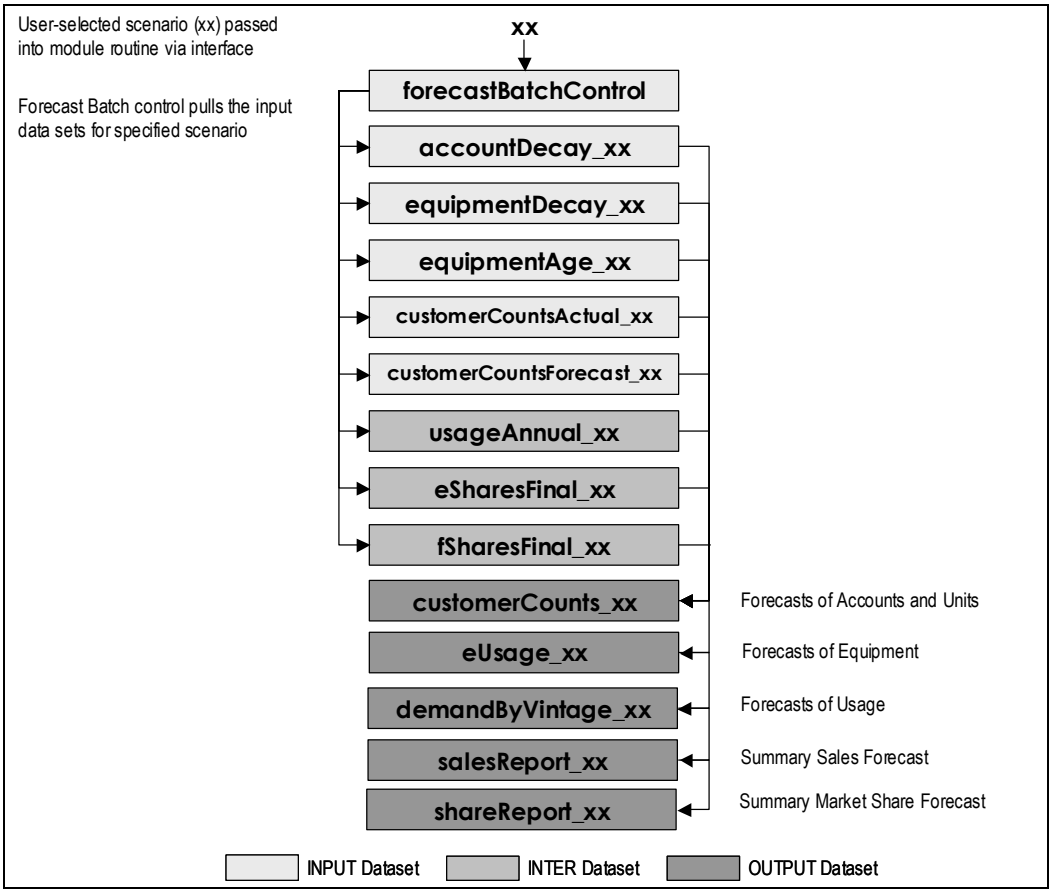
1. Merges all input data across Dimensions 1-3, including:
   - Existing accounts, plus a distribution of accounts across historical building vintages
   - New construction forecast, plus capture rates for new and conversion buildings
   - Dimension 3 saturation, equal to the number of Dimension 2 customers with Dimension 3 divided by total Dimension 2 customers
   - Decay rates for buildings (indexed by year and building vintage) and equipment (indexed by Dimension 4 and equipment age)
   - Product usage forecast (potentially modified by an intervention strategies scenario)
   - Provider choice forecast (potentially modified by an intervention strategies scenario)
2. Solves for output arrays that contain information on number of market segments units per year, indexed by the specified dimensions (e.g., building vintage, equipment age, fuel, and efficiency)
3. Stores the results in datasets of varying dimensions
4. Multiplies the number of units by the respective consumption estimate per unit, again indexed by the appropriate dimension.
5. Summarizes these results in standard report formats

Figure 20 illustrates how the operation of the Turnover module. Table 13 summarizes the programs developed for the Turnover/Vintage module, and Table 13 summarizes the data files used in this module.

Table 13. Forecast Module Data Library and Files

Library	Dataset Name	Description	Record Dimensions	Attributes/Variables
INPUT	**ForecastBatchControl**	Forecast module input control	One record per output scenario	Account history, distribution and new construction scenarios; decay scenarios; usage scenario, saturation scenarios, and equipment mean age scenario.
INPUT	**accountDecay_xx**	Decay parameters for Dimension 2	Dimensions 1 and 2, forecast vintages	Decay Function, Decay Parameters 1-4
INPUT	**equipmentDecay_xx**	New construction Dimension 3 (end use) decay	Dimensions 1, 2, 3 and 4	Decay Function, Decay Parameters 1-4
INPUT	**saturations_xx**	Existing Dimension 3 (end use) saturation	Dimensions 1, 2, and 3 Year, historical vintages	Saturation
INPUT	**customerCountsActual_xx**	Base year accounts and non-accounts (potential customers)	Dimensions 1 and 2	Accounts, non accounts
INPUT	**equipmentAge_xx**	Dimension 3 (end use) mean age in base year	Dimensions 1, 2, and 3, historical vintage	Dimension 3 (end use) mean age in base year
INPUT	**customerCountsForecast_xx**	New construction / economic driver forecast	Dimensions 1 and 2, Year	Forecasted new construction, capture rate, conversion rate, units per account,
INTER	**usageAnnual_xx**	Product Usage module output	Dimensions 1, 2, 3, 4 and 5, year, vintage	Annual usage
INTER	**eSharesFinal_xx**	Provider Choice module output – existing Dimension 5 market share forecast	Dimensions 1, 2, 3, 4 and 5, year	Market share for replacement, early replacement indicator
INTER	**fSharesFinal_xx**	Provider Choice module output – existing Dimension 4 market share forecast	Dimensions 1, 2, 3 and 4, year	Market share for replacement, early replacement indicator
OUTPUT	**customerCounts_xx**	Forecast of accounts and units (square footage)	Dimensions 1 and 2, year, vintage	(E/C/N) Accounts, (E/C/N) units, units per account, remaining nonconversion potential
OUTPUT	**eUsage__xx**	Forecast of equipment (end-uses)	Dimensions 1, 2, 3, 4 and 5, year, vintage	Total number of Dimension 3 (end uses)
OUTPUT	**demandByVintage_xx**	Forecast of usage (e.g., kWh, therms)	Dimensions 1, 2, 3, 4 and 5, year, vintage	(E/C/N) Accounts, (E/C/N) units, units per account, remaining nonconversion potential; Total number of Dimension 3 (end uses); Break out of dimension 3 by replacement, conversion, and new construction.
OUTPUT	**salesReport_xx**	Summary Sales Forecast	Dimensions 1, 2, 3 and 4, year	Total usage and equipment sales by Dimension 5
OUTPUT	**shareReport_xx**	Summary Market Share Forecast	Dimensions 1, 2, 3 and 4, year	Market shares for Dimensions 4 and 5, by existing, conversion, and new construction

Figure 20. Turnover (Vintage) Module System Diagram



VIII. End Use Forecaster Utilities

The main End Use Forecaster analysis modules – Product Usage, Provider Choice, Intervention Strategies, and Forecast – are typically run separately during the calibration and testing phase of any market segmentation and forecasting process. Once this process is complete, however, you can run these modules jointly and generate all relevant analyses with a single click of the mouse (after data are prepared, of course).

This chapter describes the various utilties available in End Use Forecaster: Super Batch, Calibration, Analysis of Data Files, and Reporting.

Super Batch Processing

Some forecasting scenarios lend themselves to super batch processing. When the Product Usage, Provider Choice, and Forecast modules all have the same scenario indicator value, the that scenario can be run across all modules by selecting it in the Super Batch frame.

Calibration

End Use Forecaster can be calibrated to base year energy usage data for the "primary" fuel of interest in the model (f='1'). Calibration may proceed at the Z-Level, or at the Z-B-Level. Base year sales data must be available in the \INPUT**calibrationZ_xx or calibrationZB_xx** datasets. To calibrate the model apply the following procedure:

- Select the level at which the forecasts will be calibrated (the Z-Level vs. the Z-B-Level) from the Calibration Utility
- Select the scenario to be calibrated and the percent of usage to be assigned to the miscellaneous usage category.

The calibration routine works as follows:

1. Residual energy is attributed to the miscellaneous end use. This value should be greater than or equal to zero but generally does not exceed 10% of forecasted energy sales. In fact, the upper limit available through the model interface is 10%. Errors larger than this generally indicate a more fundamental data problem where an investigation of data inputs is required rather than this automated calibration process
2. When non-calibrated total usage is on the high side (miscellaneous would then be negative), the next step is to reduce the per-unit energy usage (i.e., customer or square foot) for each market segment, end use, and efficiency combination. Note that the *relative* energy usage across efficiency levels is unchanged. Conversely, when non-calibrated total usage is on the low side, simply let miscellaneous equal zero (the default value). All other end uses will be adjusted proportionately. Again, we recommend avoiding this procedure if the adjustment is larger than 10%.

The relative size of the calibration adjustment which is ultimately applied to the \INPUT**usageParameters_xx** datasetc can be found in \INTER**initialCalibrationRatio**.[4] The variable (*Zfratio* (*ZBfratio*) shows the percent error results, and how much End Use Forecaster had to change parameters through the calibration routine to match base year sales.

If additional calibration is needed beyond the base year to, for example, match an external econometric forecast over the duration of the forecast horizon, a post-processing adjustment using either SAS or Excel can be applied.[5]

After running the calibration routine, it is necessary to run the Usage, Choice, and Forecast modules (or Super Batch) and produce a new forecast. One can then click on the appropriate "Calibration: Calibration Check" routine to make sure the calibration worked as intended.

Analysis of Data Files

All SAS datasets in across End Use Forecaster libraries can be accessed directly from End Use Forecaster for further analysis in real time by following these steps:

- Click on "File: Analyze" to access SAS/INSIGHT
- Select the library and dataset of interest and perform desired analysis

  OR
- SAS/FSP software tools can also be used to browse the SAS datasets via the pull-down menu item "File: Library Map"

Reporting

Five default SAS output dataset reports are created in the OUTPUT directory by the Forecast module:

- A summary sales report (**salesReport_xx**)
- A summary market share report (**shareReport_xx**)
- Detailed account stock forecast (**customerCounts_xx**)
- Detailed market segment/end use equipment sales forecast (**eUsage_xx**)
- Detailed sales projections (**demandByVintage_xx**)

These reports can be browsed directly as described above, or exported to Excel. To accomplish the latter simply click on "Reports: Export Basic Reports to Excel" and select the Forecast module scenario to export.

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[4] Notice that there is no scenario indicator on the **initialCalibrationRatio** dataset. This is because only one scenario per Model should be calibrated; all other scenarios within that model can then be developed from the calibrated **usageParameters_xx** or successor datasets.

[5] Please contact Quantec for more information or to obtain a customized calibration routine

End Use Forecaster also produces reports that can be customized based upon the user's choice of segmentation combinations to analyze. These reports summarize and/or compare forecasts for two forecast scenarios specified by clicking on "Reports: Scenario Comparison Reports." The user specifies the Report Category (sales, market share, customer counts or demand by vintage) and, based on the category selection, is given the option of selecting different combinations of segments to summarize and/or compare.

Appendix: Variable Glossary

This glossary provides definitions for each End Use Forecaster SAS variable, and is organized by the model's libraries and datasets as defined in Chapter III.

Table 14. INPUT\accountDecay_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
vintage	Building vintage
accountDecayIndicator	Account decay indicator
accountDecayParm1	Account decay parameter 1
accountDecayParm2	Account decay parameter 2
accountDecayParm3	Account decay parameter 3
accountDecayParm4	Account decay parameter 4

Table 15. INPUT\calibrationZ

Variable Name	Description
z	The indicator for Dimension 1
year	Year of forecast (0 to rorecast horizon)
actualSales	Actual sales in base year

Table 16. INPUT\calibrationZB

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
year	Year
actualSales	Actual sales in base year

Table 17. INPUT\choiceBatchControl

Variable Name	Description
scenarioName	Descriptive name of the scenario
scenario	Output scenario number
choiceDrivers	Scenario to select for the choiceDrivers_xx dataset
priceForecast	Scenario to select for the priceForecast_xx dataset
choiceParameters	Scenario to select for the choiceParameters_xx dataset
usageAnnual	Scenario to select for the usageAnnual_xx dataset
eSharesInitial	Scenario to select for the eSharesInitial_xx dataset
fSharesInitial	Scenario to select for the fSharesInitial_xx dataset
eChoiceStatus	Scenario to select for the eChoiceStatus_xx dataset
fChoiceStatus	Scenario to select for the fChoiceStatus_xx dataset

Table 18. INPUT\choiceDrivers_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
available	Binary switch to indicate availability of the alternative in any given year of the forecast
capitalCostExisting	Capitial cost for equipment in existing (replacement) construction
capitalCostConversion	Capital cost for equipment for conversion customers
capitalCostNew	Capital costs for equipment for new construction

Table 19. INPUT\choiceParameters_xx

Variable Name	Description
Z	The indicator for Dimension 1
B	The indicator for Dimension 2
N	The indicator for Dimension 3
f	The indicator for Dimension 4
eIndicator	Binary switch for choice modeling to indicate the dimension modeled (0 = Dimension 4 and 1 = Dimension 5)
conType	Type of construction or customer (new, existing, or conversion)
lifetime	Equipment or measure lifetime (years)
alpha	Constant
description	Description of Choice
discountRate	Implicit discount rate
priceShare	Price share of customer utility function
a1	Intercept for alternative 1
a2	Intercept for alternative 2
a3	Intercept for alternative 3
a4	Intercept for alternative 4
b1	Operating cost coefficient
b2	Capital cost coefficient

Table 20. INPUT\customerAccountsActual_xx

Variable Name	Description
Z	The indicator for Dimension 1
B	The indicator for Dimension 2
vintage	Building vintage
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
accounts	Number of accounts.
onMainAccounts	Number of accounts on main.
offMainAccounts	Number of accounts off main.

Table 21. INPUT\customerAccountsForecast_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
year	Year
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
newConstructionAccounts	New Construction accounts.
newConstructionCaptureRate	The “capture” rate of NEWCONST = the share of new buildings that are customers
conversionCaptureRate	The share (%) of existing non-customers converting or becoming a customer each year

Table 22. INPUT\dimens

Variable Name	Description
DIM	Dimension
DIMNAME	Dimension Name
DIMNUM	Starting Levels

Table 23. INPUT\dsmEChoice_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
conType	Type of construction or customer (new, existing, or conversion)
yearIntroduced	Year of Program Introduction
programLife	Duration of Program (Years)
adoptionPath	Years to Full Adoption
applicability	Percent of Customers Applicable
eLevel	e Level to Which Program Applies
marketShare	Market Share Percent
earlyReplacement	Early Replacement (binary)
description	Program Description

Table 24. INPUT\dsmFChoice_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
conType	Type of construction or customer (new, existing, or conversion)
yearIntroduced	Year of Program Introduction
programLife	Duration of Program (Years)
adoptionPath	Years to Full Adoption
applicability	Percent of Customers Applicable
marketShare	Market Share Percent
earlyReplacement	Early Replacement (binary)
description	Program Description

Table 25. INPUT\dsmRetrofit_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
yearIntroduced	Year of Program Introduction
programLife	Duration of Program (Years)
measureLife	The average life of Dimension 3 equipment
eImprovement	The efficiency improvement (%) as reflected by the reduction in equipment energy usage.
adoptionPath	Years to Full Adoption
vintageApplicability	Vintages to Which Programs Apply
applicability	Percent of Customers Applicable
marketShare	Market Share Percent
earlyReplacement	Early Replacement (binary)
eLevel	Lowest e Level to Which Program Applies
description	Program Description

Table 26. INPUT\eChoiceStatus_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
eChoiceStatus	This is a “status” variable for Dimension 5. It tells the Provider Choice module which of several possible equation/modeling processing should be followed.
eAlternatives	The number of choice alternatives for Dimension 5, which ranges from 1-4

Table 27. INPUT\eSharesInitial_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
baseAvgEShare	The average market share in the historical stock at Dimension 5
baseMargEShareExisting	The marginal (i.e., most recent) market share associated with the replacement of the product or service option by existing customers
baseMargEShareConversion	The marginal market share associated with conversion customers
baseMargEShareNew	The marginal market share associated with the new construction customers
peakDayLoadFactor	The peak demand or peak day load factor associated with annual usage for each Dimension 1-5 combination.

Table 28. INPUT\equipmentAge_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
equipmentMaxAge	The maximum age of existing equipment for each Dimension 1-3 combination regardless of the historical vintage
equipmentMeanAge	The average age of existing equipment for each Dimension 1-3 combination and each historical vintage
vintage	Building vintage

Table 29. INPUT\equipmentDecay_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
conType	Type of construction or customer (new, existing, or conversion)
equipmentDecayIndicator	Equipment decay indicator
equipmentDecayParm1	Equipment decay paramater 1
equipmentDecayParm2	Equipment decay paramater 2
equipmentDecayParm3	Equipment decay paramater 3
equipmentDecayParm4	Equipment decay paramater 4

Table 30. INPUT\fChoiceStatus_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
fChoiceStatus	This is a "status" variable for Dimension 4. It tells the Provider Choice module which of several possible equation/modeling processing should be followed.
fAlternatives	The number of choice alternatives for Dimension 4, which ranges from 1-4

Table 31. INPUT\forecastBatchControl

Variable Name	Description
scenarioName	Descriptive name of the output scenario
scenario	Output scenario number
accountDecay	Scenario to select for the accountDecay_xx dataset
equipmentDecay	Scenario to select for the equipmentDecay_xx dataset
equipmentAge	Scenario to select for the equipmentAge_xx dataset
saturations	Scenario to select for the saturations_xx dataset
customerCountsActual	Scenario to select for the customerCountsActual_xx dataset
customerCountsForecast	Scenario to select for the customerCountsForecast_xx dataset
usageAnnual	Scenario to select for the usageAnnual_xx dataset
eSharesFinal	Scenario to select for the eSharesFinal_xx dataset
fSharesFinal	Scenario to select for the fSharesFinal_xx dataset

Table 32. INPUT\fsharesInitial_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
baseAvgFShare	The average market share in the historical stock at Dimension 4.
baseMargFShareExisting	The marginal (i.e., most recent) market share associated with the replacement of the product or service by existing customers
baseMargFShareConversion	The marginal market share associated with the conversion customers
baseMargFShareNew	The marginal market share associated with the new construction customers

Table 33. INPUT\initParm

Variable Name	Description
BASEYR	Base Year
FCSTYRS	Forecast Years

Table 34. INPUT\priceForecast_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
price	Price (Native Units)

Table 35. INPUT\saturations_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
year	Year
vintage	Building vintage
saturation	Presence of End Use (Percent)

Table 36. INPUT\scenarioDescriptions

Variable Name	Description
scenario	Output scenario number
scenarioName	Descriptive name of the scenario

Table 37INPUT\usageBatchControl

Variable Name	Description
scenarioName	Descriptive name of the scenario
scenario	Output scenario number
usageParameters	Scenario to select for the usageParameters_xx dataset
usageDrivers	Scenario to select for the usageDrivers_xx dataset

Table 38. INPUT\usageDrivers_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
month	Month
X0 - X20	Product Usage module forecast drivers

Table 39. INPUT\usageParameters_xx

Variable Name	Description
Z	The indicator for Dimension 1
B	The indicator for Dimension 2
N	The indicator for Dimension 3
F	The indicator for Dimension 4
E	The indicator for Dimension 5
Vintage	Building vintage
B0 - B20	Product Usage module coefficients
usageEquationStatus	This is a “status” variable for the Product Usage module.

Table 40. INTER\eSharesFinal_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
eshare	Share for Dimension 5
earadop	A 0/1 binary variable where a value of 1 indicates that the marginal market shares apply to all existing customers, not just those who need to replace retired equipment. The default value is 0; a one will be used if specified in the Intervention Strategies CSFUELE\Sxx dataset.
conType	Type of construction or customer (new, existing, or conversion)

Table 41. INTER\fSharesFinal_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
fshare	Fuel Share
earadop	A 0/1 binary variable where a value of 1 indicates that the marginal market shares apply to all existing customers, not just those who need to replace retired equipment. The default value is 0; a one will be used if specified in the Intervention Strategies CSFUELE\Sxx dataset.
conType	Type of construction or customer (new, existing, or conversion)

Table 42. INTER\usageAnnual_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
year	Year
vintage	Building vintage
f	The indicator for Dimension 4
e	The indicator for Dimension 5
use	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage

Table 43. INTER\usageMonthly_xx

Variable Name	Description
vintage	Building vintage
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
month	Month
use	Monthly usage from the usage module for each Dimension 1-5 combination by year and vintage

Table 44. OUTPUT\customerCounts_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
year	Year
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
vintage	Building vintage
remain	All customers and non-customers remaining for each vintage
totalAccounts	The sum of existing, conversion, and new construction customers
cAccounts	Conversion customers
nAccounts	New construction customers
totalUnits	totalAccounts * units per account
cUnits	cAccounts * units per account
nUnits	nAccounts * units per account

Table 45. OUTPUT\demandByVintage_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
vintage	Building vintage
year	Year
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
use	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage
peakDayLoadFactor	The peak demand or peak day load factor associated with annual usage for each Dimension 1-5 combination.
ereplcs	The total number of new Dimension 3 equipment sales from existing customers (who are replacing retired equipment) by year and vintage for each Dimension 1-5 combination
ceus	The total number of new Dimension 3 equipment sales from conversion customers by year and vintage for each Dimension 1-5 combination
neus	The total number of new Dimension 3 equipment sales from new construction customers by year and vintage for each Dimension 1-5 combination
totalUsage	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage
cUsage	The total number of new Dimension 3 equipment sales from conversion customers by year and vintage for each Dimension 1-5 combination
nUsage	The total number of new Dimension 3 equipment sales from new construction customers by year and vintage for each Dimension 1-5 combination
usagePerUnit	Total usage per unit (e.g., square foot, customer, apartment, etc.) for each Dimension 1-5 combination by year and vintage = USE * EEUS
cuseunit	Total conversion usage per unit (e.g., square foot, customer, apartment, etc.) for each Dimension 1-5 combination by year and vintage = USE * CEUS
nuseunit	Total new construction usage per unit (e.g., square foot, customer, apartment, etc.) for each Dimension 1-5 combination by year and vintage = USE * NEUS

Table 46. OUTPUT\eUsage_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
vintage	Building vintage
year	Year
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.

Table 47. OUTPUT\salesReport_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
totalAccounts	The sum of existing, conversion, and new construction customers
totalUnits	totalAccounts * units per account
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.
totalUsage	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage
peakUsage	Annual peak usage from the usage module for each Dimension 1-5 combination by year and vintage
effeeus1 - effeeus4	This is the average number of fuel specific end-uses (FEUS) across the possible Dimension 5 (efficiency) levels, and is identical to AVGEU(1-4) in VNTFMKSH\Sxx
effuec1 - effuec4	The annual usage for each Dimension 5 level associated with each Dimension 1-4 combination. These estimates come directly from USE is USEANN\Sxx
effuse1 - effuse4	The total usage for each Dimension 1-5 combination by year and vintage. These estimates come directly from EUSE in VNTFDEMD\\Sxx
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
uec	Sales per End Use Unit
fuelSpecificUnitsPerAccount	Fuel-Specific End-Use Units per Account
totalUsagePerAccount	Sales per Account

Table 48. OUTPUT\shareReport_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
totalAccounts	The sum of existing, conversion, and new construction customers
totalUnits	totalAccounts * units per account
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.
effeeus1 - effeeus4	This is the average number of fuel specific end-uses (FEUS) across the possible Dimension 5 (efficiency) levels, and is identical to AVGEU(1-4) in VNTFMKSH\Sxx
averageShareEff1 - averageShareEff4	The average stock share of Dimension 5 for each Dimension 1-4 combination
fshareExisting	The fourth dimension (fuel) market share for existing (replacement equipment) customers
fshareNew	The fourth dimension (fuel) market share for new construction customers
fshareConversion	The fourth dimension (fuel) market share for conversion customers
marginalShareExisting1 - marginalShareExisting4	The marginal (existing equipment) share of Dimension 5 for each Dimension 1-4 combination
marginalShareNew1 - marginalShareNew4	The marginal (new equipment) share of Dimension 5 for each Dimension 1-4 combination
marginalShareConversion1 - marginalShareConversion4	The marginal (conversion equipment) share of Dimension 5 for each Dimension 1-4 combination

Non Residential Core

Core Commercial and Industrial End Use Model

Introduction

The G10 commercial and industrial gas demand forecast used the EUForecaster model to generate annual gas demand forecasts for the TCAP forecast horizon.

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The model segments the G-10 commercial and industrial markets into 14 sectors and 11 sectors by type of business activity, respectively. Business activity is determined by the NAICS code assigned to the customer and carried on the customer's billing record. A second segmentation within each specific business type involved further disaggregation into end-uses.

The gas demand forecast that results from the EUForecaster model is at the annual design HDD total of 1,320 for an Average Year. The gas demand forecasts under Cold, Hot and Base temperature were then constructed based on Cold Year (Hdd = 1,594), Hot Year (Hdd=1,046) and Base Year (Hdd=0) annual assumptions.

This *end use* forecasts under the above four temperature scenarios are then adjusted for a set of *post-model* adjustments. These adjustments consist of *reductions* for the EE/DSM savings provided by the EE/DSM group. An addition to load associated with (existing) G10 commercial and industrial customers who install electric self-generation equipment was included. This program was established initially by the State of California through AB970 and is now known as SGIP. Other adjustments to the load consist of the anticipated core to noncore migration expected and a reduction in load for the City of Vernon customers. The final adjustment adds both the Gas AC and Gas Engine demand forecasts into commercial G10 forecast. All of these post-model adjustments are summarized in tables that follow.

Data Sources

The key set of information used to perform the modeling and to generate the forecast includes historical year 2017 consumption and customer counts, employment forecasts, gas and electric energy use intensity (EUI) values, end-use saturations, fuel and efficiency shares, gas and electric price forecasts, equipment age, use per meter for existing and new customers, and equipment cost. A description of each component follows.

A. Historical Year 2017 Sales:

The historical data are extracted from the billing tables in the Customer Information System (CIS). The gas consumption by business type was adjusted to our 1,320 average year HDD.

B. Employment Data:

The level of employment in each business type is used as a measure of economic activity in the G-10 commercial and industrial demand forecast models. The employment data series matches the NAICS categories used to develop the historical consumption data. The employment data were compiled and totaled for the 12 counties comprising SoCalGas' service territory. The forecast data comes from Global Insight's Regional forecast released in 2018 and based on Global Insight's latest US Economic Forecast. The historical 2017 data comes from the California Employment Development Department.

Data Sources

The key set of information used to perform the modeling and to generate the forecast includes historical year 2017 consumption and customer counts, employment forecasts, gas and electric energy use intensity (EUI) values, end-use saturations, fuel and efficiency shares, gas and electric price forecasts, equipment age, use per meter for existing and new customers, and equipment cost. A description of each component follows.

A. Historical Year 2017 Sales:

The historical data are extracted from the billing tables in the Customer Information System (CIS). The gas consumption by business type was adjusted to our 1,320 average year HDD.

B. Employment Data:

The level of employment in each business type is used as a measure of economic activity in the G-10 commercial and industrial demand forecast models. The employment data series matches the NAICS categories used to develop the historical consumption data. The employment data were compiled and totaled for the 12 counties comprising SoCalGas' service territory. The forecast data is based on Global Insight's Regional forecast.

Gas Price Data:

Average and marginal gas prices ($/therm) were calculated from forecasts of the G-10 rate components. We used detailed consumption data on our core G-10 C&I, customers, to separate monthly consumption for customers by each respective C&I business type into the respective G-10 consumption tiers. (The most recent 12-month calendar period, January 2017 through December 2017, was used.)

For a given business type, the average gas commodity rate for the 12-month period was calculated for each year. The average commodity rate in each forecast year was developed using the same monthly consumption pattern, but with the forecasts of rates for each G-10 rate tier. The average gas price each year was then calculated by including the non-volumetric customer charges with the year's average gas commodity rate.

Each respective business type's marginal gas commodity rate (for each month) was calculated by "pricing" the entire month's consumption at the G-10 rate's tier that was the last tier with non-zero consumption, the marginal consumption tier, for the customers of the given business type. The marginal gas price was then calculated as the simple average of the 12 monthly marginal commodity rates. The forecasts for each year used the same monthly consumption pattern, but used the projected G-10 price of the marginal consumption tier.

Electric Price Data:

Both average prices (cents/kWh) and marginal prices (cents/kWh) were developed as electricity price inputs. Forecasts for the SCE commercial and industrial customer classes were developed based on the California Energy Commission's December 2017 updated forecast rates for California energy demand (forecast for the SCE planning area, under "Mid-Case" demand for electricity) for the SCE service area through our forecast time horizon.

The CEC did not did not provide an explicit projection of retail prices for medium sized commercial customers, a relationship for the retail price for this group was assumed to be at 88% of the retail price projected for SCE's commercial customer class. These were the average electricity prices for the core industrial market overall.

The marginal prices were calculated by multiplying each year's respecitve average price by a rattio. This ratio, 0.789 was estimated from an analysis of the SCE GS-2 rate schedule posted on their web-site. (These customers were assumed to be large non-self-generation customers who were on time-of-use rates.

To impute, in each year, average and marginal electricity prices to each core business type, a ratio of the average (or marginall) gas price to the overall core market gas price for each business type was constructed and then multiplied by the overall average (or marginal) electricity price.

E. Building and Equipment Decay Rates:

Building decay rates are based on buildings' lifetimes, where the lifetime is defined as the length of time it takes for either a demolition or a major renovation in which major systems are replaced. For existing core buildings and facilities, an exponential rate of decay of 1% per year was assumed, consistent with an average remaining life for existing buildings of 100 years. (A building decay rate concept is not relevant to non-core large gas transport customers. In both the commercial and industrial non-core models the existing building decay rate was set equal to zero.)

All new construction decay rates were assumed to be zero over the forecast horizon. This assumption was required because the growth of new buildings and facilities was tied directly to the econometric models.

End-Use lifetimes were derived from a variety of sources.

Commercial:

Space heat: 25 years
Water heat: 15 years
AC/compressor: 20 years
All other commercial end-uses: 15 years

Industrial:

Fire-tube boiler: 25 years
Water-tube boiler: 25 years
Engine (motors): 25 years
All other industrial end-uses: 20 years

F. Equipment Saturations, Fuel Shares, and Efficiency Shares:

EUForecaster defines saturation as the percentage of customers in any segment that has a particular end use, independent of fuel shares. EUForecaster adjusted core commercial fuel shares according to a set of fuel-choice equations over the forecast horizon.

End-use saturations in the industrial model were initially set equal to 100%. Industrial end-use gas fuel shares were initially approximated. We then used an iterative procedure to further adjust industrial saturation and fuel shares such that the EUForecaster sales totals matched SoCalGas industrial sales figures, and our estimates of electric usage by SoCalGas customers. Finally, all commercial and industrial fuel shares were held constant over the forecast horizon.

Energy efficiency varied within the major gas end-uses/processes, including all boilers, space heat, and water heat. Four levels of efficiency were assigned to gas equipment: low, medium (standard) high, and premium for core commercial and three levels of efficiency were assigned to gas equipment: low, medium (standard), and high for core industrial market. California and federal standards have effectively eliminated the lowest efficiency alternatives for several gas end-uses from being purchased as new or replacement equipment. The lowest efficiency alternative for these end uses is, therefore, allowed to exist in the base year stock, but the customer must then purchase either medium (e.g., equipment that just meets Government standards), high or premium efficiency equipment as these units decay.

For existing equipment stock, the low efficiency share was set to 50%, whereas the medium efficiency share ranges from 40 to 45%, and the high efficiency share ranges from 5 to 10%.

EUForecaster's choice module prorates the low share to the medium, high and premium alternatives in proportion to their shares noted above. Therefore, replacement and new construction efficiency shares for medium range from 80% to 90%, and high ranges from 10% to 20%.

G. Energy Efficiency (EE) Forecast:

The end-use gas demand forecast developed with EUForecaster does not capture the effects of SoCalGas' EE/DSM programs. Energy savings goals from the CPUC's mandated energy efficiency/energy conservation programs for the core commercial and industrial were provided by SoCalGas' DSM department. These savings are subtracted from the forecast generated by the core commercial and industrial forecasts generated by EUForecaster.

Gas Air Conditioning and Gas Engines

A special tariff for gas air-conditioning rates went into effect at the end of 1993, while a special tariff for gas engine rates started in early 1995. The forecasts of core gas air conditioning and gas engine demand are based on the latest information provided by customers. Both segments are forecasted based on the expected number of customers in each market times their usage per customer.

AMI

Annual conservation benefits associated with AMI are estimated by SoCalGas to represent 1% of core gas throughput in the post-deployment period.

The Core Commercial and the Core Industrial loads were reduced by AMI's projected savings

CORE COMMERCIAL WORKPAPERS

Southern California Gas Company
Core Commercial Market
2017 Historical Base Year Data Inputs

Segment	2017 Therm Sales	2017 Meter Count	2017 Meter Count, Existing/Old customers	2017 Meter Count New	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity
Office	69,661,885	42,124	41,960	164	**1,652**	2,166	-0.135376
Restaurant	265,444,159	39,638	39,118	520	**6,698**	6,580	-0.091877
Retail	56,711,651	23,554	23,405	149	**2,403**	3,124	-0.265060
Laundry	61,959,561	4,020	4,010	10	**15,403**	19,549	-0.122795
Warehouse	14,331,013	7,308	7,278	30	**1,956**	3,029	-0.043035
School	34,431,893	6,727	6,718	9	**5,116**	6,541	-0.000001
College	25,727,915	2,815	2,802	13	**9,156**	5,652	-0.037179
Health	59,352,244	6,891	6,868	23	**8,586**	16,633	-0.096826
Lodging	61,148,660	4,815	4,791	24	**12,561**	40,381	-0.105697
Misc	82,312,303	34,266	33,975	291	**2,320**	12,002	-0.000001
Government	24648141	3711	3695	16	**6660**	2484	-0.095709
TCU	24126636	6160	6147	13	**3913**	5696	-0.129301
Construction	8848279	5693	5654	39	**1547**	2624	-0.161076
Agriculture	40337250	1398	1390	8	**28906**	19720	-0.315282

Southern California Gas Company
Core Commercial Market
Employment Forecast (in millions)

YEAR	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Government	TCU	Construction	Agriculture
2017	1.2003667	0.7795004	1.0114507	0.101989	0.4984833	0.6606726	0.220224	1.2220905	0.1405063	0.57445858	0.52582398	0.5836167	0.41963653	0.2395167
2018	1.2198685	0.7822994	1.0150362	0.103215	0.5052034	0.6615444	0.220515	1.2529891	0.1444381	0.58197851	0.52664558	0.5983493	0.43955261	0.2430876
2019	1.2801186	0.7840517	1.0173088	0.102183	0.5144852	0.6670805	0.22236	1.2767144	0.1457339	0.58270079	0.53106138	0.6050372	0.45869724	0.2459024
2020	1.3245748	0.7854922	1.0191751	0.101126	0.5200029	0.6733419	0.224447	1.2925231	0.1464313	0.58726743	0.53604918	0.6069905	0.48962717	0.2478962
2021	1.3451784	0.7821973	1.0148939	0.100324	0.5226228	0.6799729	0.226658	1.3074667	0.1468859	0.57889418	0.54132891	0.6084603	0.51619005	0.248788
2022	1.3716336	0.7742639	1.0045982	0.09966	0.5250847	0.6864689	0.228823	1.3229899	0.1472768	0.57562208	0.54649838	0.6064113	0.53368976	0.2493133
2023	1.3991727	0.7661713	0.9941011	0.099108	0.5278484	0.6930485	0.231016	1.3389466	0.1476561	0.57367277	0.55173711	0.6018821	0.54321331	0.2497526
2024	1.4241548	0.7582503	0.9838214	0.098455	0.5301717	0.699908	0.233303	1.3526287	0.1479467	0.57147813	0.5571986	0.5971645	0.54978663	0.2497441
2025	1.4423386	0.7508548	0.97423	0.097848	0.5315306	0.7068138	0.235605	1.3642075	0.1476503	0.56740921	0.56269604	0.5940576	0.55706796	0.2491945

Southern California Gas Company
Core Commercial Market
Saturations

zname	bname	nname	SAT	SOURCE
Commercial	Agriculture	Drying	1.0000	Assumed
Commercial	Agriculture	Engine	0.5000	Assumed
Commercial	Agriculture	Other	1.0000	DEFAULT
Commercial	Agriculture	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Agriculture	Water_Heat	0.6900	CI_1996_STUDY
Commercial	College	AC_Compressor	0.8850	CBECS
Commercial	College	Cook_top	0.1470	CBECS
Commercial	College	Fryer	0.1470	CBECS
Commercial	College	Griddle	0.1470	CBECS
Commercial	College	Other	1.0000	DEFAULT
Commercial	College	Other_Cooking	0.1470	CBECS
Commercial	College	Space_Heat	0.7630	SDGE_EUI_STUDY
Commercial	College	Water_Heat	0.9550	SDGE_EUI_STUDY
Commercial	Construction	Other	1.0000	DEFAULT
Commercial	Construction	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Construction	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Government	AC_Compressor	0.8880	CBECS
Commercial	Government	Cook_top	0.1960	CBECS
Commercial	Government	Fryer	0.1960	CBECS
Commercial	Government	Griddle	0.1960	CBECS
Commercial	Government	Other	1.0000	DEFAULT
Commercial	Government	Other_Cooking	0.1960	CBECS
Commercial	Government	Space_Heat	0.8720	SDGE_EUI_STUDY
Commercial	Government	Water_Heat	0.7000	CI_1996_STUDY
Commercial	Grocery	AC_Compressor	0.8560	CBECS
Commercial	Grocery	Cook_top	0.2450	CBECS
Commercial	Grocery	Fryer	0.2450	CBECS
Commercial	Grocery	Griddle	0.2450	CBECS
Commercial	Grocery	Other	1.0000	DEFAULT
Commercial	Grocery	Other_Cooking	0.2450	CBECS
Commercial	Grocery	Space_Heat	0.6470	SDGE_EUI_STUDY
Commercial	Grocery	Water_Heat	0.9300	CI_1996_STUDY
Commercial	Health	AC_Compressor	0.7920	CBECS
Commercial	Health	Cook_top	0.1020	CBECS
Commercial	Health	Drying	0.8200	CI_1996_STUDY
Commercial	Health	Fryer	0.1020	CBECS
Commercial	Health	Griddle	0.1020	CBECS
Commercial	Health	Other	1.0000	DEFAULT
Commercial	Health	Other_Cooking	0.1020	CBECS
Commercial	Health	Space_Heat	0.9360	SDGE_EUI_STUDY
Commercial	Health	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Laundry	Drying	1.0000	CI_1996_STUDY
Commercial	Laundry	Other	1.0000	CI_1996_STUDY
Commercial	Laundry	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Laundry	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Lodging	AC_Compressor	0.7950	CBECS

Southern California Gas Company
Core Commercial Market
Saturations

zname	bname	nname	SAT	SOURCE
Commercial	Lodging	Cook_top	0.0840	CBECS
Commercial	Lodging	Drying	0.8200	CI_1996_STUDY
Commercial	Lodging	Fryer	0.0840	CBECS
Commercial	Lodging	Griddle	0.0840	CBECS
Commercial	Lodging	Other	1.0000	CI_1996_STUDY
Commercial	Lodging	Other_Cooking	0.0840	CBECS
Commercial	Lodging	Space_Heat	0.8950	SDGE_EUI_STUDY
Commercial	Lodging	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Misc	AC_Compressor	0.7310	CBECS
Commercial	Misc	Cook_top	0.0210	CBECS
Commercial	Misc	Fryer	0.0210	CBECS
Commercial	Misc	Griddle	0.0210	CBECS
Commercial	Misc	Other	1.0000	CI_1996_STUDY
Commercial	Misc	Other_Cooking	0.0210	CBECS
Commercial	Misc	Space_Heat	0.6950	SDGE_EUI_STUDY
Commercial	Misc	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Office	AC_Compressor	0.9310	CBECS
Commercial	Office	Cooking	0.0820	CBECS
Commercial	Office	Other	1.0000	CI_1996_STUDY
Commercial	Office	Space_Heat	0.8720	SDGE_EUI_STUDY
Commercial	Office	Water_Heat	0.7000	CI_1996_STUDY
Commercial	Restaurant	AC_Compressor	0.8710	CBECS
Commercial	Restaurant	Cook_top	0.7500	SCG_COOKING_STUDY
Commercial	Restaurant	Fryer	0.7290	SCG_COOKING_STUDY
Commercial	Restaurant	Griddle	0.5740	SCG_COOKING_STUDY
Commercial	Restaurant	Other	1.0000	CI_1996_STUDY
Commercial	Restaurant	Other_Cooking	0.9000	CI_1996_STUDY
Commercial	Restaurant	Space_Heat	0.8180	SDGE_EUI_STUDY
Commercial	Restaurant	Water_Heat	0.9600	CI_1996_STUDY
Commercial	Retail	Cooking	0.2450	CBECS
Commercial	Retail	Other	1.0000	CI_1996_STUDY
Commercial	Retail	Space_Heat	0.7710	SDGE_EUI_STUDY
Commercial	Retail	Water_Heat	0.6200	CI_1996_STUDY
Commercial	School	AC_Compressor	0.8850	CBECS
Commercial	School	Cook_top	0.1470	CBECS
Commercial	School	Fryer	0.1470	CBECS
Commercial	School	Griddle	0.1470	CBECS
Commercial	School	Other	1.0000	CI_1996_STUDY
Commercial	School	Other_Cooking	0.1470	CBECS
Commercial	School	Space_Heat	0.9670	SDGE_EUI_STUDY
Commercial	School	Water_Heat	0.9000	CI_1996_STUDY
Commercial	TCU	Engine	0.5000	Assumed
Commercial	TCU	Other	1.0000	CI_1996_STUDY
Commercial	TCU	Space_Heat	0.7200	CI_1996_STUDY
Commercial	TCU	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Warehouse	Engine	0.2500	Assumed

Southern California Gas Company
Core Commercial Market
Saturations

zname	bname	nname	SAT	SOURCE
Commercial	Warehouse	Other	1.0000	DEFAULT
Commercial	Warehouse	Space_Heat	0.2310	SDGE_EUI_STUDY
Commercial	Warehouse	Water_Heat	0.8800	SDGE_EUI_STUDY

Southern California Gas Company
Core Commerical Market
F Share Values by End Use

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
OfficeSpace_Heat	SDGE_EUI_STUDY	0.7460000000000000	0.8720000000000000	0.8555045871559630
OfficeSpace_Heat	SDGE_EUI_STUDY	0.1260000000000000	0.8720000000000000	0.1444954128440370
OfficeWater_Heat	SDGE_EUI_STUDY	0.1620000000000000	0.9770000000000000	0.1658137154554760
OfficeWater_Heat	SDGE_EUI_STUDY	0.8150000000000000	0.9770000000000000	0.8341862845445240
OfficeCooking	SDGE_EUI_STUDY	0.0180000000000000	0.8700000000000000	0.0206896551724138
OfficeCooking	SDGE_EUI_STUDY	0.8520000000000000	0.8700000000000000	0.9793103448275860
OfficeAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
OfficeAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
OfficeOther	DEFAULT	0.1750000000000000	0.1750000000000000	1.0000000000000000
RestaurantSpace_Heat	SDGE_EUI_STUDY	0.4830000000000000	0.8180000000000000	0.5904645476772620
RestaurantSpace_Heat	SDGE_EUI_STUDY	0.3350000000000000	0.8180000000000000	0.4095354523227380
RestaurantWater_Heat	SDGE_EUI_STUDY	0.8840000000000000	0.9800000000000000	0.9020408163265310
RestaurantWater_Heat	SDGE_EUI_STUDY	0.0960000000000000	0.9800000000000000	0.0979591836734694
RestaurantCook_top	SCG_COOKING_STUDY	0.7330000000000000	0.7500000000000000	0.9773333333333330
RestaurantCook_top	SCG_COOKING_STUDY	0.0170000000000000	0.7500000000000000	0.0226666666666667
RestaurantFryer	SCG_COOKING_STUDY	0.6600000000000000	0.7290000000000000	0.9053497942386830
RestaurantFryer	SCG_COOKING_STUDY	0.0690000000000000	0.7290000000000000	0.0946502057613169
RestaurantGriddle	SCG_COOKING_STUDY	0.5570000000000000	0.5740000000000000	0.9703832752613240
RestaurantGriddle	SCG_COOKING_STUDY	0.0170000000000000	0.5740000000000000	0.0296167247386760
RestaurantOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
RestaurantOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
RestaurantAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
RestaurantAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
RestaurantOther	DEFAULT	0.0050000000000000	0.0050000000000000	1.0000000000000000
RetailSpace_Heat	SDGE_EUI_STUDY	0.3990000000000000	0.7710000000000000	0.5175097276264590
RetailSpace_Heat	SDGE_EUI_STUDY	0.3720000000000000	0.7710000000000000	0.4824902723735410
RetailWater_Heat	SDGE_EUI_STUDY	0.2800000000000000	0.9030000000000000	0.3100775193798450
RetailWater_Heat	SDGE_EUI_STUDY	0.6230000000000000	0.9030000000000000	0.6899224806201550
RetailCooking	SDGE_EUI_STUDY	0.0740000000000000	0.7900000000000000	0.0936708860759494
RetailCooking	SDGE_EUI_STUDY	0.7160000000000000	0.7900000000000000	0.9063291139240510
RetailOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
LaundrySpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
LaundrySpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
LaundryWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
LaundryWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
LaundryDrying	CI_1996_STUDY	0.6000000000000000	1.1000000000000000	0.6000000000000000
LaundryDrying	CI_1996_STUDY	0.4400000000000000	1.1000000000000000	0.4000000000000000
LaundryOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
WarehouseSpace_Heat	SDGE_EUI_STUDY	0.1010000000000000	0.2310000000000000	0.4372294372294370
WarehouseSpace_Heat	SDGE_EUI_STUDY	0.1300000000000000	0.2310000000000000	0.5627705627705630
WarehouseWater_Heat	SDGE_EUI_STUDY	0.0630000000000000	0.8800000000000000	0.0715909090909091
WarehouseWater_Heat	SDGE_EUI_STUDY	0.8170000000000000	0.8800000000000000	0.9284090909090910
WarehouseEngine	Assumed same as AC	0.0600000000000000	1.0000000000000000	0.0600000000000000
WarehouseEngine	Assumed same as AC	0.9400000000000000	1.0000000000000000	0.9400000000000000
WarehouseOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
SchoolSpace_Heat	SDGE_EUI_STUDY	0.7280000000000000	0.9670000000000000	0.7528438469493280
SchoolSpace_Heat	SDGE_EUI_STUDY	0.2390000000000000	0.9670000000000000	0.2471561530506720
SchoolWater_Heat	SDGE_EUI_STUDY	0.6970000000000000	0.9190000000000000	0.7584330794341680
SchoolWater_Heat	SDGE_EUI_STUDY	0.2220000000000000	0.9190000000000000	0.2415669205658320
SchoolCook_top	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolCook_top	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolFryer	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolFryer	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710

Southern California Gas Company
Core Commerical Market
F Share Values by End Use

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
SchoolGriddle	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolGriddle	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolOther_Cooking	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolOther_Cooking	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
SchoolAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
SchoolOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
CollegeSpace_Heat	SDGE_EUI_STUDY	0.2520000000000000	0.7630000000000000	0.3302752293577980
CollegeSpace_Heat	SDGE_EUI_STUDY	0.5110000000000000	0.7630000000000000	0.6697247706422020
CollegeWater_Heat	SDGE_EUI_STUDY	0.7800000000000000	0.9550000000000000	0.8167539267015710
CollegeWater_Heat	SDGE_EUI_STUDY	0.1750000000000000	0.9550000000000000	0.1832460732984290
CollegeCook_top	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeCook_top	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeFryer	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeFryer	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeGriddle	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeGriddle	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeOther_Cooking	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeOther_Cooking	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
CollegeAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
CollegeOther	DEFAULT	0.0930000000000000	0.0930000000000000	1.0000000000000000
HealthSpace_Heat	SDGE_EUI_STUDY	0.6180000000000000	0.9360000000000000	0.6602564102564100
HealthSpace_Heat	SDGE_EUI_STUDY	0.3180000000000000	0.9360000000000000	0.3397435897435900
HealthWater_Heat	SDGE_EUI_STUDY	0.7220000000000000	0.8760000000000000	0.8242009132420090
HealthWater_Heat	SDGE_EUI_STUDY	0.1540000000000000	0.8760000000000000	0.1757990867579910
HealthCook_top	SDGE_EUI_STUDY	0.0870000000000000	0.9170000000000000	0.0948745910577972
HealthCook_top	SDGE_EUI_STUDY	0.8300000000000000	0.9170000000000000	0.9051254089422030
HealthFryer	SDGE_EUI_STUDY	0.0870000000000000	0.9170000000000000	0.0948745910577972
HealthFryer	SDGE_EUI_STUDY	0.8300000000000000	0.9170000000000000	0.9051254089422030
HealthGriddle	SDGE_EUI_STUDY	0.0870000000000000	0.9170000000000000	0.0948745910577972
HealthGriddle	SDGE_EUI_STUDY	0.8300000000000000	0.9170000000000000	0.9051254089422030
HealthOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
HealthOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
HealthDrying	CI_1996_STUDY	0.6600000000000000	1.1000000000000000	0.6000000000000000
HealthDrying	CI_1996_STUDY	0.4400000000000000	1.1000000000000000	0.4000000000000000
HealthAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
HealthAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
HealthOther	DEFAULT	0.2110000000000000	0.2110000000000000	1.0000000000000000
LodgingSpace_Heat	SDGE_EUI_STUDY	0.2430000000000000	0.8950000000000000	0.2715083798882680
LodgingSpace_Heat	SDGE_EUI_STUDY	0.6520000000000000	0.8950000000000000	0.7284916201117320
LodgingWater_Heat	SDGE_EUI_STUDY	0.9410000000000000	0.9510000000000000	0.9894847528916930
LodgingWater_Heat	SDGE_EUI_STUDY	0.0100000000000000	0.9510000000000000	0.0105152471083070
LodgingCook_top	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingCook_top	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingFryer	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingFryer	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingGriddle	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingGriddle	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingOther_Cooking	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingOther_Cooking	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingDrying	CI_1996_STUDY	0.6600000000000000	1.1000000000000000	0.6000000000000000
LodgingDrying	CI_1996_STUDY	0.4400000000000000	1.1000000000000000	0.4000000000000000

Southern California Gas Company
Core Commerical Market
F Share Values by End Use

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
LodgingAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
LodgingAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
LodgingOther	DEFAULT	0.4330000000000000	0.4330000000000000	1.0000000000000000
MiscSpace_Heat	SDGE_EUI_STUDY	0.3820000000000000	0.6950000000000000	0.5496402877697840
MiscSpace_Heat	SDGE_EUI_STUDY	0.3130000000000000	0.6950000000000000	0.4503597122302160
MiscWater_Heat	SDGE_EUI_STUDY	0.5040000000000000	0.9050000000000000	0.5569060773480660
MiscWater_Heat	SDGE_EUI_STUDY	0.4010000000000000	0.9050000000000000	0.4430939226519340
MiscCook_top	SCG_COOKING_STUDY	0.7330000000000000	0.7500000000000000	0.9773333333333330
MiscCook_top	SCG_COOKING_STUDY	0.0170000000000000	0.7500000000000000	0.0226666666666667
MiscFryer	SCG_COOKING_STUDY	0.6600000000000000	0.7290000000000000	0.9053497942386830
MiscFryer	SCG_COOKING_STUDY	0.0690000000000000	0.7290000000000000	0.0946502057613169
MiscGriddle	SCG_COOKING_STUDY	0.5570000000000000	0.5740000000000000	0.9703832752613240
MiscGriddle	SCG_COOKING_STUDY	0.0170000000000000	0.5740000000000000	0.0296167247386760
MiscOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
MiscOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
MiscAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
MiscAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
MiscOther	DEFAULT	0.0600000000000000	0.0600000000000000	1.0000000000000000
GovernmentSpace_Heat	SDGE_EUI_STUDY	0.7460000000000000	0.8720000000000000	0.8555045871559630
GovernmentSpace_Heat	SDGE_EUI_STUDY	0.1260000000000000	0.8720000000000000	0.1444954128440370
GovernmentWater_Heat	SDGE_EUI_STUDY	0.1620000000000000	0.9770000000000000	0.1658137154554760
GovernmentWater_Heat	SDGE_EUI_STUDY	0.8150000000000000	0.9770000000000000	0.8341862845445240
GovernmentCook_top	SCG_COOKING_STUDY	0.7330000000000000	0.7500000000000000	0.9773333333333330
GovernmentCook_top	SCG_COOKING_STUDY	0.0170000000000000	0.7500000000000000	0.0226666666666667
GovernmentFryer	SCG_COOKING_STUDY	0.6600000000000000	0.7290000000000000	0.9053497942386830
GovernmentFryer	SCG_COOKING_STUDY	0.0690000000000000	0.7290000000000000	0.0946502057613169
GovernmentGriddle	SCG_COOKING_STUDY	0.5570000000000000	0.5740000000000000	0.9703832752613240
GovernmentGriddle	SCG_COOKING_STUDY	0.0170000000000000	0.5740000000000000	0.0296167247386760
GovernmentOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
GovernmentOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
GovernmentAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
GovernmentAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
GovernmentOther	DEFAULT	0.1750000000000000	0.1750000000000000	1.0000000000000000
TCUSpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
TCUSpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
TCUWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
TCUWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
TCUEngine	Assumed same as AC	0.0600000000000000	1.0000000000000000	0.0600000000000000
TCUEngine	Assumed same as AC	0.9400000000000000	1.0000000000000000	0.9400000000000000
TCUOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
ConstructionSpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
ConstructionSpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
ConstructionWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
ConstructionWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
ConstructionOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
AgricultureSpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
AgricultureSpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
AgricultureWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
AgricultureWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
AgricultureDrying	NEED DATA	1.0000000000000000	1.0000000000000000	1.0000000000000000
AgricultureDrying	NEED DATA	0.0000000000000000	1.0000000000000000	0.0000000000000000
AgricultureEngine	Assumed same as AC	0.0600000000000000	1.0000000000000000	0.0600000000000000
AgricultureEngine	Assumed same as AC	0.9400000000000000	1.0000000000000000	0.9400000000000000

Southern California Gas Company
Core Commerical Market
F Share Values by End Use

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
AgricultureOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
GrocerySpace_Heat	SDGE_EUI_STUDY	0.4830000000000000	0.6470000000000000	0.7465224111282840
GrocerySpace_Heat	SDGE_EUI_STUDY	0.1640000000000000	0.6470000000000000	0.2534775888717160
GroceryWater_Heat	SDGE_EUI_STUDY	0.6950000000000000	0.9810000000000000	0.7084607543323140
GroceryWater_Heat	SDGE_EUI_STUDY	0.2860000000000000	0.9810000000000000	0.2915392456676860
GroceryCook_top	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryCook_top	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryFryer	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryFryer	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryGriddle	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryGriddle	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryOther_Cooking	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryOther_Cooking	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
GroceryAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
GroceryOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000

Southern California Gas Company
Core Commercial Market
EUI Data

bname	nname	fname	_NAME_	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Agriculture	Drying	Electric	B0	0.3120000	0.2808000	N/A	N/A
Agriculture	Drying	Natural_Gas	B0	0.2013300	0.1811970	N/A	N/A
Agriculture	Engine	Electric	B0	1.3416000	1.2074400	N/A	N/A
Agriculture	Engine	Natural_Gas	B0	0.8657190	0.7791471	N/A	N/A
Agriculture	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Agriculture	Space_Heat	Electric	B0	0.6010000	0.5409000	N/A	N/A
Agriculture	Space_Heat	Natural_Gas	B0	0.1468600	0.1321740	0.1202783	0.1083827
Agriculture	Water_Heat	Electric	B0	0.3120000	0.2808000	0.2732184	0.2656368
Agriculture	Water_Heat	Natural_Gas	B0	0.2013300	0.1811970	0.1585474	0.1358978
College	AC_Compressor	Electric	B0	3.4630000	3.1167000	N/A	N/A
College	AC_Compressor	Natural_Gas	B0	0.1181922	0.1063730	N/A	N/A
College	Cook_top	Electric	B0	0.7620000	0.6858000	N/A	N/A
College	Cook_top	Natural_Gas	B0	0.0486000	0.0437400	N/A	N/A
College	Fryer	Electric	B0	0.7620000	0.6858000	N/A	N/A
College	Fryer	Natural_Gas	B0	0.0485700	0.0437130	N/A	N/A
College	Griddle	Electric	B0	0.7620000	0.6858000	N/A	N/A
College	Griddle	Natural_Gas	B0	0.0485700	0.0437130	N/A	N/A
College	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
College	Other_Cooking	Electric	B0	0.7620000	0.6858000	N/A	N/A
College	Other_Cooking	Natural_Gas	B0	0.0486000	0.0437400	N/A	N/A
College	Space_Heat	Electric	B0	0.1990000	0.1791000	N/A	N/A
College	Space_Heat	Natural_Gas	B0	0.2664300	0.2397870	0.2182062	0.1966253
College	Water_Heat	Electric	B0	0.6400000	0.5760000	0.5604480	0.5448960
College	Water_Heat	Natural_Gas	B0	0.2871500	0.2584350	0.2261306	0.1938263
Construction	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Construction	Space_Heat	Electric	B0	0.6010000	0.5409000	N/A	N/A
Construction	Space_Heat	Natural_Gas	B0	0.1468600	0.1321740	0.1202783	0.1083827
Construction	Water_Heat	Electric	B0	0.3120000	0.2808000	0.2732184	0.2656368
Construction	Water_Heat	Natural_Gas	B0	0.2013300	0.1811970	0.1585474	0.1358978
Government	AC_Compressor	Electric	B0	3.0560000	2.7504000	N/A	N/A
Government	AC_Compressor	Natural_Gas	B0	0.1043013	0.0938712	N/A	N/A
Government	Cook_top	Electric	B0	0.4510000	0.4059000	N/A	N/A
Government	Cook_top	Natural_Gas	B0	0.0346000	0.0311400	N/A	N/A
Government	Fryer	Electric	B0	0.4510000	0.4059000	N/A	N/A
Government	Fryer	Natural_Gas	B0	0.0345900	0.0311310	N/A	N/A
Government	Griddle	Electric	B0	0.4510000	0.4059000	N/A	N/A
Government	Griddle	Natural_Gas	B0	0.0345900	0.0311310	N/A	N/A
Government	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Government	Other_Cooking	Electric	B0	0.4510000	0.4059000	N/A	N/A
Government	Other_Cooking	Natural_Gas	B0	0.0346000	0.0311400	N/A	N/A
Government	Space_Heat	Electric	B0	0.8450000	N/A	N/A	N/A
Government	Space_Heat	Natural_Gas	B0	0.3046400	0.2741760	0.2495002	0.2248243
Government	Water_Heat	Electric	B0	0.1790000	0.1611000	0.1567503	0.1524006
Government	Water_Heat	Natural_Gas	B0	0.0473900	0.0426510	0.0373196	0.0319883
Grocery	AC_Compressor	Electric	B0	5.5860000	5.0274000	N/A	N/A
Grocery	AC_Compressor	Natural_Gas	B0	0.1906502	0.1715852	N/A	N/A
Grocery	Cook_top	Electric	B0	5.2450000	4.7205000	N/A	N/A
Grocery	Cook_top	Natural_Gas	B0	0.0418300	0.0376470	N/A	N/A
Grocery	Fryer	Electric	B0	5.2450000	4.7205000	N/A	N/A
Grocery	Fryer	Natural_Gas	B0	0.4183200	0.3764880	N/A	N/A
Grocery	Griddle	Electric	B0	5.2450000	4.7205000	N/A	N/A
Grocery	Griddle	Natural_Gas	B0	0.4183200	0.3764880	N/A	N/A
Grocery	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Grocery	Other_Cooking	Electric	B0	5.2450000	4.7205000	N/A	N/A
Grocery	Other_Cooking	Natural_Gas	B0	0.0418300	0.0376470	N/A	N/A
Grocery	Space_Heat	Electric	B0	0.7350000	N/A	N/A	N/A
Grocery	Space_Heat	Natural_Gas	B0	0.0976200	0.0878580	0.0799508	0.0720436
Grocery	Water_Heat	Electric	B0	1.7630000	1.5867000	1.5438591	1.5010182

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bname	nname	fname	_NAME_	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Grocery	Water_Heat	Natural_Gas	B0	0.3182700	0.2864430	0.2506376	0.2148323
Health	AC_Compressor	Electric	B0	3.3360000	3.0024000	N/A	N/A
Health	AC_Compressor	Natural_Gas	B0	0.1138577	0.1024719	N/A	N/A
Health	Cook_top	Electric	B0	1.1540000	1.0386000	N/A	N/A
Health	Cook_top	Natural_Gas	B0	0.2635800	0.2372220	N/A	N/A
Health	Drying	Electric	B0	0.7619500	0.6857550	N/A	N/A
Health	Drying	Natural_Gas	B0	0.1459815	0.1313834	N/A	N/A
Health	Fryer	Electric	B0	1.1540000	1.0386000	N/A	N/A
Health	Fryer	Natural_Gas	B0	0.2635800	0.2372220	N/A	N/A
Health	Griddle	Electric	B0	1.1540000	1.0386000	N/A	N/A
Health	Griddle	Natural_Gas	B0	0.2635800	0.2372220	N/A	N/A
Health	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Health	Other_Cooking	Electric	B0	1.1540000	1.0386000	N/A	N/A
Health	Other_Cooking	Natural_Gas	B0	0.0263600	0.0237240	N/A	N/A
Health	Space_Heat	Electric	B0	0.4050000	0.3645000	N/A	N/A
Health	Space_Heat	Natural_Gas	B0	0.0689400	0.0620460	0.0564619	0.0508777
Health	Water_Heat	Electric	B0	2.1770000	1.9593000	1.9063989	1.8534978
Health	Water_Heat	Natural_Gas	B0	0.4170900	0.3753810	0.3284584	0.2815358
Laundry	Drying	Electric	B0	85.5136937	76.9623243	N/A	N/A
Laundry	Drying	Natural_Gas	B0	14.9366516	13.4429864	N/A	N/A
Laundry	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Laundry	Space_Heat	Electric	B0	0.6010000	0.5409000	N/A	N/A
Laundry	Space_Heat	Natural_Gas	B0	0.1468600	0.1321740	0.1202783	0.1083827
Laundry	Water_Heat	Electric	B0	15.8040000	14.2236000	13.8395628	13.4555256
Laundry	Water_Heat	Natural_Gas	B0	2.7604800	2.4844320	2.1738780	1.8633240
Lodging	AC_Compressor	Electric	B0	1.6700000	1.5030000	N/A	N/A
Lodging	AC_Compressor	Natural_Gas	B0	0.0569971	0.0512974	N/A	N/A
Lodging	Cook_top	Electric	B0	39.3000000	35.3700000	N/A	N/A
Lodging	Cook_top	Natural_Gas	B0	0.3210000	0.2889000	N/A	N/A
Lodging	Drying	Electric	B0	0.9877500	0.8889750	N/A	N/A
Lodging	Drying	Natural_Gas	B0	0.1725300	0.1552770	N/A	N/A
Lodging	Fryer	Electric	B0	5.2450000	4.7205000	N/A	N/A
Lodging	Fryer	Natural_Gas	B0	0.4183200	0.3764880	N/A	N/A
Lodging	Griddle	Electric	B0	5.2450000	4.7205000	N/A	N/A
Lodging	Griddle	Natural_Gas	B0	0.4183200	0.3764880	N/A	N/A
Lodging	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Lodging	Other_Cooking	Electric	B0	5.2450000	4.7205000	N/A	N/A
Lodging	Other_Cooking	Natural_Gas	B0	0.0410000	0.0369000	N/A	N/A
Lodging	Space_Heat	Electric	B0	0.5490000	0.4941000	N/A	N/A
Lodging	Space_Heat	Natural_Gas	B0	0.3869800	0.3482820	0.3169366	0.2855912
Lodging	Water_Heat	Electric	B0	3.9510000	3.5559000	3.4598907	3.3638814
Lodging	Water_Heat	Natural_Gas	B0	0.6901200	0.6211080	0.5434695	0.4658310
Misc	AC_Compressor	Electric	B0	3.8720000	3.4848000	N/A	N/A
Misc	AC_Compressor	Natural_Gas	B0	0.1321514	0.1189362	N/A	N/A
Misc	Cook_top	Electric	B0	0.5390000	0.4851000	N/A	N/A
Misc	Cook_top	Natural_Gas	B0	0.0430000	0.0387000	N/A	N/A
Misc	Fryer	Electric	B0	0.5390000	0.4851000	N/A	N/A
Misc	Fryer	Natural_Gas	B0	0.0430200	0.0387180	N/A	N/A
Misc	Griddle	Electric	B0	0.5390000	0.4851000	N/A	N/A
Misc	Griddle	Natural_Gas	B0	0.0430200	0.0387180	N/A	N/A
Misc	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Misc	Other_Cooking	Electric	B0	0.5390000	0.4851000	N/A	N/A
Misc	Other_Cooking	Natural_Gas	B0	0.0430000	0.0387000	N/A	N/A
Misc	Space_Heat	Electric	B0	0.6010000	0.5409000	N/A	N/A
Misc	Space_Heat	Natural_Gas	B0	0.1468600	0.1321740	0.1202783	0.1083827
Misc	Water_Heat	Electric	B0	0.3120000	0.2808000	0.2732184	0.2656368
Misc	Water_Heat	Natural_Gas	B0	0.2013300	0.1811970	0.1585474	0.1358978
Office	AC_Compressor	Electric	B0	3.0560000	2.7504000	N/A	N/A

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bname	nname	fname	_NAME_	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Office	AC_Compressor	Natural_Gas	B0	0.1043013	0.0938712	N/A	N/A
Office	Cooking	Electric	B0	0.4510000	0.4059000	N/A	N/A
Office	Cooking	Natural_Gas	B0	0.0345900	0.0311310	N/A	N/A
Office	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Office	Space_Heat	Electric	B0	0.8450000	0.7605000	N/A	N/A
Office	Space_Heat	Natural_Gas	B0	0.3046400	0.2741760	0.2495002	0.2248243
Office	Water_Heat	Electric	B0	0.1790000	0.1611000	0.1567503	0.1524006
Office	Water_Heat	Natural_Gas	B0	0.0473900	0.0426510	0.0373196	0.0319883
Restaurant	AC_Compressor	Electric	B0	5.9430000	5.3487000	N/A	N/A
Restaurant	AC_Compressor	Natural_Gas	B0	0.2028346	0.1825511	N/A	N/A
Restaurant	Cook_top	Electric	B0	1.5190269	1.3671242	N/A	N/A
Restaurant	Cook_top	Natural_Gas	B0	1.1985040	1.0786536	N/A	N/A
Restaurant	Fryer	Electric	B0	6.1654621	5.5489159	N/A	N/A
Restaurant	Fryer	Natural_Gas	B0	1.0791441	0.9712297	N/A	N/A
Restaurant	Griddle	Electric	B0	1.5190269	1.3671242	N/A	N/A
Restaurant	Griddle	Natural_Gas	B0	0.9107322	0.8196590	N/A	N/A
Restaurant	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Restaurant	Other_Cooking	Electric	B0	27.3424841	24.6082357	N/A	N/A
Restaurant	Other_Cooking	Natural_Gas	B0	0.9712297	0.8741067	N/A	N/A
Restaurant	Space_Heat	Electric	B0	0.3430000	0.3087000	N/A	N/A
Restaurant	Space_Heat	Natural_Gas	B0	0.1176700	0.1059030	0.0963717	0.0868405
Restaurant	Water_Heat	Electric	B0	4.2600000	3.8340000	3.7304820	3.6269640
Restaurant	Water_Heat	Natural_Gas	B0	0.8665900	0.7799310	0.6824396	0.5849483
Retail	Cooking	Electric	B0	0.6930000	0.6237000	N/A	N/A
Retail	Cooking	Natural_Gas	B0	0.3078600	0.2770740	N/A	N/A
Retail	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Retail	Space_Heat	Electric	B0	1.3560000	1.2204000	N/A	N/A
Retail	Space_Heat	Natural_Gas	B0	0.2455200	0.2209680	0.2010809	0.1811938
Retail	Water_Heat	Electric	B0	0.5280000	0.4752000	0.4623696	0.4495392
Retail	Water_Heat	Natural_Gas	B0	0.1092600	0.0983340	0.0860423	0.0737505
School	AC_Compressor	Electric	B0	1.9130000	1.7217000	N/A	N/A
School	AC_Compressor	Natural_Gas	B0	0.0652907	0.0587616	N/A	N/A
School	Cook_top	Electric	B0	0.5020000	0.4518000	N/A	N/A
School	Cook_top	Natural_Gas	B0	0.0460000	0.0414000	N/A	N/A
School	Fryer	Electric	B0	0.5020000	0.4518000	N/A	N/A
School	Fryer	Natural_Gas	B0	0.0461000	0.0414900	N/A	N/A
School	Griddle	Electric	B0	0.5020000	0.4518000	N/A	N/A
School	Griddle	Natural_Gas	B0	0.0461000	0.0414900	N/A	N/A
School	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
School	Other_Cooking	Electric	B0	0.5020000	0.4518000	N/A	N/A
School	Other_Cooking	Natural_Gas	B0	0.0460000	0.0414000	N/A	N/A
School	Space_Heat	Electric	B0	0.4840000	0.4356000	N/A	N/A
School	Space_Heat	Natural_Gas	B0	0.0923800	0.0831420	0.0756592	0.0681764
School	Water_Heat	Electric	B0	0.6880000	0.6192000	0.6024816	0.5857632
School	Water_Heat	Natural_Gas	B0	0.1232800	0.1109520	0.0970830	0.0832140
TCU	Engine	Electric	B0	3.7825983	3.4043385	N/A	N/A
TCU	Engine	Natural_Gas	B0	2.4408670	2.1967803	N/A	N/A
TCU	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
TCU	Space_Heat	Electric	B0	0.6010000	0.5409000	N/A	N/A
TCU	Space_Heat	Natural_Gas	B0	0.1468600	0.1321740	0.1202783	0.1083827
TCU	Water_Heat	Electric	B0	0.3120000	0.2808000	0.2732184	0.2656368
TCU	Water_Heat	Natural_Gas	B0	0.2013300	0.1811970	0.1585474	0.1358978
Warehouse	Engine	Electric	B0	33.4700769	30.1230692	N/A	N/A
Warehouse	Engine	Natural_Gas	B0	8.8838738	7.9954865	N/A	N/A
Warehouse	Other	Natural_Gas	B0	0.00	N/A	N/A	N/A
Warehouse	Space_Heat	Electric	B0	2.3400000	2.1060000	N/A	N/A
Warehouse	Space_Heat	Natural_Gas	B0	0.6211000	0.5589900	0.5086809	0.4583718
Warehouse	Water_Heat	Electric	B0	0.1300000	0.1170000	0.1138410	0.1106820

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bname	nname	fname	_NAME_	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Warehouse	Water_Heat	Natural_Gas	B0	0.2048000	0.1843200	0.1612800	0.1382400

Southern California Gas Company
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E Shares by Business Type , End Use and Fuel Name

bname	nname	fname	_NAME_	SAT_LOOKUP	Stock_Qtec	Standard_Qtec	High_Qtec	Premium_Qtec
Agriculture	Drying	Electric	EASHARE	AgricultureDryingElectric	0.65	0.35	N/A	N/A
Agriculture	Drying	Natural_Gas	EASHARE	AgricultureDryingNatural_Gas	0.65	0.35	N/A	N/A
Agriculture	Engine	Electric	EASHARE	AgricultureEngineElectric	0.65	0.35	N/A	N/A
Agriculture	Engine	Natural_Gas	EASHARE	AgricultureEngineNatural_Gas	0.65	0.35	N/A	N/A
Agriculture	Other	Natural_Gas	EASHARE	AgricultureOtherNatural_Gas	1	N/A	N/A	N/A
Agriculture	Space_Heat	Electric	EASHARE	AgricultureSpace_HeatElectric	1	999	999	999
Agriculture	Space_Heat	Natural_Gas	EASHARE	AgricultureSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Agriculture	Water_Heat	Electric	EASHARE	AgricultureWater_HeatElectric	0.4	0.5	0.08	0.02
Agriculture	Water_Heat	Natural_Gas	EASHARE	AgricultureWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
College	AC_Compressor	Electric	EASHARE	CollegeAC_CompressorElectric	0.65	0.35	N/A	N/A
College	AC_Compressor	Natural_Gas	EASHARE	CollegeAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
College	Cook_top	Electric	EASHARE	CollegeCook_topElectric	0.65	0.35	N/A	N/A
College	Cook_top	Natural_Gas	EASHARE	CollegeCook_topNatural_Gas	0.65	0.35	N/A	N/A
College	Fryer	Electric	EASHARE	CollegeFryerElectric	0.65	0.35	N/A	N/A
College	Fryer	Natural_Gas	EASHARE	CollegeFryerNatural_Gas	0.65	0.35	N/A	N/A
College	Griddle	Electric	EASHARE	CollegeGriddleElectric	0.65	0.35	N/A	N/A
College	Griddle	Natural_Gas	EASHARE	CollegeGriddleNatural_Gas	0.65	0.35	N/A	N/A
College	Other	Natural_Gas	EASHARE	CollegeOtherNatural_Gas	1	N/A	N/A	N/A
College	Other_Cooking	Electric	EASHARE	CollegeOther_CookingElectric	0.65	0.35	N/A	N/A
College	Other_Cooking	Natural_Gas	EASHARE	CollegeOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
College	Space_Heat	Electric	EASHARE	CollegeSpace_HeatElectric	1	999	999	999
College	Space_Heat	Natural_Gas	EASHARE	CollegeSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
College	Water_Heat	Electric	EASHARE	CollegeWater_HeatElectric	0.4	0.5	0.08	0.02
College	Water_Heat	Natural_Gas	EASHARE	CollegeWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Construction	Other	Natural_Gas	EASHARE	ConstructionOtherNatural_Gas	1	N/A	N/A	N/A
Construction	Space_Heat	Electric	EASHARE	ConstructionSpace_HeatElectric	1	999	999	999
Construction	Space_Heat	Natural_Gas	EASHARE	ConstructionSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Construction	Water_Heat	Electric	EASHARE	ConstructionWater_HeatElectric	0.4	0.5	0.08	0.02
Construction	Water_Heat	Natural_Gas	EASHARE	ConstructionWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Government	AC_Compressor	Electric	EASHARE	GovernmentAC_CompressorElectric	0.65	0.35	N/A	N/A
Government	AC_Compressor	Natural_Gas	EASHARE	GovernmentAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Government	Cook_top	Electric	EASHARE	GovernmentCook_topElectric	0.65	0.35	N/A	N/A
Government	Cook_top	Natural_Gas	EASHARE	GovernmentCook_topNatural_Gas	0.65	0.35	N/A	N/A
Government	Fryer	Electric	EASHARE	GovernmentFryerElectric	0.65	0.35	N/A	N/A
Government	Fryer	Natural_Gas	EASHARE	GovernmentFryerNatural_Gas	0.65	0.35	N/A	N/A
Government	Griddle	Electric	EASHARE	GovernmentGriddleElectric	0.65	0.35	N/A	N/A
Government	Griddle	Natural_Gas	EASHARE	GovernmentGriddleNatural_Gas	0.65	0.35	N/A	N/A
Government	Other	Natural_Gas	EASHARE	GovernmentOtherNatural_Gas	1	N/A	N/A	N/A
Government	Other_Cooking	Electric	EASHARE	GovernmentOther_CookingElectric	0.65	0.35	N/A	N/A
Government	Other_Cooking	Natural_Gas	EASHARE	GovernmentOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Government	Space_Heat	Electric	EASHARE	GovernmentSpace_HeatElectric	1	999	999	999
Government	Space_Heat	Natural_Gas	EASHARE	GovernmentSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Government	Water_Heat	Electric	EASHARE	GovernmentWater_HeatElectric	0.4	0.5	0.08	0.02
Government	Water_Heat	Natural_Gas	EASHARE	GovernmentWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Grocery	AC_Compressor	Electric	EASHARE	GroceryAC_CompressorElectric	0.65	0.35	N/A	N/A
Grocery	AC_Compressor	Natural_Gas	EASHARE	GroceryAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Cook_top	Electric	EASHARE	GroceryCook_topElectric	0.65	0.35	N/A	N/A
Grocery	Cook_top	Natural_Gas	EASHARE	GroceryCook_topNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Fryer	Electric	EASHARE	GroceryFryerElectric	0.65	0.35	N/A	N/A
Grocery	Fryer	Natural_Gas	EASHARE	GroceryFryerNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Griddle	Electric	EASHARE	GroceryGriddleElectric	0.65	0.35	N/A	N/A
Grocery	Griddle	Natural_Gas	EASHARE	GroceryGriddleNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Other	Natural_Gas	EASHARE	GroceryOtherNatural_Gas	1	N/A	N/A	N/A
Grocery	Other_Cooking	Electric	EASHARE	GroceryOther_CookingElectric	0.65	0.35	N/A	N/A
Grocery	Other_Cooking	Natural_Gas	EASHARE	GroceryOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Space_Heat	Electric	EASHARE	GrocerySpace_HeatElectric	1	999	999	999
Grocery	Space_Heat	Natural_Gas	EASHARE	GrocerySpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Grocery	Water_Heat	Electric	EASHARE	GroceryWater_HeatElectric	0.4	0.5	0.08	0.02
Grocery	Water_Heat	Natural_Gas	EASHARE	GroceryWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Health	AC_Compressor	Electric	EASHARE	HealthAC_CompressorElectric	0.65	0.35	N/A	N/A
Health	AC_Compressor	Natural_Gas	EASHARE	HealthAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Health	Cook_top	Electric	EASHARE	HealthCook_topElectric	0.65	0.35	N/A	N/A
Health	Cook_top	Natural_Gas	EASHARE	HealthCook_topNatural_Gas	0.65	0.35	N/A	N/A
Health	Drying	Electric	EASHARE	HealthDryingElectric	0.65	0.35	N/A	N/A
Health	Drying	Natural_Gas	EASHARE	HealthDryingNatural_Gas	0.65	0.35	N/A	N/A
Health	Fryer	Electric	EASHARE	HealthFryerElectric	0.65	0.35	N/A	N/A
Health	Fryer	Natural_Gas	EASHARE	HealthFryerNatural_Gas	0.65	0.35	N/A	N/A
Health	Griddle	Electric	EASHARE	HealthGriddleElectric	0.65	0.35	N/A	N/A
Health	Griddle	Natural_Gas	EASHARE	HealthGriddleNatural_Gas	0.65	0.35	N/A	N/A
Health	Other	Natural_Gas	EASHARE	HealthOtherNatural_Gas	1	N/A	N/A	N/A
Health	Other_Cooking	Electric	EASHARE	HealthOther_CookingElectric	0.65	0.35	N/A	N/A
Health	Other_Cooking	Natural_Gas	EASHARE	HealthOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Health	Space_Heat	Electric	EASHARE	HealthSpace_HeatElectric	1	999	999	999
Health	Space_Heat	Natural_Gas	EASHARE	HealthSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Health	Water_Heat	Electric	EASHARE	HealthWater_HeatElectric	0.4	0.5	0.08	0.02
Health	Water_Heat	Natural_Gas	EASHARE	HealthWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Laundry	Drying	Electric	EASHARE	LaundryDryingElectric	0.65	0.35	N/A	N/A

Southern California Gas Company
Core Commercial Market
E Shares by Business Type , End Use and Fuel Name

bname	nname	fname	_NAME_	SAT_LOOKUP	Stock_Qtec	Standard_Qtec	High_Qtec	Premium_Qtec
Laundry	Drying	Natural_Gas	EASHARE	LaundryDryingNatural_Gas	0.65	0.35	N/A	N/A
Laundry	Other	Natural_Gas	EASHARE	LaundryOtherNatural_Gas	1	N/A	N/A	N/A
Laundry	Space_Heat	Electric	EASHARE	LaundrySpace_HeatElectric	1	999	999	999
Laundry	Space_Heat	Natural_Gas	EASHARE	LaundrySpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Laundry	Water_Heat	Electric	EASHARE	LaundryWater_HeatElectric	0.4	0.5	0.08	0.02
Laundry	Water_Heat	Natural_Gas	EASHARE	LaundryWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Lodging	AC_Compressor	Electric	EASHARE	LodgingAC_CompressorElectric	0.65	0.35	N/A	N/A
Lodging	AC_Compressor	Natural_Gas	EASHARE	LodgingAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Cook_top	Electric	EASHARE	LodgingCook_topElectric	0.65	0.35	N/A	N/A
Lodging	Cook_top	Natural_Gas	EASHARE	LodgingCook_topNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Drying	Electric	EASHARE	LodgingDryingElectric	0.65	0.35	N/A	N/A
Lodging	Drying	Natural_Gas	EASHARE	LodgingDryingNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Fryer	Electric	EASHARE	LodgingFryerElectric	0.65	0.35	N/A	N/A
Lodging	Fryer	Natural_Gas	EASHARE	LodgingFryerNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Griddle	Electric	EASHARE	LodgingGriddleElectric	0.65	0.35	N/A	N/A
Lodging	Griddle	Natural_Gas	EASHARE	LodgingGriddleNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Other	Natural_Gas	EASHARE	LodgingOtherNatural_Gas	1	N/A	N/A	N/A
Lodging	Other_Cooking	Electric	EASHARE	LodgingOther_CookingElectric	0.65	0.35	N/A	N/A
Lodging	Other_Cooking	Natural_Gas	EASHARE	LodgingOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Space_Heat	Electric	EASHARE	LodgingSpace_HeatElectric	1	999	999	999
Lodging	Space_Heat	Natural_Gas	EASHARE	LodgingSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Lodging	Water_Heat	Electric	EASHARE	LodgingWater_HeatElectric	0.4	0.5	0.08	0.02
Lodging	Water_Heat	Natural_Gas	EASHARE	LodgingWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Misc	AC_Compressor	Electric	EASHARE	MiscAC_CompressorElectric	0.65	0.35	N/A	N/A
Misc	AC_Compressor	Natural_Gas	EASHARE	MiscAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Misc	Cook_top	Electric	EASHARE	MiscCook_topElectric	0.65	0.35	N/A	N/A
Misc	Cook_top	Natural_Gas	EASHARE	MiscCook_topNatural_Gas	0.65	0.35	N/A	N/A
Misc	Fryer	Electric	EASHARE	MiscFryerElectric	0.65	0.35	N/A	N/A
Misc	Fryer	Natural_Gas	EASHARE	MiscFryerNatural_Gas	0.65	0.35	N/A	N/A
Misc	Griddle	Electric	EASHARE	MiscGriddleElectric	0.65	0.35	N/A	N/A
Misc	Griddle	Natural_Gas	EASHARE	MiscGriddleNatural_Gas	0.65	0.35	N/A	N/A
Misc	Other	Natural_Gas	EASHARE	MiscOtherNatural_Gas	1	N/A	N/A	N/A
Misc	Other_Cooking	Electric	EASHARE	MiscOther_CookingElectric	0.65	0.35	N/A	N/A
Misc	Other_Cooking	Natural_Gas	EASHARE	MiscOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Misc	Space_Heat	Electric	EASHARE	MiscSpace_HeatElectric	1	999	999	999
Misc	Space_Heat	Natural_Gas	EASHARE	MiscSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Misc	Water_Heat	Electric	EASHARE	MiscWater_HeatElectric	0.4	0.5	0.08	0.02
Misc	Water_Heat	Natural_Gas	EASHARE	MiscWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Office	AC_Compressor	Electric	EASHARE	OfficeAC_CompressorElectric	0.65	0.35	N/A	N/A
Office	AC_Compressor	Natural_Gas	EASHARE	OfficeAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Office	Cooking	Electric	EASHARE	OfficeCookingElectric	0.65	0.35	N/A	N/A
Office	Cooking	Natural_Gas	EASHARE	OfficeCookingNatural_Gas	0.65	0.35	N/A	N/A
Office	Other	Natural_Gas	EASHARE	OfficeOtherNatural_Gas	1	N/A	N/A	N/A
Office	Space_Heat	Electric	EASHARE	OfficeSpace_HeatElectric	1	999	999	999
Office	Space_Heat	Natural_Gas	EASHARE	OfficeSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Office	Water_Heat	Electric	EASHARE	OfficeWater_HeatElectric	0.4	0.5	0.08	0.02
Office	Water_Heat	Natural_Gas	EASHARE	OfficeWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Restaurant	AC_Compressor	Electric	EASHARE	RestaurantAC_CompressorElectric	0.65	0.35	N/A	N/A
Restaurant	AC_Compressor	Natural_Gas	EASHARE	RestaurantAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Cook_top	Electric	EASHARE	RestaurantCook_topElectric	0.65	0.35	N/A	N/A
Restaurant	Cook_top	Natural_Gas	EASHARE	RestaurantCook_topNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Fryer	Electric	EASHARE	RestaurantFryerElectric	0.65	0.35	N/A	N/A
Restaurant	Fryer	Natural_Gas	EASHARE	RestaurantFryerNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Griddle	Electric	EASHARE	RestaurantGriddleElectric	0.65	0.35	N/A	N/A
Restaurant	Griddle	Natural_Gas	EASHARE	RestaurantGriddleNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Other	Natural_Gas	EASHARE	RestaurantOtherNatural_Gas	1	N/A	N/A	N/A
Restaurant	Other_Cooking	Electric	EASHARE	RestaurantOther_CookingElectric	0.65	0.35	N/A	N/A
Restaurant	Other_Cooking	Natural_Gas	EASHARE	RestaurantOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Space_Heat	Electric	EASHARE	RestaurantSpace_HeatElectric	1	999	999	999
Restaurant	Space_Heat	Natural_Gas	EASHARE	RestaurantSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Restaurant	Water_Heat	Electric	EASHARE	RestaurantWater_HeatElectric	0.4	0.5	0.08	0.02
Restaurant	Water_Heat	Natural_Gas	EASHARE	RestaurantWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Retail	Cooking	Electric	EASHARE	RetailCookingElectric	0.65	0.35	N/A	N/A
Retail	Cooking	Natural_Gas	EASHARE	RetailCookingNatural_Gas	0.65	0.35	N/A	N/A
Retail	Other	Natural_Gas	EASHARE	RetailOtherNatural_Gas	1	N/A	N/A	N/A
Retail	Space_Heat	Electric	EASHARE	RetailSpace_HeatElectric	1	999	999	999
Retail	Space_Heat	Natural_Gas	EASHARE	RetailSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Retail	Water_Heat	Electric	EASHARE	RetailWater_HeatElectric	0.4	0.5	0.08	0.02
Retail	Water_Heat	Natural_Gas	EASHARE	RetailWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
School	AC_Compressor	Electric	EASHARE	SchoolAC_CompressorElectric	0.65	0.35	N/A	N/A
School	AC_Compressor	Natural_Gas	EASHARE	SchoolAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
School	Cook_top	Electric	EASHARE	SchoolCook_topElectric	0.65	0.35	N/A	N/A
School	Cook_top	Natural_Gas	EASHARE	SchoolCook_topNatural_Gas	0.65	0.35	N/A	N/A
School	Fryer	Electric	EASHARE	SchoolFryerElectric	0.65	0.35	N/A	N/A
School	Fryer	Natural_Gas	EASHARE	SchoolFryerNatural_Gas	0.65	0.35	N/A	N/A
School	Griddle	Electric	EASHARE	SchoolGriddleElectric	0.65	0.35	N/A	N/A
School	Griddle	Natural_Gas	EASHARE	SchoolGriddleNatural_Gas	0.65	0.35	N/A	N/A

Southern California Gas Company
Core Commercial Market
E Shares by Business Type , End Use and Fuel Name

bname	nname	fname	_NAME_	SAT_LOOKUP	Stock_Qtec	Standard_Qtec	High_Qtec	Premium_Qtec
School	Other	Natural_Gas	EASHARE	SchoolOtherNatural_Gas	1	N/A	N/A	N/A
School	Other_Cooking	Electric	EASHARE	SchoolOther_CookingElectric	0.65	0.35	N/A	N/A
School	Other_Cooking	Natural_Gas	EASHARE	SchoolOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
School	Space_Heat	Electric	EASHARE	SchoolSpace_HeatElectric	1	999	999	999
School	Space_Heat	Natural_Gas	EASHARE	SchoolSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
School	Water_Heat	Electric	EASHARE	SchoolWater_HeatElectric	0.4	0.5	0.08	0.02
School	Water_Heat	Natural_Gas	EASHARE	SchoolWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
TCU	Engine	Electric	EASHARE	TCUEngineElectric	0.65	0.35	N/A	N/A
TCU	Engine	Natural_Gas	EASHARE	TCUEngineNatural_Gas	0.65	0.35	N/A	N/A
TCU	Other	Natural_Gas	EASHARE	TCUOtherNatural_Gas	1	N/A	N/A	N/A
TCU	Space_Heat	Electric	EASHARE	TCUSpace_HeatElectric	1	999	999	999
TCU	Space_Heat	Natural_Gas	EASHARE	TCUSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
TCU	Water_Heat	Electric	EASHARE	TCUWater_HeatElectric	0.4	0.5	0.08	0.02
TCU	Water_Heat	Natural_Gas	EASHARE	TCUWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Warehouse	Engine	Electric	EASHARE	WarehouseEngineElectric	0.65	0.35	N/A	N/A
Warehouse	Engine	Natural_Gas	EASHARE	WarehouseEngineNatural_Gas	0.65	0.35	N/A	N/A
Warehouse	Other	Natural_Gas	EASHARE	WarehouseOtherNatural_Gas	1	999	N/A	N/A
Warehouse	Space_Heat	Electric	EASHARE	WarehouseSpace_HeatElectric	1	999	999	999
Warehouse	Space_Heat	Natural_Gas	EASHARE	WarehouseSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Warehouse	Water_Heat	Electric	EASHARE	WarehouseWater_HeatElectric	0.4	0.5	0.08	0.02
Warehouse	Water_Heat	Natural_Gas	EASHARE	WarehouseWater_HeatNatural_Gas	0.4	0.5	0.08	0.02

Southern California Gas Company
Average Equipment Age
Core Commercial Market

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other
Office	1987	1983	1984	1977	1984	1983	1973	2000	1984	1988	1975
Restaurant	1987	1988	1987	1986	1986	1989	1981	1993	1985	1978	1980
Retail	1993	1983	1992	1985	1988	1992	1973	1976	1990	1994	1975
Laundry	1985	1999	2008	1995	1979	1979	1939	1975	1991	.	2006
Warehouse	1987	1984	1983	1983	2002	1995	1974	1975	1989	1996	1976
School	1993	1982	1981	1974	1979	1979	1968	1973	1980	1986	1973
College	1994	1988	1978	1980	1968	1986	1971	1979	1989	1981	1974
Health	1985	1984	1980	1976	1979	1981	1974	1975	1980	1981	1974
Lodging	1993	1990	1992	1979	1990	1991	1973	1975	1985	1984	1977
Misc	1982	1980	1982	1973	1981	1987	1970	1974	1982	1989	1971
Government	1987	1983	1981	1975	1981	1984	1986	1975	1986	1989	1973
TCU	1982	1980	1984	1982	1984	1986	1980	1975	1979	1979	1974
Construction	1986	1983	1988	1974	1993	1987	1972	1973	1993	1980	1974
Agriculture	1992	1989	1982	1965	1978	1978	1978	1976	1981	1998	1988

Southern California Gas Company
Core Commercial Market
Use Per Meter New Equipment Stock

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	198	737	149	61	43	24	1	1	37	27	129	1406
Restaurant	171	1585	864	1377	274	517	1	1	1	1	430	5220
Retail	1889	607	303	4	12	211	1	1	1	1	1	3025
Laundry	1	9511	1	1	1	1	1	1	14889	1	1	24400
Warehouse	2526	537	1	11	1	1	1	1	1	1	1	3073
School	772	5667	24	60	3	32	1	1	2	1	1	6560
College	189	2034	1	1	1	1	1	1	1	1	516	2739
Health	2173	1739	4	1	1	1	1	1	1	1	1	3919
Lodging	2239	10609	1	7	0	1	1	1	306	1	139	13300
Misc	411	2808	161	247	46	90	1	1	37	97	236	4133
Government	1086	14687	1	1	1	1	1	1	1	5	1	15777
TCU	2	1	1	1	1	1	1	1	1	2138	5596	7736
Construction	2530	1445	1441	343	996	1	1	1	1	1	1	6754
Agriculture	1	1	1	1	1	1	1	1	379	28059	1	28439

Southern California Gas Company
Core Commercial Market
Use Per Meter (Average of All) Equipment Stock

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC		Dryer	Engine	Other	Total Building
Office	586	625	63	31	7	9	1	1		18	4	123	1466
Restaurant	232	1335	1421	1417	553	931	58	1		8	1	350	6306
Retail	276	683	476	134	25	110	4	1		37	12	375	2131
Laundry	93	9347	9	11	1	3	1	1		4034	0	148	13647
Warehouse	233	1283	332	19	1	19	1	1		76	8	504	2475
School	1037	2288	195	170	9	17	2	1		11	56	634	4420
College	2959	3813	164	127	38	87	1	1		34	149	596	7968
Health	1407	4845	335	369	57	75	3	1		250	23	304	7669
Lodging	1230	7714	534	469	106	139	3	1		705	18	629	11546
Misc	426	949	113	87	21	35	2	1		35	11	270	1949
Government	2131	2963	135	131	58	27	1	1		147	89	463	6144
TCU	963	1087	69	44	9	19	1	1		22	810	704	3728
Construction	342	867	37	10	2	3	1	1		57	1	269	1588
Agriculture	376	14095	265	57	11	80	1	1		3138	1936	4024	23982

Southern California Gas Company
Natural Gas (AVERAGE PRICE FOREACAST)
$/Therm

Year	Com Price Deflator	C Agriculture Average Price	C College Average Price	C Construction Average Price	C Government Average Price	C Health Average Price	C Laundry Average Price	C Lodging Average Price	C Misc Average Price	C Office Average Price	C Restaurant Average Price	C Retail Average Price	C School Average Price	C TCU Average Price	C Warehouse Average Price
2017	100.00	0.7909	0.7432	0.7674	0.6752	0.7556	0.7305	0.6402	0.6566	0.6704	0.7675	0.6790	0.6819	0.7548	0.5912
2018	102.78	0.7951	0.7562	0.7783	0.6864	0.7558	0.7350	0.6366	0.6561	0.6753	0.7700	0.6788	0.6775	0.7476	0.5768
2019	104.50	0.7992	0.7597	0.7821	0.6917	0.7608	0.7394	0.6436	0.6625	0.6810	0.7744	0.6848	0.6838	0.7532	0.5853
2020	107.29	0.8227	0.7832	0.8056	0.7152	0.7843	0.7629	0.6673	0.6862	0.7046	0.7979	0.7084	0.7074	0.7768	0.6091
2021	110.05	0.8473	0.8073	0.8300	0.7410	0.8098	0.7879	0.6947	0.7131	0.7308	0.8229	0.7348	0.7343	0.8029	0.6381
2022	112.70	0.8934	0.8539	0.8763	0.7862	0.8552	0.8337	0.7385	0.7573	0.7756	0.8688	0.7794	0.7785	0.8478	0.6805
2023	115.27	0.9863	0.9476	0.9696	0.8770	0.9465	0.9260	0.8263	0.8460	0.8657	0.9610	0.8691	0.8675	0.9379	0.7656
2024	117.81	1.0649	1.0268	1.0484	0.9543	1.0242	1.0042	0.9018	0.9221	0.9425	1.0392	0.9457	0.9437	1.0149	0.8395
2025	120.30	1.1398	1.1022	1.1235	1.0280	1.0983	1.0787	0.9739	0.9947	1.0158	1.1137	1.0187	1.0164	1.0883	0.9100

Southern California Gas Company
Natural Gas (MARGINAL PRICE FOREACAST)
$/Therm

Year	Com Price Deflator	C Agriculture Marginal Price	C College Marginal Price	C Construction Marginal Price	C Government Marginal Price	C Health Marginal Price	C Laundry Marginal Price	C Lodging Marginal Price	C Misc Marginal Price	C Office Marginal Price	C Restaurant Marginal Price	C Retail Marginal Price	C School Marginal Price	C TCU Marginal Price	C Warehouse Marginal Price
2017	100.00	0.6585	0.6525	0.6552	0.6211	0.6358	0.6284	0.5831	0.5999	0.6055	0.6497	0.6051	0.6032	0.6291	0.5588
2018	102.78	0.6610	0.6740	0.6660	0.6313	0.6305	0.6285	0.5698	0.5934	0.6040	0.6497	0.5969	0.5925	0.6167	0.5358
2019	104.50	0.6666	0.6793	0.6715	0.6380	0.6372	0.6352	0.5783	0.6012	0.6115	0.6557	0.6046	0.6003	0.6238	0.5455
2020	107.29	0.6902	0.7029	0.6951	0.6616	0.6609	0.6589	0.6021	0.6250	0.6353	0.6794	0.6283	0.6241	0.6475	0.5694
2021	110.05	0.7165	0.7287	0.7212	0.6888	0.6880	0.6861	0.6312	0.6533	0.6632	0.7059	0.6565	0.6524	0.6751	0.5995
2022	112.70	0.7612	0.7738	0.7661	0.7328	0.7320	0.7300	0.6736	0.6963	0.7065	0.7504	0.6996	0.6954	0.7187	0.6409
2023	115.27	0.8513	0.8646	0.8564	0.8212	0.8204	0.8183	0.7586	0.7827	0.7935	0.8399	0.7862	0.7817	0.8064	0.7241
2024	117.81	0.9282	0.9419	0.9335	0.8971	0.8962	0.8941	0.8324	0.8573	0.8684	0.9164	0.8609	0.8563	0.8817	0.7968
2025	120.30	1.0015	1.0156	1.0069	0.9695	0.9686	0.9664	0.9029	0.9285	0.9400	0.9893	0.9322	0.9275	0.9537	0.8663

Southern California Gas Company
Electric Average Prices
Cents/KWh

Year	C Agriculture Average Price	C College Average Price	C Construction Average Price	C Government Average Price	C Health Average Price	C Laundry Average Price	C Lodging Average Price	C Misc Average Price	C Office Average Price	C Restaurant Average Price	C Retail Average Price	C School Average Price	C TCU Average Price	C Warehouse Average Price
2017	19.24	18.08	18.67	16.43	18.38	17.77	15.58	15.98	16.31	18.67	16.52	16.59	18.36	14.38
2018	20.37	19.37	19.94	17.58	19.36	18.83	16.31	16.81	17.30	19.72	17.39	17.35	19.15	14.77
2019	21.21	20.16	20.76	18.35	20.19	19.62	17.08	17.58	18.07	20.55	18.17	18.15	19.99	15.53
2020	21.61	20.57	21.16	18.79	20.60	20.04	17.53	18.02	18.51	20.96	18.61	18.58	20.40	16.00
2021	22.06	21.02	21.61	19.29	21.08	20.51	18.09	18.57	19.03	21.43	19.13	19.12	20.91	16.61
2022	22.58	21.58	22.15	19.87	21.62	21.07	18.67	19.14	19.61	21.96	19.70	19.68	21.43	17.20
2023	22.09	21.22	21.71	19.64	21.20	20.74	18.50	18.95	19.39	21.52	19.46	19.43	21.00	17.15
2024	22.58	21.77	22.23	20.23	21.71	21.29	19.12	19.55	19.98	22.03	20.05	20.01	21.52	17.80
2025	23.21	22.45	22.88	20.94	22.37	21.97	19.83	20.26	20.69	22.68	20.75	20.70	22.16	18.53

Southern California Gas Company
Electric MARGINAL PRICES
Cents/KWh

Year	C Agriculture Marginal Price	C College Marginal Price	C Construction Marginal Price	C Government Marginal Price	C Health Marginal Price	C Laundry Marginal Price	C Lodging Marginal Price	C Misc Marginal Price	C Office Marginal Price	C Restaurant Marginal Price	C Retail Marginal Price	C School Marginal Price	C TCU Marginal Price	C Warehouse Marginal Price
2017	18.27	18.10	18.18	17.23	17.64	17.43	16.18	16.64	16.80	18.02	16.79	16.73	17.45	15.50
2018	19.43	19.81	19.57	18.56	18.53	18.47	16.75	17.44	17.75	19.10	17.54	17.41	18.13	15.75
2019	20.22	20.61	20.37	19.35	19.33	19.27	17.54	18.24	18.55	19.89	18.34	18.21	18.92	16.55
2020	20.63	21.00	20.77	19.77	19.75	19.69	17.99	18.68	18.98	20.30	18.78	18.65	19.35	17.02
2021	21.08	21.44	21.22	20.26	20.24	20.18	18.57	19.22	19.51	20.77	19.31	19.19	19.86	17.63
2022	21.62	21.98	21.76	20.82	20.79	20.74	19.13	19.78	20.07	21.32	19.87	19.75	20.42	18.21
2023	21.23	21.56	21.36	20.48	20.46	20.41	18.92	19.52	19.79	20.95	19.61	19.50	20.11	18.06
2024	21.76	22.09	21.89	21.03	21.02	20.96	19.52	20.10	20.36	21.49	20.19	20.08	20.68	18.68
2025	22.43	22.74	22.55	21.71	21.69	21.64	20.22	20.79	21.05	22.16	20.88	20.77	21.36	19.40

Southern California Gas Company
Core Commercial Market
Average Year Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2017**	9225.76	8654.56	7816.13	7106.91	6018.85	5469.68	5324.31	5319.91	5361.02	5779.51	7306.61	9520.90	82904.16
G10Commercial	2018	9137.65	8570.33	7737.59	7033.18	5952.51	5407.07	5262.69	5258.32	5299.15	5714.79	7231.53	9430.79	82035.60
G10Commercial	2019	9052.74	8490.61	7665.47	6967.49	5896.69	5356.23	5213.17	5208.83	5249.29	5661.14	7164.02	9343.20	81268.89
G10Commercial	2020	8933.13	8378.32	7563.94	6875.06	5818.22	5284.81	5143.61	5139.33	5179.27	5585.74	7069.03	9219.80	80190.26
G10Commercial	2021	8762.78	8218.45	7419.43	6743.56	5706.66	5183.31	5044.78	5040.58	5079.76	5478.57	6933.87	9044.05	78655.81
G10Commercial	2022	8550.06	8018.81	7239.02	6579.40	5567.45	5056.69	4921.49	4917.39	4955.63	5344.84	6765.13	8824.55	76740.47
G10Commercial	2023	8270.09	7756.18	7001.83	6363.73	5384.80	4890.70	4759.91	4755.95	4792.94	5169.46	6543.41	8535.63	74224.63
G10Commercial	2024	8012.24	7514.30	6783.38	6165.11	5216.58	4737.84	4611.11	4607.27	4643.11	5007.93	6339.20	8269.54	71907.60
G10Commercial	2025	7763.40	7280.86	6572.56	5973.42	5054.24	4590.30	4467.50	4463.78	4498.51	4852.04	6142.12	8012.73	69671.45

Southern California Gas Company
Core Commercial Market
Cold Year Forecast

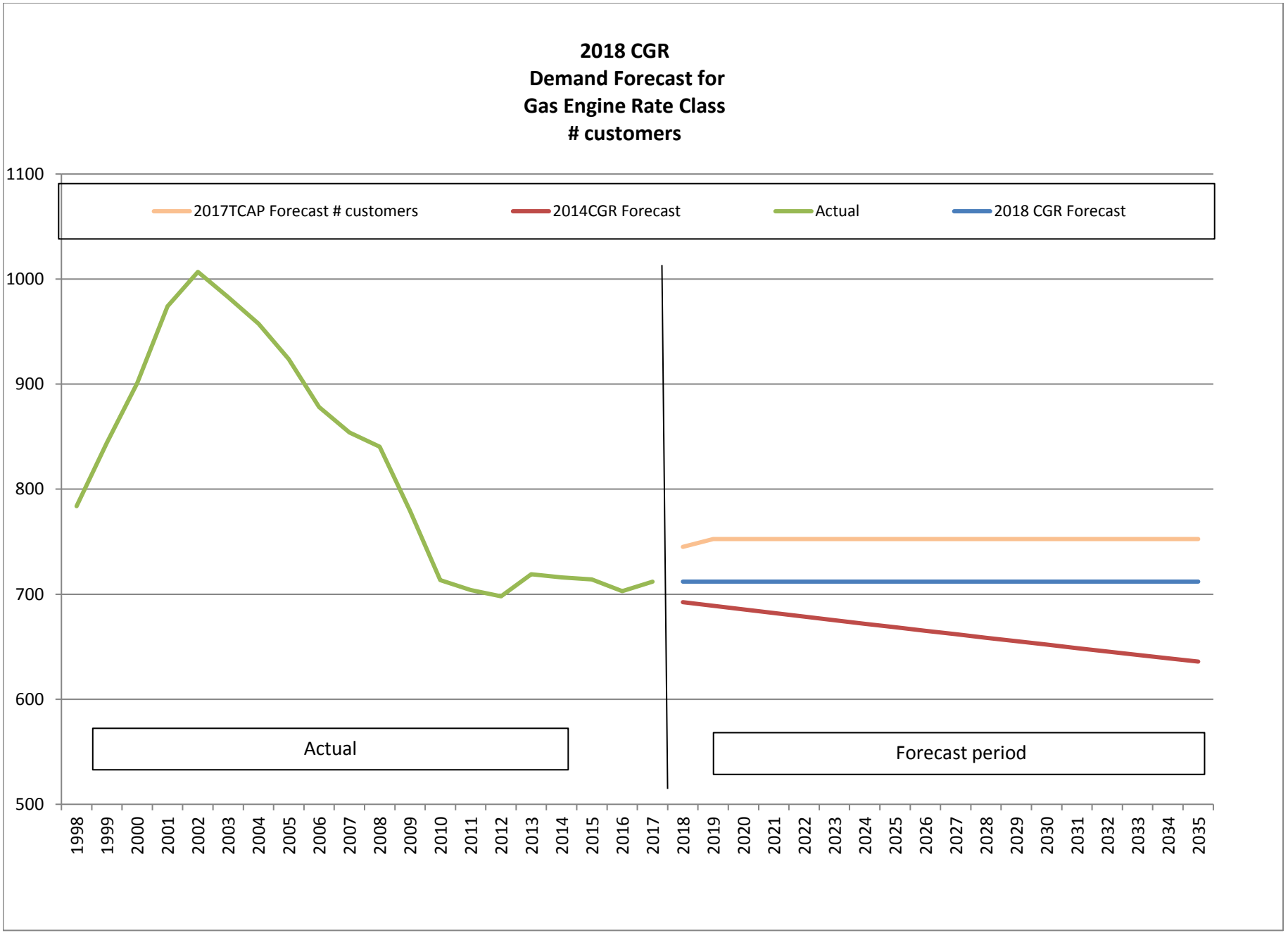
SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2017**	9963.91	9286.31	8290.94	7447.39	6155.84	5502.93	5330.96	5325.23	5374.32	5871.28	7684.33	10314.91	86548.36
G10Commercial	2018	9875.80	9202.08	8212.40	7373.66	6089.50	5440.32	5269.34	5263.64	5312.45	5806.56	7609.25	10224.80	85679.80
G10Commercial	2019	9790.89	9122.36	8140.28	7307.97	6033.68	5389.48	5219.82	5214.15	5262.59	5752.91	7541.74	10137.21	84913.09
G10Commercial	2020	9671.28	9010.07	8038.75	7215.54	5955.21	5318.06	5150.26	5144.65	5192.57	5677.51	7446.75	10013.81	83834.46
G10Commercial	2021	9500.93	8850.20	7894.24	7084.04	5843.65	5216.56	5051.43	5045.90	5093.06	5570.34	7311.59	9838.06	82300.01
G10Commercial	2022	9288.21	8650.56	7713.83	6919.88	5704.44	5089.94	4928.14	4922.71	4968.93	5436.61	7142.85	9618.56	80384.67
G10Commercial	2023	9008.24	8387.93	7476.64	6704.21	5521.79	4923.95	4766.56	4761.27	4806.24	5261.23	6921.13	9329.64	77868.83
G10Commercial	2024	8750.39	8146.05	7258.19	6505.59	5353.57	4771.09	4617.76	4612.59	4656.41	5099.70	6716.92	9063.55	75551.80
G10Commercial	2025	8501.55	7912.61	7047.37	6313.90	5191.23	4623.55	4474.15	4469.10	4511.81	4943.81	6519.84	8806.74	73315.65

Southern California Gas Company
Core Commercial Market
HOT Year Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2017**	8486.28	8022.81	7341.32	6766.43	5883.19	5436.43	5318.99	5315.92	5347.72	5689.07	6927.56	8725.56	79261.29
G10Commercial	2018	8398.17	7938.58	7262.78	6692.70	5816.85	5373.82	5257.37	5254.33	5285.85	5624.35	6852.48	8635.45	78392.73
G10Commercial	2019	8313.26	7858.86	7190.66	6627.01	5761.03	5322.98	5207.85	5204.84	5235.99	5570.70	6784.97	8547.86	77626.02
G10Commercial	2020	8193.65	7746.57	7089.13	6534.58	5682.56	5251.56	5138.29	5135.34	5165.97	5495.30	6689.98	8424.46	76547.39
G10Commercial	2021	8023.30	7586.70	6944.62	6403.08	5571.00	5150.06	5039.46	5036.59	5066.46	5388.13	6554.82	8248.71	75012.94
G10Commercial	2022	7810.58	7387.06	6764.21	6238.92	5431.79	5023.44	4916.17	4913.40	4942.33	5254.40	6386.08	8029.21	73097.60
G10Commercial	2023	7530.61	7124.43	6527.02	6023.25	5249.14	4857.45	4754.59	4751.96	4779.64	5079.02	6164.36	7740.29	70581.76
G10Commercial	2024	7272.76	6882.55	6308.57	5824.63	5080.92	4704.59	4605.79	4603.28	4629.81	4917.49	5960.15	7474.20	68264.73
G10Commercial	2025	7023.92	6649.11	6097.75	5632.94	4918.58	4557.05	4462.18	4459.79	4485.21	4761.60	5763.07	7217.39	66028.58

Southern California Gas Company
Core Commercial Market
BASE Year Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2017**	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	5295.97	63551.64
G10Commercial	2018	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	5234.38	62812.54
G10Commercial	2019	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	5184.90	62218.76
G10Commercial	2020	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	5115.40	61384.79
G10Commercial	2021	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	5016.65	60199.83
G10Commercial	2022	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	4893.46	58721.56
G10Commercial	2023	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	4732.03	56784.32
G10Commercial	2024	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	4583.35	55000.16
G10Commercial	2025	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	4439.86	53278.27


2018 CGR
Demand Forecast for
Gas Engine Rate Class
customers
2017TCAP Forecast # customers
2014CGR Forecast
Actual
2018 CGR Forecast
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1000
900
800
700
600
500
Actual
Forecast period
1998
1999
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Meter **For CGR2018** **GAC** **4/10/2018**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2017	8	8	8	8	8	8	9	8	9	9	8	8	8
2018	4	4	4	4	4	4	4	4	4	4	4	4	4
2019	4	4	4	4	4	4	4	4	4	4	4	4	4
2020	4	4	4	4	4	4	4	4	4	4	4	4	4
2021	4	4	4	4	4	4	4	4	4	4	4	4	4
2022	4	4	4	4	4	4	4	4	4	4	4	4	4
2023	4	4	4	4	4	4	4	4	4	4	4	4	4
2024	4	4	4	4	4	4	4	4	4	4	4	4	4
2025	4	4	4	4	4	4	4	4	4	4	4	4	4

Mdth

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2017	3.56	3.51	3.72	5.65	5.17	5.11	7.86	12.36	11.67	9.79	8.41	5.79	82.60
2018	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2019	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2020	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2021	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2022	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2023	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2024	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63
2025	2.15	2.95	2.28	2.10	3.88	1.78	4.10	5.31	5.29	4.92	4.27	2.61	41.63

Meter **For CGR2018** **GEN** **4/10/2018**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2017	718	716	715	713	714	714	714	713	715	713	713	711	714
2018	711	712	711	712	713	711	713	711	712	713	712	711	712
2019	711	712	711	712	713	711	713	711	712	713	712	711	712
2020	711	712	711	712	713	711	713	711	712	713	712	711	712
2021	711	712	711	712	713	711	713	711	712	713	712	711	712
2022	711	712	711	712	713	711	713	711	712	713	712	711	712
2023	711	712	711	712	713	711	713	711	712	713	712	711	712
2024	711	712	711	712	713	711	713	711	712	713	712	711	712
2025	711	712	711	712	713	711	713	711	712	713	712	711	712

Mdth

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2017	75.65	55.49	69.38	110.53	134.06	196.65	237.67	261.22	233.12	149.06	167.52	115.30	1,806
2018	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2019	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2020	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2021	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2022	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2023	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2024	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230
2025	80.04	95.05	119.85	161.40	201.21	255.93	302.91	286.29	258.47	208.97	162.73	97.31	2,230

G10 Industrial DATA TABLES

Southern California Gas Company
Industrial G10
The Year the Equipment Was Installed by Business Types

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	2002	1980	1979	1980	1968	1978	.	1970	1976
Food	2004	1999	2002	1992	1992	2002	1965	1994	1983
Textile	1999	1998	1994	1982	1992	1982	.	.	1980
Wood_Paper	1997	1994	1995	1981	1981	2006	.	.	1975
Chemical	2005	1995	2002	1986	1985	1981	.	1999	1976
Petroleum	2006	1990	2002	1975	1981	1971	.	.	1977
Stone	2007	1983	1996	1982	1982	1982	1985	2014	1975
Primary_Metal	1993	1991	1987	1982	1978	1982	.	1996	1976
Fabricated_Metal	2002	1989	1986	1980	1984	1980	.	1984	1975
Transport	1993	1994	1996	1981	1987	1983	1973	2003	1976
Misc	1996	1995	1994	1981	1987	1978	1984	1999	1978

Southern California Gas Company
Industrial G10
Electric Price Forecasat (Cent/KWH)

(a) Average Price Forecast

Year	Chemical	Fab Metal	Food	Mining	Petroleum	Prim Metal	Stone	Textile	Transport	Wood Paper	Misc
2017	13.64	13.56	13.95	13.24	13.73	12.75	14.16	13.54	14.15	14.18	14.98
2018	14.32	14.22	14.78	13.79	14.51	13.13	15.10	14.30	15.07	15.00	16.03
2019	14.96	14.86	15.42	14.43	15.14	13.77	15.73	14.93	15.71	15.64	16.68
2020	15.30	15.21	15.76	14.78	15.49	14.14	16.07	15.28	16.05	15.97	16.99
2021	15.72	15.63	16.16	15.22	15.89	14.61	16.45	15.70	16.43	16.37	17.34
2022	16.17	16.08	16.60	15.68	16.34	15.07	16.89	16.15	16.87	16.80	17.76
2023	15.94	15.86	16.34	15.49	16.11	14.93	16.61	15.93	16.59	16.52	17.40
2024	16.40	16.32	16.79	15.96	16.56	15.42	17.04	16.39	17.03	16.96	17.80
2025	16.95	16.88	17.33	16.53	17.11	16.00	17.58	16.94	17.56	17.50	18.32

(b) Marginal Price Forecast

Year	Chemical	Fab Metal	Food	Mining	Petroleum	Prim Metal	Stone	Textile	Transport	Wood Paper	Misc
2017	10.80	10.83	10.97	10.67	10.86	10.49	11.04	10.70	11.00	11.06	11.35
2018	11.35	11.40	11.64	11.15	11.46	10.88	11.73	11.22	11.67	11.72	12.15
2019	11.86	11.91	12.14	11.66	11.96	11.39	12.23	11.72	12.18	12.22	12.66
2020	12.13	12.18	12.41	11.94	12.23	11.67	12.50	12.00	12.44	12.48	12.91
2021	12.46	12.50	12.72	12.28	12.56	12.03	12.81	12.33	12.75	12.79	13.20
2022	12.81	12.86	13.07	12.63	12.91	12.38	13.16	12.69	13.10	13.14	13.54
2023	12.63	12.67	12.87	12.46	12.72	12.23	12.95	12.52	12.90	12.93	13.30
2024	12.99	13.03	13.22	12.83	13.07	12.61	13.29	12.88	13.25	13.28	13.64
2025	13.42	13.46	13.65	13.26	13.51	13.05	13.72	13.31	13.67	13.71	14.06

Southern California Gas Company
Industrial G10
Gas Price Forecasat ($/Therm)

(a) Average Price Forecast

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2017	100.00	0.5974	0.5940	0.6112	0.5799	0.6014	0.5585	0.6205	0.5934	0.6200	0.6211	0.6565
2018	102.78	0.5826	0.5788	0.6016	0.5611	0.5903	0.5343	0.6143	0.5818	0.6134	0.6103	0.6523
2019	104.50	0.5911	0.5873	0.6095	0.5701	0.5985	0.5441	0.6218	0.5901	0.6210	0.6181	0.6591
2020	107.29	0.6149	0.6111	0.6332	0.5939	0.6223	0.5680	0.6456	0.6139	0.6447	0.6419	0.6827
2021	110.05	0.6438	0.6400	0.6616	0.6234	0.6509	0.5982	0.6736	0.6427	0.6727	0.6702	0.7100
2022	112.70	0.6863	0.6825	0.7045	0.6654	0.6936	0.6396	0.7168	0.6853	0.7160	0.7132	0.7539
2023	115.27	0.7715	0.7677	0.7908	0.7497	0.7794	0.7226	0.8037	0.7708	0.8028	0.7996	0.8421
2024	117.81	0.8455	0.8416	0.8654	0.8230	0.8537	0.7952	0.8786	0.8448	0.8777	0.8742	0.9179
2025	120.30	0.9161	0.9122	0.9366	0.8930	0.9246	0.8646	0.9501	0.9156	0.9492	0.9455	0.9902

(b) Marginal Price Forecasat

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2017	100.00	0.5593	0.5606	0.5681	0.5526	0.5622	0.5432	0.5715	0.5541	0.5697	0.5724	0.5879
2018	102.78	0.5355	0.5379	0.5491	0.5262	0.5406	0.5133	0.5534	0.5292	0.5506	0.5527	0.5734
2019	104.50	0.5452	0.5475	0.5584	0.5361	0.5501	0.5236	0.5625	0.5390	0.5598	0.5618	0.5819
2020	107.29	0.5691	0.5714	0.5822	0.5600	0.5740	0.5476	0.5864	0.5629	0.5837	0.5857	0.6057
2021	110.05	0.5992	0.6014	0.6119	0.5904	0.6039	0.5784	0.6159	0.5932	0.6133	0.6152	0.6346
2022	112.70	0.6406	0.6430	0.6537	0.6317	0.6456	0.6193	0.6579	0.6345	0.6552	0.6572	0.6771
2023	115.27	0.7238	0.7263	0.7377	0.7143	0.7290	0.7012	0.7420	0.7174	0.7392	0.7413	0.7623
2024	117.81	0.7965	0.7990	0.8108	0.7867	0.8018	0.7731	0.8153	0.7898	0.8123	0.8145	0.8363
2025	120.30	0.8660	0.8685	0.8807	0.8559	0.8715	0.8419	0.8853	0.8591	0.8823	0.8845	0.9069

Southern California Gas Company
Industrial G10
Historical Throughput and Customer Counts

Business Type	therms_ 2017	meters_ 2017	meters_ 2017_ ExCust	meters_ 2017_ NewCust	avgUse_ 2017_ ExCust	avgUse_ 2017_ NewCust	Price Elasticity	Employment Elasticity
Mining	3460102	231	229	2	15097	1400	0.000000	0.321451
Food	72574390	2894	2,858	36	25318	5994	-0.190795	1.242506
Textile	7775303	498	497	1	15638	3053	0.000000	0.033325
Wood_Paper	9705545	445	444	1	21856	1329	0.000000	0.508272
Chemical	20489473	1022	1,018	4	20083	11312	-0.080517	0.650067
Petroleum	13870210	136	135	1	100291	330957	-0.180563	0.084537
Stone	5226667	422	420	2	12438	1249	0.000000	0.416909
Prim_Metal	10684915	330	330	0	32379	0	0.000000	0.956685
Fab_Metal	25620869	2052	2,050	2	12461	37816	-0.137441	1.023881
Transport	14126278	1595	1,593	2	8867	196	0.000000	0.402505
Misc	36189691	6586	6,563	23	5502	3440	-0.108307	0.879307
Total	219,723,443	16,211						

Southern California Gas Company
Industrial G10
Average Use Per Meter

therm

Business Type	Water_ Boiler	Fire_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other	Total
Mining	0.00	6225.80	43.44	1922.69	76.05	0.56	0.00	2.75	4786.37	13057.66
Food	3180.78	10141.03	82.75	2847.86	5310.90	7.92	71.91	83.96	2503.74	24230.85
Textile	5027.39	6783.50	56.56	1340.65	7765.90	71.23	0.00	0.00	1098.82	22144.05
Wood_Paper	4463.96	11983.97	458.96	1285.89	1606.17	119.80	0.00	3.78	2324.39	22246.91
Chemical	1972.76	7552.98	2767.33	1673.42	2070.49	665.27	2.19	85.13	4219.74	21009.32
Petroleum	2197.09	20863.92	133.26	129.32	41681.87	8.61	0.00	9165.75	15693.36	89873.19
Stone	428.23	1589.00	45.91	474.03	3876.33	3293.73	0.59	0.02	1787.29	11495.13
Prim_Metal	1513.70	2386.00	313.35	1878.50	6092.33	16202.71	10.64	0.00	3538.66	31935.90
Fab_Metal	336.91	656.28	208.11	1452.36	3112.68	2689.72	0.05	7.80	2730.58	11194.48
Transport	488.08	1995.77	1128.58	1115.44	1053.17	659.96	0.00	196.93	1456.32	8094.24
Misc	230.00	1031.13	332.14	501.28	1535.53	375.48	0.01	17.60	1179.66	5202.83

Southern California Gas Company
Industrial G10
Use Per Meter for New Customers therm

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other	Total
Mining	0.00	2.24	0.23	23947.31	0.00	0.00	0.00	0.00	9314.20	33263.98
Food	3155.88	12674.65	38.57	1919.40	1967.47	0.00	0.00	0.00	1249.16	21005.14
Textile	1329.08	131.16	1.11	7181.12	1647.02	0.00	0.00	0.00	17.62	10307.11
Wood_Paper	0.00	30721.53	214.64	20.21	9238.90	0.00	0.00	0.00	0.00	40195.28
Chemical	5624.56	11816.67	3290.36	2592.56	3709.92	0.00	0.00	35.54	587.66	27657.26
Petroleum	3649.78	91492.09	145.82	0.00	26440.15	0.00	0.00	0.00	868.47	122596.30
Stone	0.00	0.00	198.09	0.00	1636.20	0.00	0.00	0.00	0.00	1834.29
Prim_Metal	0.00	18017.06	0.00	0.00	1290.93	39287.08	0.00	0.00	0.00	58595.07
Fab_Metal	0.00	317.56	14.86	42.94	6237.87	33.44	0.00	0.00	2118.72	8765.39
Transport	0.00	3204.72	1876.33	589.64	2009.99	3173.04	0.00	5922.60	0.00	16776.31
Misc	1325.47	1281.96	223.24	588.39	2609.70	138.67	0.00	10.79	2858.83	9037.05

Southern California Gas Company
Industrial G10
Electric UEC (Kwh/SqFt)

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	12053557	117480	22540	4117	3349437	1388699	3261	2871579	0
Food	992080	234899	77958	15939	1062552	781260	24817	1163891	0
Textile	1428304	371125	20797	30369	3811277	1069238	74615	0	0
Wood_Paper	11051345	3626956	48301	2915	523062	985476	3282	0	0
Chemical	1169880	658201	34723	19440	26417	593554	1620	738	0
Petroleum	1527674	385215	15711	15192	13761553	60935	0	101154	0
Stone	4960873	985989	31975	22824	6850607	6237158	37820	0	0
Primary_Metal	174313	550730	55233	9317	25494	13916258	66288	0	0
Fabricated_Metal	605450	591011	55315	8658	57653	2084618	5763	0	0
Transportation	76358	44486	30560	6490	228869	392291	1456	7240	0
Miscellaneous	148060	104128	22745	4673	181266	1005453	8471	17618	0

Southern California Gas Company
Industrial G10
GAS UEC (Therm per SqFt.)

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	0.0	2241270.1	252.0	5267.6	91252.7	671.9	0.0	113.8	6627.3
Food	111173.3	105370.7	954.4	4330.2	187396.8	2236.7	39768.2	13205.2	3384.0
Textile	97755.9	84794.4	490.2	4405.9	97073.5	28811.2	0.0	0.0	2469.0
Wood_Paper	8370448.2	5798601.6	3701.3	3131.2	78732.7	32091.3	0.0	567.0	3557.8
Chemical	205830.3	167162.0	13968.3	3956.0	84010.5	226745.1	1213.0	3552.9	6903.5
Petroleum	211873.9	619041.3	1095.3	797.2	1339770.6	2324.5	0.0	235688.8	27337.0
Stone	1361621.6	1403586.3	285.7	1376.6	501089.7	171147.3	48.5	1.8	3023.2
Primary_Metal	659478.1	366907.6	2067.2	4478.5	123876.9	329457.3	2862.7	0.0	5996.1
Fabricated_Metal	352859.2	114530.0	1645.4	3351.1	65001.9	216650.8	55.1	949.7	3834.3
Transportation	219677.7	209547.3	7747.4	3076.9	44487.1	83149.8	0.0	31017.5	1883.4
Miscellaneous	107096.3	63856.5	2149.8	1292.7	53625.4	55446.0	4.5	2639.9	1626.2

Southern California Gas Company
Industrial G10
Gas Market Shares

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Chemical	0.00000	0.27778	0.23611	0.50000	0.02778	0.01389	0.00000	0.02778	0.72222
Fabricated_Metal	0.06358	0.21387	0.14451	0.77374	0.23617	0.01073	0.00248	0.00908	0.73988
Food	0.19780	0.30769	0.16484	0.42857	0.57143	0.02747	0.00000	0.00000	0.44505
Mining	0.05333	0.20667	0.20000	0.53333	0.22667	0.05333	0.00000	0.01333	0.65333
Miscllaneous	0.06846	0.32274	0.27139	0.57946	0.20538	0.02934	0.00245	0.03423	0.61125
Petroleum	0.07407	0.24074	0.16667	0.22222	0.25926	0.03704	0.00000	0.05556	0.57407
Primary_Metal	0.03145	0.11321	0.22013	0.47170	0.25786	0.32075	0.01887	0.01258	0.59119
Stone	0.03279	0.09290	0.20765	0.55191	0.32787	0.49180	0.00546	0.01093	0.59016
Textile	0.01364	0.08186	0.17326	0.57026	0.31924	0.12415	0.00136	0.00955	0.71214
Transportation	0.01587	0.06803	0.19955	0.49660	0.19728	0.07937	0.00000	0.00907	0.77324
Wood_Paper	0.01534	0.11534	0.21164	0.53122	0.23862	0.06772	0.00159	0.00952	0.72540

Southern California Gas Company
Industrial G10
Saturation Rate

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Food	0.45	0.45	0.60	0.85	0.12	0.33	0.73	0.70	1.00
Textile	0.26	0.26	0.70	0.71	0.14	0.09	0.72	0.46	1.00
Wood_Paper	0.01	0.01	0.62	0.77	0.09	0.07	0.71	0.50	1.00
Chemical	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Petroleum	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Stone	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Prim_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Fab_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Transport	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Misc	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00

Southern California Gas Company
Industrial G10
UEC, Equipment Cost and Efficiency Shares

Where Fuel = 1 (gas) and = 2 (electric), and
Efficiency =1 (stock), =2 (standard), =3 (high) and =4 (premium)

Business Type	End Use	Fuel	Efficiency	EQcost
Mining	Fire_Tube_Boiler	1	1	3,907,010
Mining	Fire_Tube_Boiler	1	2	4,297,711
Mining	Fire_Tube_Boiler	1	3	4,688,412
Mining	Fire_Tube_Boiler	2	1	3,125,608
Mining	Fire_Tube_Boiler	2	2	3,438,169
Mining	Fire_Tube_Boiler	2	3	3,750,729
Mining	Water_Tube_Boiler	1	1	38,080
Mining	Water_Tube_Boiler	1	2	41,888
Mining	Water_Tube_Boiler	1	3	45,696
Mining	Water_Tube_Boiler	2	1	30,464
Mining	Water_Tube_Boiler	2	2	33,510
Mining	Water_Tube_Boiler	2	3	36,557
Mining	Space_Heat	1	1	7,306
Mining	Space_Heat	1	2	8,037
Mining	Space_Heat	1	3	8,767
Mining	Space_Heat	2	1	5,845
Mining	Space_Heat	2	2	6,429
Mining	Space_Heat	2	3	7,014
Mining	Water_Heat	1	1	1,868
Mining	Water_Heat	1	2	2,055
Mining	Water_Heat	1	3	2,242
Mining	Water_Heat	2	1	1,494
Mining	Water_Heat	2	2	1,644
Mining	Water_Heat	2	3	1,793
Mining	Dryer	1	1	1,085,678
Mining	Dryer	1	2	1,194,246
Mining	Dryer	1	3	1,302,814
Mining	Dryer	2	1	868,543
Mining	Dryer	2	2	955,397
Mining	Dryer	2	3	1,042,251
Mining	Furnace_Oven_Kiln	1	1	450,129
Mining	Furnace_Oven_Kiln	1	2	495,142
Mining	Furnace_Oven_Kiln	1	3	540,155
Mining	Furnace_Oven_Kiln	2	1	360,104
Mining	Furnace_Oven_Kiln	2	2	396,114
Mining	Furnace_Oven_Kiln	2	3	432,124
Mining	AC	1	1	1,057
Mining	AC	1	2	1,163
Mining	AC	1	3	1,268
Mining	AC	2	1	846
Mining	AC	2	2	930
Mining	AC	2	3	1,015
Mining	Engine	1	1	930,786
Mining	Engine	1	2	1,023,865
Mining	Engine	1	3	1,116,944
Mining	Engine	2	1	744,629
Mining	Engine	2	2	819,092
Mining	Engine	2	3	893,555
Mining	Other	1	1	-
Mining	Other	1	2	-
Mining	Other	1	3	-
Mining	Other	2	1	-
Mining	Other	2	2	-
Mining	Other	2	3	-
Food	Fire_Tube_Boiler	1	1	303,093
Food	Fire_Tube_Boiler	1	2	333,402
Food	Fire_Tube_Boiler	1	3	363,711
Food	Fire_Tube_Boiler	2	1	242,474
Food	Fire_Tube_Boiler	2	2	266,722

Food	Fire_Tube_Boiler	2	3	290,969
Food	Water_Tube_Boiler	1	1	71,765
Food	Water_Tube_Boiler	1	2	78,941
Food	Water_Tube_Boiler	1	3	86,117
Food	Water_Tube_Boiler	2	1	57,412
Food	Water_Tube_Boiler	2	2	63,153
Food	Water_Tube_Boiler	2	3	68,894
Food	Space_Heat	1	1	23,817
Food	Space_Heat	1	2	26,199
Food	Space_Heat	1	3	28,580
Food	Space_Heat	2	1	19,054
Food	Space_Heat	2	2	20,959
Food	Space_Heat	2	3	22,864
Food	Water_Heat	1	1	6,817
Food	Water_Heat	1	2	7,499
Food	Water_Heat	1	3	8,181
Food	Water_Heat	2	1	5,454
Food	Water_Heat	2	2	5,999
Food	Water_Heat	2	3	6,545
Food	Dryer	1	1	324,623
Food	Dryer	1	2	357,085
Food	Dryer	1	3	389,547
Food	Dryer	2	1	259,698
Food	Dryer	2	2	285,668
Food	Dryer	2	3	311,638
Food	Furnace_Oven_Kiln	1	1	238,684
Food	Furnace_Oven_Kiln	1	2	262,553
Food	Furnace_Oven_Kiln	1	3	286,421
Food	Furnace_Oven_Kiln	2	1	190,948
Food	Furnace_Oven_Kiln	2	2	210,042
Food	Furnace_Oven_Kiln	2	3	229,137
Food	AC	1	1	7,582
Food	AC	1	2	8,340
Food	AC	1	3	9,098
Food	AC	2	1	6,065
Food	AC	2	2	6,672
Food	AC	2	3	7,279
Food	Engine	1	1	355,583
Food	Engine	1	2	391,141
Food	Engine	1	3	426,700
Food	Engine	2	1	284,466
Food	Engine	2	2	312,913
Food	Engine	2	3	341,360
Food	Other	1	1	-
Food	Other	1	2	-
Food	Other	1	3	-
Food	Other	2	1	-
Food	Other	2	2	-
Food	Other	2	3	-
Textile	Fire_Tube_Boiler	1	1	440,682
Textile	Fire_Tube_Boiler	1	2	484,750
Textile	Fire_Tube_Boiler	1	3	528,818
Textile	Fire_Tube_Boiler	2	1	352,546
Textile	Fire_Tube_Boiler	2	2	387,800
Textile	Fire_Tube_Boiler	2	3	423,055
Textile	Water_Tube_Boiler	1	1	114,505
Textile	Water_Tube_Boiler	1	2	125,956
Textile	Water_Tube_Boiler	1	3	137,406
Textile	Water_Tube_Boiler	2	1	91,604
Textile	Water_Tube_Boiler	2	2	100,765
Textile	Water_Tube_Boiler	2	3	109,925
Textile	Space_Heat	1	1	6,417
Textile	Space_Heat	1	2	7,058
Textile	Space_Heat	1	3	7,700
Textile	Space_Heat	2	1	5,133
Textile	Space_Heat	2	2	5,647
Textile	Space_Heat	2	3	6,160
Textile	Water_Heat	1	1	13,118
Textile	Water_Heat	1	2	14,430
Textile	Water_Heat	1	3	15,742
Textile	Water_Heat	2	1	10,494

Textile	Water_Heat	2	2	11,544
Textile	Water_Heat	2	3	12,593
Textile	Dryer	1	1	1,175,913
Textile	Dryer	1	2	1,293,505
Textile	Dryer	1	3	1,411,096
Textile	Dryer	2	1	940,731
Textile	Dryer	2	2	1,034,804
Textile	Dryer	2	3	1,128,877
Textile	Furnace_Oven_Kiln	1	1	329,898
Textile	Furnace_Oven_Kiln	1	2	362,887
Textile	Furnace_Oven_Kiln	1	3	395,877
Textile	Furnace_Oven_Kiln	2	1	263,918
Textile	Furnace_Oven_Kiln	2	2	290,310
Textile	Furnace_Oven_Kiln	2	3	316,702
Textile	AC	1	1	23,021
Textile	AC	1	2	25,323
Textile	AC	1	3	27,626
Textile	AC	2	1	18,417
Textile	AC	2	2	20,259
Textile	AC	2	3	22,100
Textile	Engine	1	1	-
Textile	Engine	1	2	-
Textile	Engine	1	3	-
Textile	Engine	2	1	-
Textile	Engine	2	2	-
Textile	Engine	2	3	-
Textile	Other	1	1	-
Textile	Other	1	2	-
Textile	Other	1	3	-
Textile	Other	2	1	-
Textile	Other	2	2	-
Textile	Other	2	3	-
Wood_Paper	Fire_Tube_Boiler	1	1	3,531,505
Wood_Paper	Fire_Tube_Boiler	1	2	3,884,655
Wood_Paper	Fire_Tube_Boiler	1	3	4,237,806
Wood_Paper	Fire_Tube_Boiler	2	1	2,825,204
Wood_Paper	Fire_Tube_Boiler	2	2	3,107,724
Wood_Paper	Fire_Tube_Boiler	2	3	3,390,245
Wood_Paper	Water_Tube_Boiler	1	1	1,159,009
Wood_Paper	Water_Tube_Boiler	1	2	1,274,910
Wood_Paper	Water_Tube_Boiler	1	3	1,390,811
Wood_Paper	Water_Tube_Boiler	2	1	927,207
Wood_Paper	Water_Tube_Boiler	2	2	1,019,928
Wood_Paper	Water_Tube_Boiler	2	3	1,112,649
Wood_Paper	Space_Heat	1	1	15,435
Wood_Paper	Space_Heat	1	2	16,978
Wood_Paper	Space_Heat	1	3	18,522
Wood_Paper	Space_Heat	2	1	12,348
Wood_Paper	Space_Heat	2	2	13,583
Wood_Paper	Space_Heat	2	3	14,817
Wood_Paper	Water_Heat	1	1	1,304
Wood_Paper	Water_Heat	1	2	1,435
Wood_Paper	Water_Heat	1	3	1,565
Wood_Paper	Water_Heat	2	1	1,043
Wood_Paper	Water_Heat	2	2	1,148
Wood_Paper	Water_Heat	2	3	1,252
Wood_Paper	Dryer	1	1	167,147
Wood_Paper	Dryer	1	2	183,861
Wood_Paper	Dryer	1	3	200,576
Wood_Paper	Dryer	2	1	133,717
Wood_Paper	Dryer	2	2	147,089
Wood_Paper	Dryer	2	3	160,461
Wood_Paper	Furnace_Oven_Kiln	1	1	314,913
Wood_Paper	Furnace_Oven_Kiln	1	2	346,404
Wood_Paper	Furnace_Oven_Kiln	1	3	377,896
Wood_Paper	Furnace_Oven_Kiln	2	1	251,931
Wood_Paper	Furnace_Oven_Kiln	2	2	277,124
Wood_Paper	Furnace_Oven_Kiln	2	3	302,317
Wood_Paper	AC	1	1	1,049
Wood_Paper	AC	1	2	1,154
Wood_Paper	AC	1	3	1,258

Wood_Paper	AC	2	1	839
Wood_Paper	AC	2	2	923
Wood_Paper	AC	2	3	1,007
Wood_Paper	Engine	1	1	-
Wood_Paper	Engine	1	2	-
Wood_Paper	Engine	1	3	-
Wood_Paper	Engine	2	1	-
Wood_Paper	Engine	2	2	-
Wood_Paper	Engine	2	3	-
Wood_Paper	Other	1	1	-
Wood_Paper	Other	1	2	-
Wood_Paper	Other	1	3	-
Wood_Paper	Other	2	1	-
Wood_Paper	Other	2	2	-
Wood_Paper	Other	2	3	-
Chemical	Fire_Tube_Boiler	1	1	374,525
Chemical	Fire_Tube_Boiler	1	2	411,977
Chemical	Fire_Tube_Boiler	1	3	449,430
Chemical	Fire_Tube_Boiler	2	1	299,620
Chemical	Fire_Tube_Boiler	2	2	329,582
Chemical	Fire_Tube_Boiler	2	3	359,544
Chemical	Water_Tube_Boiler	1	1	210,716
Chemical	Water_Tube_Boiler	1	2	231,788
Chemical	Water_Tube_Boiler	1	3	252,859
Chemical	Water_Tube_Boiler	2	1	168,573
Chemical	Water_Tube_Boiler	2	2	185,430
Chemical	Water_Tube_Boiler	2	3	202,287
Chemical	Space_Heat	1	1	11,116
Chemical	Space_Heat	1	2	12,228
Chemical	Space_Heat	1	3	13,339
Chemical	Space_Heat	2	1	8,893
Chemical	Space_Heat	2	2	9,782
Chemical	Space_Heat	2	3	10,672
Chemical	Water_Heat	1	1	8,713
Chemical	Water_Heat	1	2	9,584
Chemical	Water_Heat	1	3	10,456
Chemical	Water_Heat	2	1	6,970
Chemical	Water_Heat	2	2	7,668
Chemical	Water_Heat	2	3	8,365
Chemical	Dryer	1	1	8,457
Chemical	Dryer	1	2	9,303
Chemical	Dryer	1	3	10,148
Chemical	Dryer	2	1	6,766
Chemical	Dryer	2	2	7,442
Chemical	Dryer	2	3	8,119
Chemical	Furnace_Oven_Kiln	1	1	190,020
Chemical	Furnace_Oven_Kiln	1	2	209,022
Chemical	Furnace_Oven_Kiln	1	3	228,024
Chemical	Furnace_Oven_Kiln	2	1	152,016
Chemical	Furnace_Oven_Kiln	2	2	167,218
Chemical	Furnace_Oven_Kiln	2	3	182,419
Chemical	AC	1	1	519
Chemical	AC	1	2	571
Chemical	AC	1	3	622
Chemical	AC	2	1	415
Chemical	AC	2	2	456
Chemical	AC	2	3	498
Chemical	Engine	1	1	236
Chemical	Engine	1	2	260
Chemical	Engine	1	3	284
Chemical	Engine	2	1	189
Chemical	Engine	2	2	208
Chemical	Engine	2	3	227
Chemical	Other	1	1	-
Chemical	Other	1	2	-
Chemical	Other	1	3	-
Chemical	Other	2	1	-
Chemical	Other	2	2	-
Chemical	Other	2	3	-
Petroleum	Fire_Tube_Boiler	1	1	461,658
Petroleum	Fire_Tube_Boiler	1	2	507,824

Petroleum	Fire_Tube_Boiler	1	3	553,990
Petroleum	Fire_Tube_Boiler	2	1	369,326
Petroleum	Fire_Tube_Boiler	2	2	406,259
Petroleum	Fire_Tube_Boiler	2	3	443,192
Petroleum	Water_Tube_Boiler	1	1	116,411
Petroleum	Water_Tube_Boiler	1	2	128,052
Petroleum	Water_Tube_Boiler	1	3	139,693
Petroleum	Water_Tube_Boiler	2	1	93,129
Petroleum	Water_Tube_Boiler	2	2	102,442
Petroleum	Water_Tube_Boiler	2	3	111,754
Petroleum	Space_Heat	1	1	4,748
Petroleum	Space_Heat	1	2	5,222
Petroleum	Space_Heat	1	3	5,697
Petroleum	Space_Heat	2	1	3,798
Petroleum	Space_Heat	2	2	4,178
Petroleum	Space_Heat	2	3	4,558
Petroleum	Water_Heat	1	1	6,427
Petroleum	Water_Heat	1	2	7,070
Petroleum	Water_Heat	1	3	7,713
Petroleum	Water_Heat	2	1	5,142
Petroleum	Water_Heat	2	2	5,656
Petroleum	Water_Heat	2	3	6,170
Petroleum	Dryer	1	1	4,158,697
Petroleum	Dryer	1	2	4,574,567
Petroleum	Dryer	1	3	4,990,436
Petroleum	Dryer	2	1	3,326,957
Petroleum	Dryer	2	2	3,659,653
Petroleum	Dryer	2	3	3,992,349
Petroleum	Furnace_Oven_Kiln	1	1	18,414
Petroleum	Furnace_Oven_Kiln	1	2	20,256
Petroleum	Furnace_Oven_Kiln	1	3	22,097
Petroleum	Furnace_Oven_Kiln	2	1	14,731
Petroleum	Furnace_Oven_Kiln	2	2	16,205
Petroleum	Furnace_Oven_Kiln	2	3	17,678
Petroleum	AC	1	1	-
Petroleum	AC	1	2	-
Petroleum	AC	1	3	-
Petroleum	AC	2	1	-
Petroleum	AC	2	2	-
Petroleum	AC	2	3	-
Petroleum	Engine	1	1	30,569
Petroleum	Engine	1	2	33,625
Petroleum	Engine	1	3	36,682
Petroleum	Engine	2	1	24,455
Petroleum	Engine	2	2	26,900
Petroleum	Engine	2	3	29,346
Petroleum	Other	1	1	-
Petroleum	Other	1	2	-
Petroleum	Other	1	3	-
Petroleum	Other	2	1	-
Petroleum	Other	2	2	-
Petroleum	Other	2	3	-
Stone	Fire_Tube_Boiler	1	1	1,591,073
Stone	Fire_Tube_Boiler	1	2	1,750,181
Stone	Fire_Tube_Boiler	1	3	1,909,288
Stone	Fire_Tube_Boiler	2	1	1,272,859
Stone	Fire_Tube_Boiler	2	2	1,400,145
Stone	Fire_Tube_Boiler	2	3	1,527,431
Stone	Water_Tube_Boiler	1	1	316,231
Stone	Water_Tube_Boiler	1	2	347,854
Stone	Water_Tube_Boiler	1	3	379,477
Stone	Water_Tube_Boiler	2	1	252,985
Stone	Water_Tube_Boiler	2	2	278,283
Stone	Water_Tube_Boiler	2	3	303,582
Stone	Space_Heat	1	1	10,255
Stone	Space_Heat	1	2	11,281
Stone	Space_Heat	1	3	12,306
Stone	Space_Heat	2	1	8,204
Stone	Space_Heat	2	2	9,024
Stone	Space_Heat	2	3	9,845
Stone	Water_Heat	1	1	10,249

Stone	Water_Heat	1	2	11,273
Stone	Water_Heat	1	3	12,298
Stone	Water_Heat	2	1	8,199
Stone	Water_Heat	2	2	9,019
Stone	Water_Heat	2	3	9,839
Stone	Dryer	1	1	2,197,157
Stone	Dryer	1	2	2,416,873
Stone	Dryer	1	3	2,636,589
Stone	Dryer	2	1	1,757,726
Stone	Dryer	2	2	1,933,498
Stone	Dryer	2	3	2,109,271
Stone	Furnace_Oven_Kiln	1	1	2,000,409
Stone	Furnace_Oven_Kiln	1	2	2,200,450
Stone	Furnace_Oven_Kiln	1	3	2,400,491
Stone	Furnace_Oven_Kiln	2	1	1,600,327
Stone	Furnace_Oven_Kiln	2	2	1,760,360
Stone	Furnace_Oven_Kiln	2	3	1,920,393
Stone	AC	1	1	12,130
Stone	AC	1	2	13,343
Stone	AC	1	3	14,556
Stone	AC	2	1	9,704
Stone	AC	2	2	10,674
Stone	AC	2	3	11,645
Stone	Engine	1	1	-
Stone	Engine	1	2	-
Stone	Engine	1	3	-
Stone	Engine	2	1	-
Stone	Engine	2	2	-
Stone	Engine	2	3	-
Stone	Other	1	1	-
Stone	Other	1	2	-
Stone	Other	1	3	-
Stone	Other	2	1	-
Stone	Other	2	2	-
Stone	Other	2	3	-
Prim_Metal	Fire_Tube_Boiler	1	1	54,853
Prim_Metal	Fire_Tube_Boiler	1	2	60,338
Prim_Metal	Fire_Tube_Boiler	1	3	65,823
Prim_Metal	Fire_Tube_Boiler	2	1	43,882
Prim_Metal	Fire_Tube_Boiler	2	2	48,270
Prim_Metal	Fire_Tube_Boiler	2	3	52,658
Prim_Metal	Water_Tube_Boiler	1	1	173,303
Prim_Metal	Water_Tube_Boiler	1	2	190,633
Prim_Metal	Water_Tube_Boiler	1	3	207,963
Prim_Metal	Water_Tube_Boiler	2	1	138,642
Prim_Metal	Water_Tube_Boiler	2	2	152,506
Prim_Metal	Water_Tube_Boiler	2	3	166,371
Prim_Metal	Space_Heat	1	1	17,381
Prim_Metal	Space_Heat	1	2	19,119
Prim_Metal	Space_Heat	1	3	20,857
Prim_Metal	Space_Heat	2	1	13,905
Prim_Metal	Space_Heat	2	2	15,295
Prim_Metal	Space_Heat	2	3	16,685
Prim_Metal	Water_Heat	1	1	4,105
Prim_Metal	Water_Heat	1	2	4,515
Prim_Metal	Water_Heat	1	3	4,926
Prim_Metal	Water_Heat	2	1	3,284
Prim_Metal	Water_Heat	2	2	3,612
Prim_Metal	Water_Heat	2	3	3,941
Prim_Metal	Dryer	1	1	8,022
Prim_Metal	Dryer	1	2	8,825
Prim_Metal	Dryer	1	3	9,627
Prim_Metal	Dryer	2	1	6,418
Prim_Metal	Dryer	2	2	7,060
Prim_Metal	Dryer	2	3	7,701
Prim_Metal	Furnace_Oven_Kiln	1	1	4,379,149
Prim_Metal	Furnace_Oven_Kiln	1	2	4,817,064
Prim_Metal	Furnace_Oven_Kiln	1	3	5,254,978
Prim_Metal	Furnace_Oven_Kiln	2	1	3,503,319
Prim_Metal	Furnace_Oven_Kiln	2	2	3,853,651
Prim_Metal	Furnace_Oven_Kiln	2	3	4,203,983

Prim_Metal	AC	1	1	20,859
Prim_Metal	AC	1	2	22,945
Prim_Metal	AC	1	3	25,031
Prim_Metal	AC	2	1	16,687
Prim_Metal	AC	2	2	18,356
Prim_Metal	AC	2	3	20,025
Prim_Metal	Engine	1	1	-
Prim_Metal	Engine	1	2	-
Prim_Metal	Engine	1	3	-
Prim_Metal	Engine	2	1	-
Prim_Metal	Engine	2	2	-
Prim_Metal	Engine	2	3	-
Prim_Metal	Other	1	1	-
Prim_Metal	Other	1	2	-
Prim_Metal	Other	1	3	-
Prim_Metal	Other	2	1	-
Prim_Metal	Other	2	2	-
Prim_Metal	Other	2	3	-
Fab_Metal	Fire_Tube_Boiler	1	1	199,496
Fab_Metal	Fire_Tube_Boiler	1	2	219,446
Fab_Metal	Fire_Tube_Boiler	1	3	239,395
Fab_Metal	Fire_Tube_Boiler	2	1	159,597
Fab_Metal	Fire_Tube_Boiler	2	2	175,557
Fab_Metal	Fire_Tube_Boiler	2	3	191,516
Fab_Metal	Water_Tube_Boiler	1	1	194,739
Fab_Metal	Water_Tube_Boiler	1	2	214,212
Fab_Metal	Water_Tube_Boiler	1	3	233,686
Fab_Metal	Water_Tube_Boiler	2	1	155,791
Fab_Metal	Water_Tube_Boiler	2	2	171,370
Fab_Metal	Water_Tube_Boiler	2	3	186,949
Fab_Metal	Space_Heat	1	1	18,226
Fab_Metal	Space_Heat	1	2	20,049
Fab_Metal	Space_Heat	1	3	21,872
Fab_Metal	Space_Heat	2	1	14,581
Fab_Metal	Space_Heat	2	2	16,039
Fab_Metal	Space_Heat	2	3	17,497
Fab_Metal	Water_Heat	1	1	3,994
Fab_Metal	Water_Heat	1	2	4,393
Fab_Metal	Water_Heat	1	3	4,793
Fab_Metal	Water_Heat	2	1	3,195
Fab_Metal	Water_Heat	2	2	3,515
Fab_Metal	Water_Heat	2	3	3,834
Fab_Metal	Dryer	1	1	18,997
Fab_Metal	Dryer	1	2	20,896
Fab_Metal	Dryer	1	3	22,796
Fab_Metal	Dryer	2	1	15,197
Fab_Metal	Dryer	2	2	16,717
Fab_Metal	Dryer	2	3	18,237
Fab_Metal	Furnace_Oven_Kiln	1	1	686,883
Fab_Metal	Furnace_Oven_Kiln	1	2	755,571
Fab_Metal	Furnace_Oven_Kiln	1	3	824,260
Fab_Metal	Furnace_Oven_Kiln	2	1	549,507
Fab_Metal	Furnace_Oven_Kiln	2	2	604,457
Fab_Metal	Furnace_Oven_Kiln	2	3	659,408
Fab_Metal	AC	1	1	1,899
Fab_Metal	AC	1	2	2,089
Fab_Metal	AC	1	3	2,279
Fab_Metal	AC	2	1	1,519
Fab_Metal	AC	2	2	1,671
Fab_Metal	AC	2	3	1,823
Fab_Metal	Engine	1	1	-
Fab_Metal	Engine	1	2	-
Fab_Metal	Engine	1	3	-
Fab_Metal	Engine	2	1	-
Fab_Metal	Engine	2	2	-
Fab_Metal	Engine	2	3	-
Fab_Metal	Other	1	1	-
Fab_Metal	Other	1	2	-
Fab_Metal	Other	1	3	-
Fab_Metal	Other	2	1	-
Fab_Metal	Other	2	2	-

Fab_Metal	Other	2	3	-
Transport	Fire_Tube_Boiler	1	1	27,156
Transport	Fire_Tube_Boiler	1	2	29,871
Transport	Fire_Tube_Boiler	1	3	32,587
Transport	Fire_Tube_Boiler	2	1	21,724
Transport	Fire_Tube_Boiler	2	2	23,897
Transport	Fire_Tube_Boiler	2	3	26,069
Transport	Water_Tube_Boiler	1	1	15,821
Transport	Water_Tube_Boiler	1	2	17,403
Transport	Water_Tube_Boiler	1	3	18,985
Transport	Water_Tube_Boiler	2	1	12,657
Transport	Water_Tube_Boiler	2	2	13,922
Transport	Water_Tube_Boiler	2	3	15,188
Transport	Space_Heat	1	1	10,868
Transport	Space_Heat	1	2	11,955
Transport	Space_Heat	1	3	13,042
Transport	Space_Heat	2	1	8,694
Transport	Space_Heat	2	2	9,564
Transport	Space_Heat	2	3	10,433
Transport	Water_Heat	1	1	3,231
Transport	Water_Heat	1	2	3,554
Transport	Water_Heat	1	3	3,877
Transport	Water_Heat	2	1	2,585
Transport	Water_Heat	2	2	2,843
Transport	Water_Heat	2	3	3,102
Transport	Dryer	1	1	81,394
Transport	Dryer	1	2	89,533
Transport	Dryer	1	3	97,673
Transport	Dryer	2	1	65,115
Transport	Dryer	2	2	71,627
Transport	Dryer	2	3	78,138
Transport	Furnace_Oven_Kiln	1	1	139,512
Transport	Furnace_Oven_Kiln	1	2	153,464
Transport	Furnace_Oven_Kiln	1	3	167,415
Transport	Furnace_Oven_Kiln	2	1	111,610
Transport	Furnace_Oven_Kiln	2	2	122,771
Transport	Furnace_Oven_Kiln	2	3	133,932
Transport	AC	1	1	518
Transport	AC	1	2	570
Transport	AC	1	3	621
Transport	AC	2	1	414
Transport	AC	2	2	456
Transport	AC	2	3	497
Transport	Engine	1	1	2,575
Transport	Engine	1	2	2,832
Transport	Engine	1	3	3,090
Transport	Engine	2	1	2,060
Transport	Engine	2	2	2,266
Transport	Engine	2	3	2,472
Transport	Other	1	1	-
Transport	Other	1	2	-
Transport	Other	1	3	-
Transport	Other	2	1	-
Transport	Other	2	2	-
Transport	Other	2	3	-
Misc	Fire_Tube_Boiler	1	1	50,324
Misc	Fire_Tube_Boiler	1	2	55,356
Misc	Fire_Tube_Boiler	1	3	60,388
Misc	Fire_Tube_Boiler	2	1	40,259
Misc	Fire_Tube_Boiler	2	2	44,285
Misc	Fire_Tube_Boiler	2	3	48,311
Misc	Water_Tube_Boiler	1	1	35,392
Misc	Water_Tube_Boiler	1	2	38,931
Misc	Water_Tube_Boiler	1	3	42,470
Misc	Water_Tube_Boiler	2	1	28,313
Misc	Water_Tube_Boiler	2	2	31,145
Misc	Water_Tube_Boiler	2	3	33,976
Misc	Space_Heat	1	1	7,731
Misc	Space_Heat	1	2	8,504
Misc	Space_Heat	1	3	9,277
Misc	Space_Heat	2	1	6,185

Misc	Space_Heat	2	2	6,803
Misc	Space_Heat	2	3	7,422
Misc	Water_Heat	1	1	2,224
Misc	Water_Heat	1	2	2,446
Misc	Water_Heat	1	3	2,669
Misc	Water_Heat	2	1	1,779
Misc	Water_Heat	2	2	1,957
Misc	Water_Heat	2	3	2,135
Misc	Dryer	1	1	61,610
Misc	Dryer	1	2	67,771
Misc	Dryer	1	3	73,932
Misc	Dryer	2	1	49,288
Misc	Dryer	2	2	54,217
Misc	Dryer	2	3	59,145
Misc	Furnace_Oven_Kiln	1	1	341,739
Misc	Furnace_Oven_Kiln	1	2	375,913
Misc	Furnace_Oven_Kiln	1	3	410,087
Misc	Furnace_Oven_Kiln	2	1	273,391
Misc	Furnace_Oven_Kiln	2	2	300,731
Misc	Furnace_Oven_Kiln	2	3	328,070
Misc	AC	1	1	2,879
Misc	AC	1	2	3,167
Misc	AC	1	3	3,455
Misc	AC	2	1	2,303
Misc	AC	2	2	2,534
Misc	AC	2	3	2,764
Misc	Engine	1	1	5,988
Misc	Engine	1	2	6,587
Misc	Engine	1	3	7,186
Misc	Engine	2	1	4,790
Misc	Engine	2	2	5,270
Misc	Engine	2	3	5,749
Misc	Other	1	1	-
Misc	Other	1	2	-
Misc	Other	1	3	-
Misc	Other	2	1	-
Misc	Other	2	2	-
Misc	Other	2	3	-

Southern California Gas Company
Industrial G10
Employment Forecast (in thousands)

YEAR	Mining	Food	Textile	Wood_Paper	Chemical	Petroleum	Stone	Primary_Metal	Fabricated_Metal	Transportation	Miscellaneous	Total
2017	16.1635	129.0636	9.0808	30.6771	50.7492	8.0165	18.1570	11.0987	86.1073	75.9911	299.9837	735.0885
2018	16.6153	130.6648	8.8856	31.0161	51.0104	7.9920	18.6887	11.2117	87.5823	76.1322	302.1372	741.9362
2019	17.2060	132.7147	8.6834	31.5821	51.1966	7.9618	19.1065	11.2872	89.2285	75.4447	305.2977	749.7093
2020	17.4238	134.6093	8.4449	32.1708	51.0426	7.9238	19.3095	11.2859	90.7388	74.6563	305.9301	753.5357
2021	17.6121	135.9931	8.2002	32.7095	50.6828	7.8018	19.4859	11.0731	91.2949	73.9030	305.2132	753.9697
2022	17.9344	137.4453	7.9529	33.1590	50.1418	7.6227	19.6103	10.8372	92.0872	72.5249	304.2996	753.6152
2023	18.0708	138.7979	7.7043	33.7060	49.4854	7.4314	19.5929	10.6260	92.9201	70.1257	303.1287	751.5892
2024	18.1013	140.1412	7.4693	34.2292	48.7821	7.2261	19.5228	10.4595	93.9272	67.6919	302.4777	750.0283
2025	17.9931	141.0514	7.3607	34.6570	48.2606	7.0321	19.4881	10.3260	94.6058	65.8245	301.2659	747.8653

Southern California Gas Company
Industrial G10
Core Industrial Demand Forecast (Mdth)
Average Temperature

Avg Year	Model Output G10-Ind	EE	SGIP	City of Vernon	AMI	C2NC Migration	Final
2017	21,972.3	0.0	0.0	0.0	0.0	0.0	21,972.3
2018	22,291.9	257.0	0.0	79.1	1.3	517.1	21,437.5
2019	22,535.4	502.6	0.0	158.2	2.4	517.1	21,355.2
2020	22,675.6	778.9	0.1	237.2	2.4	517.1	21,140.0
2021	22,683.7	1,085.9	0.1	316.3	2.4	517.1	20,762.0
2022	22,625.7	1,387.8	0.1	395.4	2.4	517.1	20,323.1
2023	22,319.7	1,710.1	0.1	395.4	2.3	517.1	19,694.8
2024	22,054.0	2,027.3	0.1	395.4	2.3	517.1	19,111.9
2025	21,769.3	2,339.4	0.2	395.4	2.3	517.1	18,515.2

Southern California Gas Company
Industrial G10
Core Industrial Demand Forecast (Mdth)
Cold Temperature

Cold YEAR	Model Output G10-Ind	EE	SGIP	City of Vernon	AMI	C2NC Migration	Final
2017	22,508.24	0.0	0.0	0.0	0.0	0.0	22,508.2
2018	22,835.60	257.0	0.0	79.1	1.3	517.1	21,981.1
2019	23,085.02	502.6	0.0	158.2	2.4	517.1	21,904.7
2020	23,228.67	778.9	0.1	237.2	2.4	517.1	21,693.0
2021	23,236.93	1,085.9	0.1	316.3	2.4	517.1	21,315.2
2022	23,177.52	1,387.8	0.1	395.4	2.4	517.1	20,874.9
2023	22,864.06	1,710.1	0.1	395.4	2.4	517.1	20,239.1
2024	22,591.89	2,027.3	0.1	395.4	2.4	517.1	19,649.8
2025	22,300.21	2,339.4	0.2	395.4	2.3	517.1	19,046.0

Southern California Gas Company
Industrial G10
Core Industrial Demand Forecast (Mdth)
Hot Temperature

Hot

YEAR	Model Output G10-Ind	EE	SGIP	City of Vernon	AMI	C2NC Migration	Final
2017	21,436.4	0.0	0.0	0.0	0.0	0.0	21,436.4
2018	21,748.2	257.0	0.0	79.1	1.2	517.1	20,893.8
2019	21,985.8	502.6	0.0	158.2	2.3	517.1	20,805.6
2020	22,122.6	778.9	0.1	237.2	2.3	517.1	20,587.0
2021	22,130.4	1,085.9	0.1	316.3	2.3	517.1	20,208.8
2022	22,073.9	1,387.8	0.1	395.4	2.3	517.1	19,771.3
2023	21,775.3	1,710.1	0.1	395.4	2.3	517.1	19,150.5
2024	21,516.1	2,027.3	0.1	395.4	2.3	517.1	18,574.1
2025	21,238.3	2,339.4	0.2	395.4	2.2	517.1	17,984.3

Southern California Gas Company
Industrial G10
Core Industrial Demand Forecast (Mdth)
Base Temperature

Base

YEAR	Model Output G10-Ind	EE	SGIP	City of Vernon	AMI	C2NC Migration	Final
2017	19,390.7	0.0	0.0	0.0	0.0	0.0	19,390.7
2018	19,672.7	257.0	0.0	79.1	1.1	517.1	18,818.4
2019	19,887.5	502.6	0.0	158.2	2.1	517.1	18,707.6
2020	20,011.3	778.9	0.1	237.2	2.1	517.1	18,476.0
2021	20,018.4	1,085.9	0.1	316.3	2.1	517.1	18,097.0
2022	19,967.2	1,387.8	0.1	395.4	2.1	517.1	17,664.9
2023	19,697.2	1,710.1	0.1	395.4	2.1	517.1	17,072.6
2024	19,462.7	2,027.3	0.1	395.4	2.0	517.1	16,520.9
2025	19,211.4	2,339.4	0.2	395.4	2.0	517.1	15,957.6

Non Residential Core
NGV Forecast

SoCalGas G-NGV Forecast Description of forecast volumes and meters

Table 1 - SoCalGas Volume Forecast Growth						
Years	Volumes				G-NGV Meters	
	Compressed		Uncompressed			
	MM CCF		MM CCF			
2013	2.3		111.5			
2014	2.2		119.9			
2015	2.3		125.2			
2016	2.3		131.1			
2017	2.8		137.6	Historical value		
2018	3.1		145.0			
2019	3.4		152.9			
2020	3.7		161.1			
2021	4.1		169.8			
2022	4.4		179.0			
2023	4.8		188.6			
2024	5.3		198.8			
2025	5.7		209.5			
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Table 2 - SoCalGas Monthly Volumes													
Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Compressed Volumes - Total (M decatherms)													
2017	21	19	23	21	25	24	24	27	26	28	27	28	292
2018	23	21	25	24	27	26	27	30	28	31	29	30	320
2019	25	23	27	26	30	28	29	33	31	34	32	33	351
2020	27	25	30	28	33	31	32	36	34	37	35	36	384
2021	29	27	33	31	36	34	35	39	37	41	39	40	420
2022	32	29	36	34	39	37	38	43	40	44	42	43	458
2023	35	32	39	37	42	40	42	46	44	48	46	47	500
2024	38	35	42	40	46	44	46	51	48	53	50	52	545
2025	41	38	46	44	51	48	50	55	53	58	55	57	595
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Workpaper NGV-1 (5)

2017	12	12	15	14	16	15	16	18	17	18	18	19	191
2018	13	13	17	15	18	16	18	20	19	20	20	20	210
2019	15	15	18	17	20	18	20	22	21	22	22	23	232
2020	16	16	20	19	22	20	22	24	23	25	24	25	256
2021	18	18	22	21	24	22	24	27	25	27	26	27	282
2022	20	20	25	23	27	24	27	29	28	30	29	30	312
2023	22	22	27	25	29	27	29	32	31	33	32	33	344
2024	24	24	30	28	33	30	32	36	34	37	35	37	379
2025	26	26	33	31	36	33	36	39	38	40	39	41	418
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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Workpaper NGV-1 (4)

Compressed Volumes - Utility Use (M decatherms)

2017	8	7	8	7	8	9	8	9	9	10	9	9	101
2018	9	7	8	8	9	9	9	10	9	11	10	10	110
2019	10	8	9	9	10	10	10	11	10	12	11	11	119
2020	11	9	10	9	11	11	10	12	11	12	12	11	128
2021	12	9	10	10	11	12	11	12	12	13	12	12	137
2022	12	10	11	11	12	13	12	13	12	14	13	13	146
2023	13	11	12	12	13	13	12	14	13	15	14	14	156
2024	14	11	12	12	14	14	13	15	14	16	15	15	166
2025	15	12	13	13	15	15	14	16	15	17	16	16	177
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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Uncompressed Volumes - Total (M Decatherms)														
2017	1,111	1,052	1,220	1,129	1,227	1,172	1,163	1,270	1,218	1,308	1,205	1,169	14,244
2018	1,171	1,108	1,286	1,190	1,293	1,235	1,226	1,339	1,283	1,378	1,270	1,233	15,013
2019	1,234	1,168	1,355	1,254	1,363	1,302	1,292	1,411	1,353	1,453	1,339	1,299	15,823
2020	1,301	1,231	1,428	1,322	1,437	1,372	1,362	1,487	1,426	1,531	1,411	1,369	16,677
2021	1,371	1,298	1,505	1,393	1,514	1,446	1,436	1,567	1,503	1,614	1,487	1,443	17,577
2022	1,445	1,368	1,587	1,468	1,596	1,524	1,513	1,652	1,584	1,701	1,567	1,521	18,526
2023	1,523	1,441	1,672	1,548	1,682	1,607	1,595	1,741	1,669	1,793	1,652	1,603	19,526
2024	1,605	1,519	1,762	1,631	1,773	1,693	1,681	1,835	1,759	1,889	1,741	1,690	20,580
2025	1,692	1,601	1,858	1,719	1,869	1,785	1,772	1,934	1,854	1,991	1,835	1,781	21,691
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Uncompressed Volumes - Utility Procurement Customers (M Decatherms)													
2017	629	596	688	635	695	666	663	678	648	689	636	605	7,828
2018	663	628	725	670	733	702	699	715	682	726	670	637	8,250
2019	699	662	764	706	772	740	737	753	719	765	706	672	8,695
2020	737	697	805	744	814	780	777	794	758	807	745	708	9,165
2021	777	735	848	784	858	822	819	837	799	850	785	746	9,659
2022	819	775	894	826	904	866	863	882	842	896	827	786	10,181
2023	863	816	942	871	953	913	909	930	888	944	872	829	10,730
2024	909	860	993	918	1,004	962	958	980	936	995	919	873	11,309
2025	958	907	1,047	968	1,059	1,014	1,010	1,033	986	1,049	968	921	11,920
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Uncompressed Volumes - Customer Owned Gas (M Decatherms)													
2017	482	456	532	494	532	506	500	592	570	619	569	565	6,417
2018	508	481	561	520	561	533	527	624	601	652	600	595	6,763
2019	535	507	591	548	591	562	556	657	633	687	632	627	7,128
2020	564	534	623	578	623	593	585	693	667	724	666	661	7,513
2021	595	563	657	609	657	625	617	730	703	764	702	697	7,918
2022	627	593	692	642	692	658	650	770	741	805	740	735	8,346
2023	660	625	730	677	729	694	686	811	781	848	780	774	8,796
2024	696	659	769	713	769	731	723	855	824	894	822	816	9,271
2025	734	694	811	752	810	771	762	901	868	942	867	860	9,771
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4. Source

Historical monthly throughput extracted from Data Warehouse.

Workpaper NGV-4

Unit Conversions for Uncompressed and compressed volumes

Table 1 - therms per CCF Unit Conversion Calculation			
Description	SoCalGas 2017 Volumes		
	therms	CCF	therms/CCF
Compressed	2,916,061	2,815,325	1.03578
Uncompressed	144,183,651	139,283,941	1.03518

1. Title - Forecasted Volume Growth Rates

2. Description - Uncompressed and compressed volume growth rates

3. Data

Table 1 - Historical Annual Growth Rates		
Historical Period	Uncompressed Annual Growth Rate	
	SoCalGas	SDG&E
5-Year (2013-2017)	5.40%	7.1%

Table 2 - Compressed Volumes - Public Use Annual Growth Rate		
Description	Units	Value
Price Elasticity of Demand	-	(0.43)
2017 U ility CNG Station Sales	GGEs	1,801,319
2017 Utility CNG Station Revenue	$ per year	$4,202,168
2017 Utility CNG Station Average Pump Price	$ per GGE	$2.33
Estimated Utility LCFS Credit	$ per GGE	($0.56)
Compressed Volumes - Public Use Annual Growth Rate	-	10.32%

Table 3 - Utility Fleet Forecast		
Description	SoCalGas	SDG&E
Current Fleet	1,005	89
Annual Fleet Addition	90	2
2018	1,005	89
2019	1,095	91
2020	1,185	93
2021	1,275	95
2022	1,365	97

4. Sources

Table 2 short run price elasticity of demand for diesel fuel taken from "The demand for road diesel in Canada" by Philippe Barla, et al., published in Energy Economics Volume 43, May 2014, Pages 316-322, Table 2 public access CNG station revenue and sales taken from Altametrics database, Table 2 estimated LCFS credit is based on an assumed $140 per LCFS credit sale price and annual LCFS credit sales of ~7,400 LCFS credits, and Table 3 utility fleet information provided by Nicholas Soar (SoCalGas) and Clinton Marsh (SDG&E) on XXX via XXX

Non Residential Core
EXCHANGE Volumes

The Master Exchange Agreement (MEA) was made and entered into on the 1st day of March 1990 by and between Pacific Gas and Electric Company (PG&E) and Southern California Gas Company (SoCalGAs). The MEA sets the terms and conditions of any delivery or redelivery of natural gas for standby or for ongoing deliveries. Each delivery point and each redelivery point is specified on the exchange tap information sheet and listed on the exchange tap information summary sheet.

For the purposes of the forecast, the monthly exchange volumes for SoCalGas deliveries to PG&E and PG&E deliveries to SoCalGas at various exchange taps were tracked. The last three years of historical exchange deliveries formed the basis for the exchange forecast. The exchange taps that were tracked are as follows:

SoCalGas to PGE	**PGE to SoCalGas**
Zone 1	**Zone 1**
Topock	Topock
	Needles
zone 2	**Zone 2**
Pisgah	Needles
EOR	**EOR**
Arco (Texaco Exploration 6'99)	EOR Redelivery
Rio Bravo	
Chevron	
Dexzel	
Oxy USA	
Zone 3	**Zone 3**
Bakersfield(stock & allen)	Baksfld(STOCK)
Fellows	Monolith
Maricopa	lamont
Taft (lincoln&ash)	Kettleman
Kern River Intertie/Bakersfield (L202) & Bakersfield (L7309)	Buttonwillow
Oxy USA #11	Bakersfld(palm & west)
Sullivan Road	Taft(lincoln&date)
Zone 4	**Zone 4**
Adelaida	Atascadero
Creston	lamont
Selma area	Templeton
Shandon	Arigo (part of San Joaquin)
Unocal Shandon	San Joaquin-Floral& sj
	Raisin City-tap 111
	Raisin City-tap 138
	Morrow bay
	Other Creston

SOURCE	DELCODE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
			0.16880411	0.119687	0.091203	0.066224	0.054049	0.048797	0.034334	0.042392	0.056646	0.061454	0.087114	0.169297	
EXCH	X	2018	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2019	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2020	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2021	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2022	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2023	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2024	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2025	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2026	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2027	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2028	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2029	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2030	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2031	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2032	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2033	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2034	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00
EXCH	X	2035	51.82	36.74	28.00	20.33	16.59	14.98	10.54	13.01	17.39	18.87	26.74	51.97	307.00

Non Residential Core Brokerage Fee Study

Brokerage Fee Summary

			TCAP Gas Purchases		
Current Brokerage Fee	0.20	cents per therm	SoCalGas Core (MTherms)	3,290,999	core throughput =3,646,701
Proposed Brokerage Fee (SoCalGas)	0.184	cents per therm	SDG&E Core (MTherms)	473,212	core throughput=502,042
Proposed Brokerage Fee (SoCalGas+SDG&E)	0.207	cents per therm	Total SCG & SDG&E	3,764,211	

Total Cost Estimate

Difference

	Labor	NonLabor	Overheads	Direct Cost	Rent	Total
Gas Acquisition	$2,729,392	$246,766	$2,328,810	$5,304,968	$473,070	$5,778,037
Demand Forecasting	$37,628	$2,770	$31,711	$72,109	$9,330	$81,439
Case Management	$13,724	$2,094	$26,563	$42,380	$3,022	$45,402
Regulatory Tariff	$16,544	$7,594	$8,066	$32,204	$2,628	$34,832
Human Resources	$16,428	$642	$5,609	$22,680	$2,102.53	$24,782
Law	$60,875	$5,479	$38,351	$104,705	$1,503.61	$106,209
	$2,874,591	$265,346	$2,439,109	$5,579,045	$491,657	$6,070,702

	Rate Base	Return & Tax	Total
SoCalGas Commodity-Related Cash Working Capital	$12,949,920	11.73%	$1,519,026
SDG&E Commodity-Related Cash Working Capital	$1,768,815	11.59%	$205,006
Total			$7,794,733

(Costs in $000)	2017		2010	2006
Gas Procurement	$	5,778	$6,168	$6,095
Sales & Supply Forecasting	$	81	$149	$131
Reg Affairs+Law+HR	$	166	$160	$160
	$6,025		**$6,477**	**$6,386**

Rent Estimate

	% Labor	Sq. Ft.		
Gas Acquisition	#N/A	13,578	36	persons
Demand Forecasting	71.00%	268		
Case Management	23.00%	87		
Regulatory Tariff	20.00%	75		
Human Resources	16.00%	60		
Law	11.44%	43	377	Avg. Chargeable Sq. Ft. per person
		14,112	$35	Rent All-Inconclusive Rate ($ per SqFt)

Labor to NonLabor and Overheads Ratio

	Labor	NonLabor Ratio	Overheads Ratio
Except Gas Acq and Law	$84,324	$13,101	$71,948
		15.54%	85.32%

Chargeable Square Feet

	CSF	Persons	CSF/Person
2200-0838 hr	6,797	17	400
2200-2309 tariff	3,584	3	1,195
2100-3427 case mgmt	690	7	99
2100-2308 fcst	1,753	7	250
	12,824	34	377

Non Residential Core
GAS PRICE Forecast

Gas Price Forecasts Current $/MMBtu

Consistent with the prior forecasts, the gas price forecast was developed using a combination of market prices and fundamental forecasts. Gas futures prices from S&P Global (Platts') were used to generate the SoCalGas border prices through December 2022. The forecast for 2023 and 2024 reflect a blending of market and fundamental prices, with declining weights for market prices over the two year period. For 2025 and beyond, the gas price forecast is a blend of market price fundamentals. Fundamentals were generated as an average of the forecast developed by the CEC and various independent consultants.

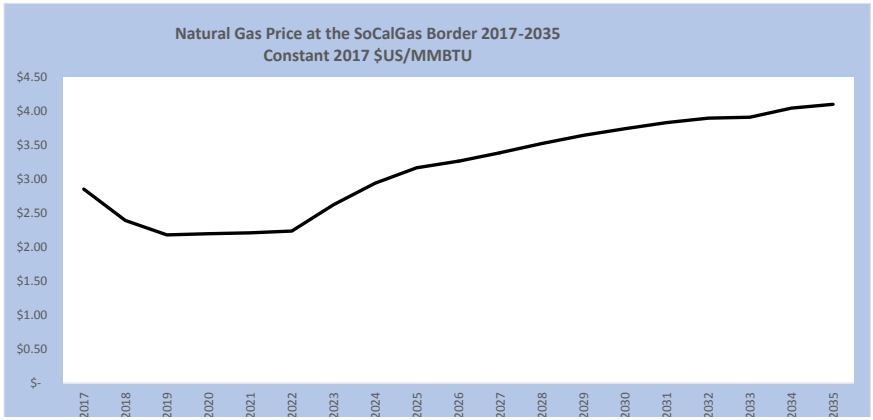
Historical Recorded Prices Reported Through February 2018.

SoCal Border

Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035

Current $/MMbtu

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Nominal (Average) Price	Real (Average) Price (2017 Constant $)
2011	**4.35**	**4.17**	**3.91**	**4.23**	**4.24**	**4.55**	**4.42**	**4.17**	**4.14**	**3.53**	**3.5**	**3.48**	4.06	
2012	$ 2.92	$ 2.74	$ 2.30	$ 2.22	$ 2.46	$ 2.59	$ 2.91	$ 2.96	$ 3.07	$ 3.53	$ 3.66	$ 3.52	$ 2.91	
2013	$ 3.53	$ 3.52	$ 3.86	$ 4.11	$ 4.03	$ 3.82	$ 3.76	$ 3.55	$ 3.73	$ 3.75	$ 3.69	$ 4.62	$ 3.83	$ 4.16
2014	$ 4.64	$ 6.57	$ 4.98	$ 4.66	$ 4.64	$ 4.72	$ 4.34	$ 4.13	$ 4.09	$ 3.82	$ 4.16	$ 3.49	$ 4.52	$ 4.82
2015	$ 2.96	$ 2.62	$ 2.55	$ 2.42	$ 2.72	$ 2.75	$ 2.91	$ 2.85	$ 2.69	$ 2.39	$ 2.18	$ 2.22	$ 2.61	$ 2.75
2016	$ 2.36	$ 1.85	$ 1.58	$ 1.77	$ 1.80	$ 2.49	$ 2.83	$ 2.80	$ 2.81	$ 2.75	$ 2.33	$ 3.57	$ 2.41	$ 2.46
2017	$ 3.34	$ 2.72	$ 2.62	$ 2.81	$ 2.85	$ 2.76	$ 2.79	$ 2.90	$ 2.80	$ 2.75	$ 2.86	$ 3.02	$ 2.85	$ 2.85
2018	$ 3.11	$ 2.45	$ 2.39	$ 2.19	$ 2.15	$ 2.26	$ 2.46	$ 2.58	$ 2.38	$ 2.25	$ 2.30	$ 2.85	$ 2.45	$ 2.39
2019	$ 2.84	$ 2.76	$ 2.39	$ 1.95	$ 1.93	$ 1.96	$ 2.22	$ 2.22	$ 2.04	$ 2.00	$ 2.44	$ 2.67	$ 2.28	$ 2.18
2020	$ 2.73	$ 2.69	$ 2.57	$ 2.04	$ 2.11	$ 2.15	$ 2.34	$ 2.33	$ 2.14	$ 2.08	$ 2.49	$ 2.69	$ 2.36	$ 2.20
2021	$ 2.79	$ 2.75	$ 2.73	$ 2.15	$ 2.14	$ 2.17	$ 2.36	$ 2.39	$ 2.23	$ 2.16	$ 2.59	$ 2.78	$ 2.44	$ 2.21
2022	$ 2.86	$ 2.83	$ 2.81	$ 2.23	$ 2.23	$ 2.26	$ 2.51	$ 2.51	$ 2.33	$ 2.26	$ 2.66	$ 2.85	$ 2.53	$ 2.24
2023	$ 3.24	$ 3.06	$ 2.96	$ 2.73	$ 2.73	$ 2.88	$ 2.99	$ 3.13	$ 3.01	$ 3.03	$ 3.10	$ 3.62	$ 3.04	$ 2.62
2024	$ 3.66	$ 3.40	$ 3.27	$ 3.19	$ 3.17	$ 3.33	$ 3.48	$ 3.62	$ 3.55	$ 3.52	$ 3.53	$ 4.16	$ 3.49	$ 2.94
2025	$ 4.21	$ 3.83	$ 3.65	$ 3.65	$ 3.58	$ 3.71	$ 3.85	$ 3.95	$ 3.86	$ 3.78	$ 3.75	$ 4.37	$ 3.85	$ 3.17
2026	$ 4.43	$ 4.04	$ 3.85	$ 3.86	$ 3.78	$ 3.91	$ 4.05	$ 4.16	$ 4.07	$ 3.99	$ 3.96	$ 4.59	$ 4.06	$ 3.26
2027	$ 4.70	$ 4.30	$ 4.10	$ 4.11	$ 4.02	$ 4.15	$ 4.30	$ 4.41	$ 4.32	$ 4.24	$ 4.20	$ 4.85	$ 4.31	$ 3.39
2028	$ 4.98	$ 4.58	$ 4.38	$ 4.38	$ 4.28	$ 4.41	$ 4.56	$ 4.68	$ 4.59	$ 4.50	$ 4.47	$ 5.14	$ 4.58	$ 3.52
2029	$ 5.26	$ 4.84	$ 4.63	$ 4.63	$ 4.53	$ 4.67	$ 4.83	$ 4.94	$ 4.86	$ 4.77	$ 4.73	$ 5.42	$ 4.84	$ 3.64
2030	$ 5.51	$ 5.08	$ 4.86	$ 4.87	$ 4.76	$ 4.90	$ 5.06	$ 5.18	$ 5.10	$ 5.00	$ 4.96	$ 5.68	$ 5.08	$ 3.74
2031	$ 5.76	$ 5.31	$ 5.09	$ 5.09	$ 4.98	$ 5.12	$ 5.29	$ 5.41	$ 5.34	$ 5.23	$ 5.19	$ 5.93	$ 5.31	$ 3.83
2032	$ 5.97	$ 5.52	$ 5.28	$ 5.29	$ 5.18	$ 5.32	$ 5.49	$ 5.61	$ 5.55	$ 5.44	$ 5.39	$ 6.15	$ 5.52	$ 3.90
2033	$ 6.11	$ 5.64	$ 5.40	$ 5.42	$ 5.30	$ 5.45	$ 5.63	$ 5.75	$ 5.69	$ 5.58	$ 5.52	$ 6.30	$ 5.65	$ 3.91
2034	$ 6.44	$ 5.96	$ 5.71	$ 5.73	$ 5.60	$ 5.75	$ 5.94	$ 6.06	$ 6.01	$ 5.89	$ 5.83	$ 6.63	$ 5.96	$ 4.04
2035	$ 6.66	$ 6.17	$ 5.91	$ 5.93	$ 5.80	$ 5.96	$ 6.15	$ 6.27	$ 6.22	$ 6.10	$ 6.04	$ 6.86	$ 6.17	$ 4.10



San Juan Basin

Historical Recorded Prices Reported Through February 2018.
Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 2.64	$ 2.48	$ 2.05	$ 1.84	$ 2.24	$ 2.31	$ 2.74	$ 2.74	$ 2.73	$ 3.27	$ 3.35	$ 3.25	$ 2.64
2013	$ 3.34	$ 3.26	$ 3.67	$ 3.94	$ 3.86	$ 3.66	$ 3.50	$ 3.31	$ 3.51	$ 3.54	$ 3.50	$ 4.43	$ 3.63
2014	$ 4.52	$ 6.49	$ 4.72	$ 4.46	$ 4.38	$ 4.48	$ 4.01	$ 3.85	$ 3.83	$ 3.64	$ 4.00	$ 3.32	$ 4.31
2015	$ 2.87	$ 2.52	$ 2.46	$ 2.31	$ 2.58	$ 2.59	$ 2.73	$ 2.67	$ 2.54	$ 2.22	$ 2.02	$ 1.98	$ 2.46
2016	$ 2.25	$ 1.78	$ 1.51	$ 1.70	$ 1.72	$ 2.36	$ 2.59	$ 2.60	$ 2.71	$ 2.64	$ 2.24	$ 3.46	$ 2.30
2017	$ 3.19	$ 2.59	$ 2.52	$ 2.70	$ 2.75	$ 2.59	$ 2.64	$ 2.60	$ 2.57	$ 2.43	$ 2.56	$ 2.52	$ 2.64
2018	$ 2.95	$ 2.20	$ 2.36	$ 2.47	$ 2.51	$ 2.57	$ 2.61	$ 2.65	$ 2.54	$ 2.50	$ 2.58	$ 2.85	$ 2.56
2019	$ 3.03	$ 2.85	$ 2.73	$ 2.40	$ 2.37	$ 2.42	$ 2.45	$ 2.48	$ 2.38	$ 2.36	$ 2.46	$ 2.74	$ 2.56
2020	$ 2.96	$ 2.80	$ 2.67	$ 2.37	$ 2.36	$ 2.41	$ 2.43	$ 2.46	$ 2.37	$ 2.34	$ 2.44	$ 2.74	$ 2.53
2021	$ 2.97	$ 2.81	$ 2.71	$ 2.43	$ 2.42	$ 2.47	$ 2.49	$ 2.53	$ 2.44	$ 2.41	$ 2.52	$ 2.80	$ 2.58
2022	$ 3.01	$ 2.85	$ 2.76	$ 2.48	$ 2.47	$ 2.52	$ 2.54	$ 2.59	$ 2.50	$ 2.47	$ 2.58	$ 2.87	$ 2.64
2023	$ 3.11	$ 2.96	$ 2.88	$ 2.64	$ 2.64	$ 2.73	$ 2.80	$ 2.88	$ 2.85	$ 2.82	$ 2.90	$ 3.31	$ 2.88
2024	$ 3.53	$ 3.29	$ 3.18	$ 3.10	$ 3.08	$ 3.18	$ 3.29	$ 3.37	$ 3.38	$ 3.31	$ 3.33	$ 3.85	$ 3.33
2025	$ 4.08	$ 3.73	$ 3.56	$ 3.56	$ 3.49	$ 3.56	$ 3.65	$ 3.70	$ 3.69	$ 3.57	$ 3.55	$ 4.06	$ 3.68
2026	$ 4.30	$ 3.94	$ 3.77	$ 3.77	$ 3.69	$ 3.76	$ 3.86	$ 3.91	$ 3.91	$ 3.77	$ 3.76	$ 4.28	$ 3.89
2027	$ 4.57	$ 4.20	$ 4.02	$ 4.02	$ 3.93	$ 4.00	$ 4.10	$ 4.16	$ 4.16	$ 4.02	$ 4.01	$ 4.55	$ 4.14
2028	$ 4.85	$ 4.48	$ 4.29	$ 4.29	$ 4.19	$ 4.26	$ 4.37	$ 4.43	$ 4.43	$ 4.29	$ 4.27	$ 4.83	$ 4.42
2029	$ 5.13	$ 4.74	$ 4.54	$ 4.54	$ 4.44	$ 4.52	$ 4.63	$ 4.69	$ 4.70	$ 4.55	$ 4.53	$ 5.12	$ 4.68
2030	$ 5.38	$ 4.98	$ 4.78	$ 4.78	$ 4.67	$ 4.75	$ 4.86	$ 4.93	$ 4.94	$ 4.79	$ 4.77	$ 5.37	$ 4.92
2031	$ 5.63	$ 5.21	$ 5.00	$ 5.00	$ 4.89	$ 4.97	$ 5.10	$ 5.16	$ 5.17	$ 5.02	$ 4.99	$ 5.62	$ 5.15
2032	$ 5.84	$ 5.41	$ 5.20	$ 5.20	$ 5.09	$ 5.17	$ 5.30	$ 5.36	$ 5.38	$ 5.22	$ 5.19	$ 5.84	$ 5.35
2033	$ 5.98	$ 5.54	$ 5.32	$ 5.33	$ 5.21	$ 5.30	$ 5.44	$ 5.50	$ 5.52	$ 5.36	$ 5.33	$ 5.99	$ 5.48
2034	$ 6.31	$ 5.86	$ 5.63	$ 5.64	$ 5.51	$ 5.60	$ 5.75	$ 5.81	$ 5.84	$ 5.67	$ 5.64	$ 6.33	$ 5.80
2035	$ 6.53	$ 6.06	$ 5.82	$ 5.84	$ 5.71	$ 5.81	$ 5.95	$ 6.02	$ 6.05	$ 5.88	$ 5.84	$ 6.55	$ 6.01

AECO

Historical Recorded Prices Reported Through February 2018.
Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 2.47	$ 2.17	$ 1.82	$ 1.66	$ 2.05	$ 1.90	$ 2.30	$ 2.23	$ 2.37	$ 3.10	$ 3.36	$ 3.20	$ 2.39
2013	$ 3.07	$ 3.04	$ 3.38	$ 3.61	$ 3.54	$ 3.25	$ 2.73	$ 2.33	$ 2.02	$ 3.13	$ 3.26	$ 3.65	$ 3.08
2014	$ 4.03	$ 6.75	$ 5.06	$ 4.52	$ 4.37	$ 4.48	$ 3.92	$ 3.77	$ 3.78	$ 3.51	$ 3.72	$ 3.08	$ 4.25
2015	$ 2.63	$ 2.59	$ 2.58	$ 2.43	$ 2.69	$ 2.45	$ 2.70	$ 2.80	$ 2.75	$ 2.48	$ 2.40	$ 2.16	$ 2.56
2016	$ 2.26	$ 1.72	$ 1.29	$ 1.02	$ 1.18	$ 1.74	$ 2.27	$ 1.94	$ 2.50	$ 2.92	$ 2.58	$ 3.28	$ 2.06
2017	$ 2.79	$ 2.42	$ 2.48	$ 2.67	$ 2.85	$ 2.44	$ 1.71	$ 1.68	$ 1.04	$ 0.77	$ 2.17	$ 1.93	$ 2.08
2018	$ 2.00	$ 1.98	$ 2.23	$ 2.12	$ 2.29	$ 2.19	$ 1.98	$ 1.86	$ 1.67	$ 1.81	$ 2.56	$ 2.46	$ 2.09
2019	$ 2.83	$ 2.74	$ 2.60	$ 2.05	$ 2.15	$ 2.04	$ 1.82	$ 1.69	$ 1.51	$ 1.67	$ 2.43	$ 2.36	$ 2.16
2020	$ 2.76	$ 2.69	$ 2.54	$ 2.01	$ 2.14	$ 2.02	$ 1.81	$ 1.67	$ 1.50	$ 1.65	$ 2.42	$ 2.36	$ 2.13
2021	$ 2.78	$ 2.70	$ 2.58	$ 2.08	$ 2.20	$ 2.09	$ 1.87	$ 1.74	$ 1.57	$ 1.72	$ 2.49	$ 2.42	$ 2.19
2022	$ 2.82	$ 2.74	$ 2.63	$ 2.12	$ 2.25	$ 2.13	$ 1.91	$ 1.80	$ 1.63	$ 1.78	$ 2.56	$ 2.49	$ 2.24
2023	$ 2.92	$ 2.84	$ 2.75	$ 2.28	$ 2.42	$ 2.34	$ 2.17	$ 2.09	$ 1.98	$ 2.13	$ 2.88	$ 2.93	$ 2.48
2024	$ 3.34	$ 3.18	$ 3.05	$ 2.75	$ 2.86	$ 2.79	$ 2.66	$ 2.58	$ 2.51	$ 2.62	$ 3.31	$ 3.47	$ 2.93
2025	$ 3.88	$ 3.61	$ 3.43	$ 3.21	$ 3.27	$ 3.17	$ 3.03	$ 2.91	$ 2.82	$ 2.88	$ 3.53	$ 3.68	$ 3.28
2026	$ 4.10	$ 3.83	$ 3.64	$ 3.42	$ 3.47	$ 3.38	$ 3.23	$ 3.12	$ 3.04	$ 3.08	$ 3.74	$ 3.90	$ 3.50
2027	$ 4.37	$ 4.08	$ 3.89	$ 3.66	$ 3.71	$ 3.62	$ 3.48	$ 3.37	$ 3.29	$ 3.33	$ 3.98	$ 4.16	$ 3.75
2028	$ 4.66	$ 4.36	$ 4.16	$ 3.93	$ 3.97	$ 3.88	$ 3.74	$ 3.64	$ 3.56	$ 3.60	$ 4.25	$ 4.45	$ 4.02
2029	$ 4.93	$ 4.62	$ 4.41	$ 4.19	$ 4.22	$ 4.13	$ 4.01	$ 3.90	$ 3.83	$ 3.86	$ 4.51	$ 4.73	$ 4.28
2030	$ 5.19	$ 4.87	$ 4.65	$ 4.42	$ 4.45	$ 4.36	$ 4.24	$ 4.14	$ 4.07	$ 4.10	$ 4.74	$ 4.99	$ 4.52
2031	$ 5.43	$ 5.10	$ 4.87	$ 4.65	$ 4.67	$ 4.59	$ 4.47	$ 4.37	$ 4.30	$ 4.33	$ 4.97	$ 5.24	$ 4.75
2032	$ 5.65	$ 5.30	$ 5.07	$ 4.85	$ 4.87	$ 4.78	$ 4.67	$ 4.57	$ 4.51	$ 4.53	$ 5.17	$ 5.46	$ 4.95
2033	$ 5.79	$ 5.43	$ 5.19	$ 4.97	$ 4.99	$ 4.92	$ 4.81	$ 4.71	$ 4.65	$ 4.67	$ 5.30	$ 5.61	$ 5.09
2034	$ 6.12	$ 5.75	$ 5.50	$ 5.28	$ 5.29	$ 5.22	$ 5.12	$ 5.02	$ 4.97	$ 4.98	$ 5.61	$ 5.94	$ 5.40
2035	$ 6.34	$ 5.95	$ 5.69	$ 5.48	$ 5.49	$ 5.42	$ 5.33	$ 5.23	$ 5.18	$ 5.19	$ 5.82	$ 6.17	$ 5.61

Permian Basin

Historical Recorded Prices Reported Through February 2018.
Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 2.63	$ 2.48	$ 2.06	$ 1.88	$ 2.32	$ 2.38	$ 2.81	$ 2.79	$ 2.75	$ 3.27	$ 3.36	$ 3.26	$ 2.66
2013	$ 3.32	$ 3.25	$ 3.66	$ 3.98	$ 3.88	$ 3.66	$ 3.51	$ 3.32	$ 3.52	$ 3.53	$ 3.50	$ 4.36	$ 3.63
2014	$ 4.44	$ 6.50	$ 4.65	$ 4.46	$ 4.37	$ 4.47	$ 3.96	$ 3.81	$ 3.82	$ 3.63	$ 3.97	$ 3.26	$ 4.28
2015	$ 2.83	$ 2.51	$ 2.47	$ 2.31	$ 2.57	$ 2.58	$ 2.72	$ 2.67	$ 2.53	$ 2.22	$ 1.98	$ 1.92	$ 2.44
2016	$ 2.20	$ 1.77	$ 1.52	$ 1.70	$ 1.71	$ 2.35	$ 2.59	$ 2.58	$ 2.70	$ 2.64	$ 2.20	$ 3.39	$ 2.28
2017	$ 3.13	$ 2.56	$ 2.50	$ 2.69	$ 2.73	$ 2.60	$ 2.59	$ 2.58	$ 2.57	$ 2.43	$ 2.50	$ 2.40	$ 2.61
2018	$ 2.93	$ 2.08	$ 2.36	$ 2.47	$ 2.49	$ 2.57	$ 2.58	$ 2.63	$ 2.53	$ 2.50	$ 2.53	$ 2.75	$ 2.53
2019	$ 2.97	$ 2.84	$ 2.72	$ 2.40	$ 2.35	$ 2.42	$ 2.42	$ 2.46	$ 2.38	$ 2.36	$ 2.41	$ 2.65	$ 2.53
2020	$ 2.90	$ 2.78	$ 2.67	$ 2.36	$ 2.34	$ 2.41	$ 2.41	$ 2.44	$ 2.36	$ 2.34	$ 2.39	$ 2.65	$ 2.50
2021	$ 2.92	$ 2.79	$ 2.71	$ 2.43	$ 2.41	$ 2.47	$ 2.47	$ 2.51	$ 2.43	$ 2.41	$ 2.47	$ 2.71	$ 2.56
2022	$ 2.96	$ 2.83	$ 2.75	$ 2.47	$ 2.45	$ 2.52	$ 2.51	$ 2.57	$ 2.49	$ 2.47	$ 2.53	$ 2.78	$ 2.61
2023	$ 3.06	$ 2.94	$ 2.87	$ 2.63	$ 2.63	$ 2.73	$ 2.77	$ 2.86	$ 2.84	$ 2.82	$ 2.85	$ 3.22	$ 2.85
2024	$ 3.48	$ 3.27	$ 3.18	$ 3.10	$ 3.07	$ 3.18	$ 3.26	$ 3.35	$ 3.38	$ 3.31	$ 3.28	$ 3.76	$ 3.30
2025	$ 4.02	$ 3.71	$ 3.56	$ 3.56	$ 3.47	$ 3.56	$ 3.63	$ 3.68	$ 3.69	$ 3.57	$ 3.50	$ 3.97	$ 3.66
2026	$ 4.24	$ 3.92	$ 3.76	$ 3.77	$ 3.67	$ 3.76	$ 3.83	$ 3.89	$ 3.90	$ 3.77	$ 3.71	$ 4.19	$ 3.87
2027	$ 4.51	$ 4.18	$ 4.01	$ 4.01	$ 3.92	$ 4.00	$ 4.08	$ 4.14	$ 4.15	$ 4.02	$ 3.96	$ 4.45	$ 4.12
2028	$ 4.80	$ 4.46	$ 4.29	$ 4.28	$ 4.18	$ 4.26	$ 4.34	$ 4.41	$ 4.42	$ 4.29	$ 4.22	$ 4.74	$ 4.39
2029	$ 5.07	$ 4.72	$ 4.54	$ 4.54	$ 4.43	$ 4.52	$ 4.61	$ 4.67	$ 4.69	$ 4.55	$ 4.48	$ 5.02	$ 4.65
2030	$ 5.33	$ 4.96	$ 4.77	$ 4.77	$ 4.66	$ 4.75	$ 4.84	$ 4.91	$ 4.93	$ 4.79	$ 4.72	$ 5.28	$ 4.89
2031	$ 5.57	$ 5.19	$ 5.00	$ 5.00	$ 4.88	$ 4.97	$ 5.07	$ 5.14	$ 5.17	$ 5.02	$ 4.94	$ 5.53	$ 5.12
2032	$ 5.79	$ 5.40	$ 5.19	$ 5.20	$ 5.07	$ 5.17	$ 5.27	$ 5.34	$ 5.38	$ 5.22	$ 5.14	$ 5.75	$ 5.33
2033	$ 5.93	$ 5.52	$ 5.31	$ 5.32	$ 5.20	$ 5.30	$ 5.41	$ 5.48	$ 5.52	$ 5.36	$ 5.28	$ 5.90	$ 5.46
2034	$ 6.26	$ 5.84	$ 5.62	$ 5.63	$ 5.50	$ 5.60	$ 5.72	$ 5.79	$ 5.84	$ 5.67	$ 5.59	$ 6.23	$ 5.77
2035	$ 6.48	$ 6.04	$ 5.82	$ 5.83	$ 5.70	$ 5.81	$ 5.93	$ 6.00	$ 6.05	$ 5.88	$ 5.79	$ 6.46	$ 5.98

Kern Delivered

Historical Recorded Prices Reported Through February 2018.
Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 2.90	$ 2.74	$ 2.30	$ 2.21	$ 2.44	$ 2.60	$ 2.87	$ 2.95	$ 3.07	$ 3.55	$ 3.65	$ 3.52	$ 2.90
2013	$ 3.53	$ 3.48	$ 3.86	$ 4.09	$ 4.00	$ 3.78	$ 3.71	$ 3.52	$ 3.69	$ 3.75	$ 3.69	$ 4.73	$ 3.82
2014	$ 4.50	$ 7.00	$ 4.87	$ 4.49	$ 4.39	$ 4.48	$ 3.98	$ 3.80	$ 3.79	$ 3.61	$ 4.03	$ 3.35	$ 4.36
2015	$ 2.82	$ 2.50	$ 2.43	$ 2.29	$ 2.60	$ 2.57	$ 2.69	$ 2.63	$ 2.55	$ 2.21	$ 2.10	$ 2.10	$ 2.46
2016	$ 2.24	$ 1.76	$ 1.51	$ 1.69	$ 1.73	$ 2.32	$ 2.57	$ 2.59	$ 2.70	$ 2.67	$ 2.24	$ 3.48	$ 2.29
2017	$ 3.24	$ 2.61	$ 2.54	$ 2.73	$ 2.78	$ 2.59	$ 2.62	$ 2.61	$ 2.60	$ 2.56	$ 2.71	$ 2.58	$ 2.68
2018	$ 2.98	$ 2.31	$ 2.37	$ 2.48	$ 2.53	$ 2.55	$ 2.59	$ 2.65	$ 2.55	$ 2.58	$ 2.66	$ 2.89	$ 2.59
2019	$ 3.05	$ 2.86	$ 2.74	$ 2.41	$ 2.39	$ 2.40	$ 2.43	$ 2.48	$ 2.39	$ 2.44	$ 2.53	$ 2.78	$ 2.57
2020	$ 2.98	$ 2.80	$ 2.68	$ 2.38	$ 2.38	$ 2.39	$ 2.41	$ 2.46	$ 2.38	$ 2.42	$ 2.52	$ 2.78	$ 2.55
2021	$ 2.99	$ 2.81	$ 2.72	$ 2.44	$ 2.44	$ 2.45	$ 2.47	$ 2.53	$ 2.45	$ 2.49	$ 2.59	$ 2.84	$ 2.60
2022	$ 3.03	$ 2.85	$ 2.77	$ 2.49	$ 2.49	$ 2.50	$ 2.52	$ 2.59	$ 2.51	$ 2.55	$ 2.66	$ 2.91	$ 2.65
2023	$ 3.13	$ 2.96	$ 2.89	$ 2.65	$ 2.66	$ 2.71	$ 2.78	$ 2.88	$ 2.86	$ 2.90	$ 2.98	$ 3.35	$ 2.89
2024	$ 3.55	$ 3.29	$ 3.19	$ 3.11	$ 3.10	$ 3.16	$ 3.27	$ 3.37	$ 3.39	$ 3.39	$ 3.41	$ 3.89	$ 3.34
2025	$ 4.10	$ 3.73	$ 3.57	$ 3.57	$ 3.51	$ 3.54	$ 3.63	$ 3.70	$ 3.70	$ 3.65	$ 3.63	$ 4.10	$ 3.70
2026	$ 4.32	$ 3.94	$ 3.78	$ 3.78	$ 3.71	$ 3.74	$ 3.84	$ 3.91	$ 3.92	$ 3.85	$ 3.84	$ 4.32	$ 3.91
2027	$ 4.59	$ 4.20	$ 4.03	$ 4.03	$ 3.95	$ 3.98	$ 4.08	$ 4.16	$ 4.17	$ 4.10	$ 4.08	$ 4.59	$ 4.16
2028	$ 4.87	$ 4.48	$ 4.30	$ 4.30	$ 4.21	$ 4.24	$ 4.35	$ 4.43	$ 4.44	$ 4.37	$ 4.35	$ 4.87	$ 4.43
2029	$ 5.15	$ 4.74	$ 4.55	$ 4.55	$ 4.46	$ 4.50	$ 4.61	$ 4.69	$ 4.71	$ 4.63	$ 4.61	$ 5.16	$ 4.70
2030	$ 5.40	$ 4.98	$ 4.79	$ 4.79	$ 4.69	$ 4.73	$ 4.84	$ 4.93	$ 4.95	$ 4.87	$ 4.84	$ 5.41	$ 4.93
2031	$ 5.65	$ 5.21	$ 5.01	$ 5.01	$ 4.91	$ 4.95	$ 5.08	$ 5.16	$ 5.18	$ 5.10	$ 5.07	$ 5.66	$ 5.17
2032	$ 5.86	$ 5.42	$ 5.21	$ 5.21	$ 5.11	$ 5.15	$ 5.28	$ 5.36	$ 5.39	$ 5.30	$ 5.27	$ 5.88	$ 5.37
2033	$ 6.00	$ 5.54	$ 5.33	$ 5.34	$ 5.23	$ 5.28	$ 5.42	$ 5.50	$ 5.53	$ 5.44	$ 5.40	$ 6.03	$ 5.50
2034	$ 6.33	$ 5.86	$ 5.64	$ 5.65	$ 5.53	$ 5.58	$ 5.73	$ 5.81	$ 5.85	$ 5.75	$ 5.71	$ 6.37	$ 5.82

2035	$ 6.55	$ 6.06	$ 5.83	$ 5.85	$ 5.73	$ 5.79	$ 5.93	$ 6.02	$ 6.06	$ 5.96	$ 5.92	$ 6.59	$ 6.03

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Historical Recorded Prices Reported Through February 2018.
Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 2.80	$ 2.60	$ 2.15	$ 1.93	$ 2.29	$ 2.28	$ 2.75	$ 2.76	$ 2.77	$ 3.40	$ 3.55	$ 3.43	$ 2.72
2013	$ 3.45	$ 3.40	$ 3.77	$ 4.00	$ 3.92	$ 3.68	$ 3.52	$ 3.36	$ 3.53	$ 3.71	$ 3.60	$ 4.54	$ 3.71
2014	$ 4.50	$ 6.91	$ 4.91	$ 4.55	$ 4.45	$ 4.55	$ 4.06	$ 3.87	$ 3.88	$ 3.67	$ 4.08	$ 3.40	$ 4.40
2015	$ 2.85	$ 2.53	$ 2.47	$ 2.33	$ 2.65	$ 2.63	$ 2.75	$ 2.70	$ 2.61	$ 2.27	$ 2.20	$ 2.19	$ 2.51
2016	$ 2.30	$ 1.80	$ 1.57	$ 1.72	$ 1.77	$ 2.38	$ 2.61	$ 2.66	$ 2.74	$ 2.72	$ 2.27	$ 3.50	$ 2.34
2017	$ 3.29	$ 2.65	$ 2.59	$ 2.79	$ 2.84	$ 2.63	$ 2.66	$ 2.68	$ 2.68	$ 2.61	$ 2.75	$ 2.64	$ 2.73
2018	$ 2.78	$ 2.36	$ 2.43	$ 2.53	$ 2.58	$ 2.60	$ 2.63	$ 2.72	$ 2.61	$ 2.63	$ 2.69	$ 2.93	$ 2.62
2019	$ 3.10	$ 2.90	$ 2.79	$ 2.46	$ 2.44	$ 2.45	$ 2.47	$ 2.55	$ 2.45	$ 2.49	$ 2.57	$ 2.82	$ 2.62
2020	$ 3.03	$ 2.84	$ 2.74	$ 2.42	$ 2.43	$ 2.44	$ 2.45	$ 2.53	$ 2.44	$ 2.47	$ 2.55	$ 2.82	$ 2.60
2021	$ 3.05	$ 2.85	$ 2.78	$ 2.49	$ 2.49	$ 2.50	$ 2.51	$ 2.60	$ 2.51	$ 2.54	$ 2.63	$ 2.88	$ 2.65
2022	$ 3.09	$ 2.89	$ 2.82	$ 2.53	$ 2.54	$ 2.55	$ 2.56	$ 2.66	$ 2.57	$ 2.60	$ 2.69	$ 2.95	$ 2.70
2023	$ 3.19	$ 3.00	$ 2.94	$ 2.69	$ 2.71	$ 2.76	$ 2.82	$ 2.95	$ 2.92	$ 2.95	$ 3.01	$ 3.39	$ 2.94
2024	$ 3.61	$ 3.33	$ 3.25	$ 3.16	$ 3.15	$ 3.21	$ 3.31	$ 3.44	$ 3.45	$ 3.44	$ 3.44	$ 3.93	$ 3.39
2025	$ 4.15	$ 3.77	$ 3.63	$ 3.62	$ 3.56	$ 3.59	$ 3.67	$ 3.77	$ 3.76	$ 3.70	$ 3.66	$ 4.14	$ 3.75
2026	$ 4.37	$ 3.98	$ 3.83	$ 3.83	$ 3.76	$ 3.79	$ 3.88	$ 3.98	$ 3.98	$ 3.90	$ 3.87	$ 4.36	$ 3.96
2027	$ 4.64	$ 4.24	$ 4.08	$ 4.07	$ 4.00	$ 4.03	$ 4.12	$ 4.23	$ 4.23	$ 4.15	$ 4.12	$ 4.63	$ 4.21
2028	$ 4.93	$ 4.52	$ 4.36	$ 4.34	$ 4.26	$ 4.29	$ 4.39	$ 4.50	$ 4.50	$ 4.42	$ 4.38	$ 4.91	$ 4.48
2029	$ 5.20	$ 4.78	$ 4.61	$ 4.60	$ 4.51	$ 4.55	$ 4.65	$ 4.76	$ 4.77	$ 4.68	$ 4.64	$ 5.20	$ 4.75
2030	$ 5.46	$ 5.02	$ 4.84	$ 4.83	$ 4.74	$ 4.78	$ 4.88	$ 5.00	$ 5.01	$ 4.92	$ 4.88	$ 5.45	$ 4.98
2031	$ 5.70	$ 5.25	$ 5.07	$ 5.06	$ 4.96	$ 5.00	$ 5.12	$ 5.23	$ 5.24	$ 5.15	$ 5.10	$ 5.70	$ 5.22
2032	$ 5.92	$ 5.46	$ 5.26	$ 5.26	$ 5.16	$ 5.20	$ 5.32	$ 5.43	$ 5.45	$ 5.35	$ 5.30	$ 5.92	$ 5.42
2033	$ 6.06	$ 5.58	$ 5.38	$ 5.38	$ 5.28	$ 5.33	$ 5.46	$ 5.57	$ 5.59	$ 5.49	$ 5.44	$ 6.07	$ 5.55
2034	$ 6.39	$ 5.90	$ 5.69	$ 5.69	$ 5.58	$ 5.63	$ 5.77	$ 5.88	$ 5.91	$ 5.80	$ 5.75	$ 6.41	$ 5.87
2035	$ 6.61	$ 6.10	$ 5.89	$ 5.89	$ 5.78	$ 5.84	$ 5.97	$ 6.09	$ 6.12	$ 6.01	$ 5.95	$ 6.63	$ 6.07

PGE Citigate

Updated March 15, 2018

PG&E G-EG Rates, 2015 GT&S Rate Case

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 3.11	$ 2.92	$ 2.52	$ 2.38	$ 2.74	$ 2.77	$ 3.01	$ 3.03	$ 3.30	$ 3.95	$ 3.83	$ 3.76	$ 3.11
2013	$ 3.67	$ 3.63	$ 4.04	$ 4.19	$ 4.15	$ 3.92	$ 3.82	$ 3.71	$ 3.99	$ 3.98	$ 3.85	$ 4.65	$ 3.97
2014	$ 4.65	$ 6.83	$ 5.23	$ 5.09	$ 5.04	$ 5.11	$ 4.70	$ 4.49	$ 4.43	$ 4.29	$ 4.50	$ 3.82	$ 4.85
2015	$ 3.24	$ 2.95	$ 2.93	$ 2.86	$ 3.19	$ 3.08	$ 3.19	$ 3.17	$ 3.10	$ 2.87	$ 2.69	$ 2.55	$ 2.99
2016	$ 2.60	$ 2.09	$ 1.90	$ 1.95	$ 1.94	$ 2.62	$ 2.98	$ 3.20	$ 3.36	$ 3.25	$ 2.82	$ 3.76	$ 2.71
2017	$ 3.62	$ 3.26	$ 3.14	$ 3.31	$ 3.38	$ 3.12	$ 3.23	$ 3.27	$ 3.29	$ 3.13	$ 3.12	$ 2.92	$ 3.23
2018	$ 2.96	$ 2.70	$ 2.87	$ 2.90	$ 2.93	$ 2.97	$ 3.10	$ 3.28	$ 3.22	$ 3.15	$ 3.15	$ 3.20	$ 3.03
2019	$ 3.42	$ 3.35	$ 3.23	$ 2.83	$ 2.79	$ 2.82	$ 2.94	$ 3.12	$ 3.07	$ 3.02	$ 3.03	$ 3.09	$ 3.06
2020	$ 3.35	$ 3.29	$ 3.18	$ 2.80	$ 2.78	$ 2.80	$ 2.92	$ 3.10	$ 3.05	$ 3.00	$ 3.01	$ 3.09	$ 3.03
2021	$ 3.36	$ 3.30	$ 3.22	$ 2.86	$ 2.85	$ 2.87	$ 2.98	$ 3.17	$ 3.12	$ 3.07	$ 3.09	$ 3.15	$ 3.09
2022	$ 3.40	$ 3.34	$ 3.26	$ 2.91	$ 2.89	$ 2.91	$ 3.03	$ 3.22	$ 3.18	$ 3.13	$ 3.15	$ 3.22	$ 3.14
2023	$ 3.50	$ 3.45	$ 3.38	$ 3.07	$ 3.07	$ 3.12	$ 3.29	$ 3.51	$ 3.53	$ 3.47	$ 3.47	$ 3.72	$ 3.38
2024	$ 3.92	$ 3.78	$ 3.69	$ 3.53	$ 3.51	$ 3.57	$ 3.78	$ 4.01	$ 4.07	$ 3.96	$ 3.90	$ 4.26	$ 3.83
2025	$ 4.47	$ 4.22	$ 4.07	$ 3.99	$ 3.91	$ 3.95	$ 4.14	$ 4.34	$ 4.38	$ 4.22	$ 4.12	$ 4.47	$ 4.19
2026	$ 4.69	$ 4.43	$ 4.27	$ 4.20	$ 4.11	$ 4.16	$ 4.35	$ 4.55	$ 4.59	$ 4.43	$ 4.33	$ 4.70	$ 4.40
2027	$ 4.96	$ 4.69	$ 4.52	$ 4.45	$ 4.36	$ 4.40	$ 4.59	$ 4.79	$ 4.84	$ 4.68	$ 4.58	$ 4.96	$ 4.65
2028	$ 5.24	$ 4.97	$ 4.80	$ 4.72	$ 4.62	$ 4.66	$ 4.86	$ 5.06	$ 5.11	$ 4.94	$ 4.84	$ 5.25	$ 4.92
2029	$ 5.52	$ 5.23	$ 5.05	$ 4.97	$ 4.87	$ 4.91	$ 5.12	$ 5.32	$ 5.38	$ 5.21	$ 5.10	$ 5.53	$ 5.18
2030	$ 5.77	$ 5.47	$ 5.28	$ 5.21	$ 5.10	$ 5.14	$ 5.35	$ 5.56	$ 5.62	$ 5.44	$ 5.34	$ 5.78	$ 5.42
2031	$ 6.02	$ 5.70	$ 5.51	$ 5.43	$ 5.32	$ 5.37	$ 5.59	$ 5.79	$ 5.86	$ 5.67	$ 5.56	$ 6.03	$ 5.65
2032	$ 6.23	$ 5.91	$ 5.70	$ 5.63	$ 5.51	$ 5.56	$ 5.79	$ 6.00	$ 6.07	$ 5.88	$ 5.76	$ 6.26	$ 5.86

2033	$ 6.37	$ 6.03	$ 5.82	$ 5.76	$ 5.64	$ 5.70	$ 5.93	$ 6.13	$ 6.21	$ 6.02	$ 5.90	$ 6.40	$ 5.99
2034	$ 6.70	$ 6.35	$ 6.13	$ 6.07	$ 5.94	$ 6.00	$ 6.24	$ 6.44	$ 6.53	$ 6.33	$ 6.21	$ 6.74	$ 6.31
2035	$ 6.92	$ 6.55	$ 6.33	$ 6.27	$ 6.14	$ 6.20	$ 6.44	$ 6.65	$ 6.74	$ 6.54	$ 6.41	$ 6.97	$ 6.51

NYMEX through 2022; Splice 2023-2024; Blend 2025-2035

Henry Hub **Updated March 15, 2018** Recorded Historical values reported through February 2018.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$2.6829	$2.5241	$2.1800	$1.9413	$2.4326	$2.4257	$2.9345	$2.8465	$2.8263	$3.3155	$3.5177	$3.3445	$ 2.75
2013	$3.3429	$3.3004	$3.8029	$4.1617	$4.0377	$3.8423	$3.6239	$3.4174	$3.6047	$3.6697	$3.6250	$4.2245	$ 3.72
2014	$4.5977	$5.8746	$4.7700	$4.6117	$4.5574	$4.5653	$4.0432	$3.8661	$3.8993	$3.7839	$4.0723	$3.3965	$ 4.34
2015	$2.9916	$2.8232	$2.7929	$2.5840	$2.8287	$2.7533	$2.8206	$2.7626	$2.6473	$2.3258	$2.0717	$1.8648	$ 2.61
2016	$2.2700	$1.9679	$1.6900	$1.8900	$1.8900	$2.5200	$2.7800	$2.7800	$2.9600	$2.9300	$2.4700	$3.5700	$ 2.48
2017	$3.3200	$2.8300	$2.8400	$3.0700	$3.1300	$2.9300	$2.9600	$2.8700	$2.9500	$2.8700	$2.9700	$2.7600	$ 2.96
2018	$3.7100	$2.6600	$2.6100	$2.7500	$2.7800	$2.8200	$2.8600	$2.8700	$2.8500	$2.8600	$2.9000	$3.0200	$ 2.89
2019	$3.1020	$3.0690	$2.9780	$2.6820	$2.6430	$2.6710	$2.7020	$2.7080	$2.6970	$2.7250	$2.7770	$2.9160	$ 2.81
2020	$3.0340	$3.0150	$2.9230	$2.6480	$2.6310	$2.6570	$2.6850	$2.6870	$2.6800	$2.7080	$2.7640	$2.9150	$ 2.78
2021	$3.0470	$3.0240	$2.9640	$2.7140	$2.6970	$2.7200	$2.7450	$2.7550	$2.7500	$2.7760	$2.8360	$2.9780	$ 2.83
2022	$3.0880	$3.0650	$3.0070	$2.7570	$2.7400	$2.7650	$2.7920	$2.8100	$2.8110	$2.8370	$2.9040	$3.0470	$ 2.89
2023	$3.1853	$3.1732	$3.1267	$2.9195	$2.9194	$2.9768	$3.0501	$3.1020	$3.1616	$3.1823	$3.2235	$3.4854	$ 3.13
2024	$3.6082	$3.5087	$3.4328	$3.3835	$3.3570	$3.4300	$3.5417	$3.5952	$3.6976	$3.6707	$3.6522	$4.0252	$ 3.58
2025	$4.1518	$3.9398	$3.8107	$3.8431	$3.7620	$3.8095	$3.9070	$3.9274	$4.0081	$3.9317	$3.8743	$4.2351	$ 3.93
2026	$4.3749	$4.1549	$4.0195	$4.0510	$3.9645	$4.0120	$4.1138	$4.1360	$4.2200	$4.1396	$4.0810	$4.4585	$ 4.14
2027	$4.6406	$4.4116	$4.2689	$4.2989	$4.2056	$4.2528	$4.3594	$4.3840	$4.4718	$4.3865	$4.3268	$4.7237	$ 4.39
2028	$4.9283	$4.6907	$4.5400	$4.5677	$4.4669	$4.5131	$4.6245	$4.6519	$4.7436	$4.6531	$4.5927	$5.0098	$ 4.67
2029	$5.2044	$4.9515	$4.7921	$4.8228	$4.7170	$4.7672	$4.8855	$4.9139	$5.0113	$4.9157	$4.8509	$5.2929	$ 4.93
2030	$5.4573	$5.1956	$5.0291	$5.0587	$4.9465	$4.9967	$5.1196	$5.1503	$5.2514	$5.1512	$5.0851	$5.5458	$ 5.17
2031	$5.7012	$5.4257	$5.2513	$5.2838	$5.1674	$5.2213	$5.3505	$5.3820	$5.4882	$5.3835	$5.3133	$5.7963	$ 5.40
2032	$5.9166	$5.6290	$5.4477	$5.4827	$5.3625	$5.4196	$5.5541	$5.5864	$5.6972	$5.5885	$5.5148	$6.0173	$ 5.60
2033	$6.0552	$5.7539	$5.5671	$5.6082	$5.4874	$5.5509	$5.6907	$5.7222	$5.8376	$5.7262	$5.6469	$6.1668	$ 5.73
2034	$6.3885	$6.0744	$5.8780	$5.9185	$5.7899	$5.8541	$6.0005	$6.0346	$6.1552	$6.0378	$5.9562	$6.5017	$ 6.05
2035	$6.6064	$6.2770	$6.0731	$6.1184	$5.9869	$6.0566	$6.2093	$6.2436	$6.3696	$6.2482	$6.1613	$6.7290	$ 6.26

Historical Recorded Prices Reported Through February 2018.

Opal **Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	NOMINAL Average
2012	$ 2.68	$ 2.53	$ 2.06	$ 1.88	$ 2.26	$ 2.27	$ 2.72	$ 2.75	$ 2.74	$ 3.35	$ 3.50	$ 3.35	$ 2.67
2013	$ 3.38	$ 3.32	$ 3.72	$ 3.96	$ 3.86	$ 3.62	$ 3.46	$ 3.29	$ 3.47	$ 3.61	$ 3.53	$ 4.54	$ 3.65
2014	$ 4.51	$ 7.02	$ 4.90	$ 4.49	$ 4.39	$ 4.48	$ 3.98	$ 3.80	$ 3.79	$ 3.61	$ 4.04	$ 3.36	$ 4.36
2015	$ 2.82	$ 2.51	$ 2.43	$ 2.30	$ 2.60	$ 2.57	$ 2.70	$ 2.64	$ 2.55	$ 2.21	$ 2.11	$ 2.11	$ 2.46
2016	$ 2.25	$ 1.76	$ 1.51	$ 1.70	$ 1.72	$ 2.32	$ 2.58	$ 2.60	$ 2.70	$ 2.68	$ 2.24	$ 3.48	$ 2.30
2017	$ 3.25	$ 2.61	$ 2.55	$ 2.74	$ 2.78	$ 2.59	$ 2.62	$ 2.61	$ 2.62	$ 2.57	$ 2.71	$ 2.59	$ 2.69
2018	$ 2.98	$ 2.32	$ 2.38	$ 2.49	$ 2.52	$ 2.55	$ 2.59	$ 2.65	$ 2.56	$ 2.59	$ 2.66	$ 2.89	$ 2.60
2019	$ 3.06	$ 2.86	$ 2.74	$ 2.42	$ 2.38	$ 2.40	$ 2.43	$ 2.49	$ 2.40	$ 2.45	$ 2.53	$ 2.79	$ 2.58
2020	$ 2.99	$ 2.80	$ 2.69	$ 2.39	$ 2.37	$ 2.39	$ 2.42	$ 2.47	$ 2.39	$ 2.43	$ 2.52	$ 2.79	$ 2.55
2021	$ 3.00	$ 2.81	$ 2.73	$ 2.45	$ 2.44	$ 2.45	$ 2.48	$ 2.54	$ 2.46	$ 2.50	$ 2.59	$ 2.85	$ 2.61
2022	$ 3.04	$ 2.85	$ 2.77	$ 2.50	$ 2.48	$ 2.50	$ 2.52	$ 2.59	$ 2.52	$ 2.56	$ 2.66	$ 2.92	$ 2.66
2023	$ 3.14	$ 2.96	$ 2.89	$ 2.66	$ 2.66	$ 2.71	$ 2.78	$ 2.88	$ 2.87	$ 2.91	$ 2.98	$ 3.36	$ 2.90
2024	$ 3.56	$ 3.29	$ 3.20	$ 3.12	$ 3.10	$ 3.16	$ 3.27	$ 3.38	$ 3.40	$ 3.40	$ 3.41	$ 3.90	$ 3.35
2025	$ 4.11	$ 3.73	$ 3.58	$ 3.58	$ 3.50	$ 3.54	$ 3.64	$ 3.71	$ 3.71	$ 3.66	$ 3.63	$ 4.11	$ 3.71
2026	$ 4.33	$ 3.94	$ 3.78	$ 3.79	$ 3.70	$ 3.74	$ 3.84	$ 3.92	$ 3.93	$ 3.86	$ 3.84	$ 4.33	$ 3.92
2027	$ 4.60	$ 4.20	$ 4.03	$ 4.04	$ 3.95	$ 3.98	$ 4.09	$ 4.16	$ 4.18	$ 4.11	$ 4.08	$ 4.59	$ 4.17
2028	$ 4.88	$ 4.48	$ 4.31	$ 4.31	$ 4.21	$ 4.24	$ 4.35	$ 4.43	$ 4.45	$ 4.38	$ 4.35	$ 4.88	$ 4.44
2029	$ 5.16	$ 4.74	$ 4.56	$ 4.56	$ 4.46	$ 4.50	$ 4.62	$ 4.69	$ 4.72	$ 4.64	$ 4.61	$ 5.16	$ 4.70
2030	$ 5.41	$ 4.98	$ 4.79	$ 4.80	$ 4.69	$ 4.73	$ 4.85	$ 4.93	$ 4.96	$ 4.88	$ 4.84	$ 5.42	$ 4.94
2031	$ 5.66	$ 5.21	$ 5.02	$ 5.02	$ 4.91	$ 4.95	$ 5.08	$ 5.16	$ 5.19	$ 5.11	$ 5.07	$ 5.67	$ 5.17
2032	$ 5.87	$ 5.42	$ 5.21	$ 5.22	$ 5.10	$ 5.15	$ 5.28	$ 5.37	$ 5.40	$ 5.31	$ 5.27	$ 5.89	$ 5.37

2033	$ 6.01	$ 5.54	$ 5.33	$ 5.35	$ 5.23	$ 5.28	$ 5.42	$ 5.50	$ 5.54	$ 5.45	$ 5.40	$ 6.04	$ 5.51
2034	$ 6.34	$ 5.86	$ 5.64	$ 5.66	$ 5.53	$ 5.58	$ 5.73	$ 5.81	$ 5.86	$ 5.76	$ 5.71	$ 6.37	$ 5.82
2035	$ 6.56	$ 6.06	$ 5.84	$ 5.86	$ 5.73	$ 5.79	$ 5.94	$ 6.02	$ 6.07	$ 5.97	$ 5.92	$ 6.60	$ 6.03

Historical Recorded Prices Reported Through February 2018.
Sumas **Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2012	$ 2.91	$ 2.60	$ 2.14	$ 1.85	$ 2.21	$ 2.16	$ 2.56	$ 2.61	$ 2.63	$ 3.39	$ 3.65	$ 3.48	$ 2.68
2013	$ 3.62	$ 3.44	$ 3.81	$ 3.94	$ 3.85	$ 3.58	$ 3.37	$ 3.05	$ 3.22	$ 3.73	$ 3.93	$ 5.32	$ 3.74
2014	$ 4.53	$ 7.14	$ 4.93	$ 4.42	$ 4.31	$ 4.35	$ 3.92	$ 3.76	$ 3.76	$ 3.50	$ 3.97	$ 3.34	$ 4.33
2015	$ 2.76	$ 2.31	$ 2.19	$ 2.16	$ 2.39	$ 2.26	$ 2.26	$ 2.44	$ 2.50	$ 2.16	$ 2.16	$ 2.13	$ 2.31
2016	$ 2.27	$ 1.65	$ 1.39	$ 1.31	$ 1.35	$ 1.94	$ 2.31	$ 2.51	$ 2.65	$ 2.58	$ 2.14	$ 3.85	$ 2.16
2017	$ 3.51	$ 2.57	$ 2.41	$ 2.60	$ 2.54	$ 2.33	$ 2.29	$ 2.55	$ 2.58	$ 2.54	$ 2.68	$ 2.80	$ 2.62
2018	$ 2.69	$ 2.24	$ 2.25	$ 2.23	$ 2.22	$ 2.23	$ 2.29	$ 2.58	$ 2.51	$ 2.52	$ 2.59	$ 3.18	$ 2.46
2019	$ 3.20	$ 2.78	$ 2.61	$ 2.16	$ 2.08	$ 2.08	$ 2.13	$ 2.41	$ 2.36	$ 2.39	$ 2.47	$ 3.08	$ 2.48
2020	$ 3.13	$ 2.73	$ 2.56	$ 2.12	$ 2.07	$ 2.07	$ 2.12	$ 2.39	$ 2.34	$ 2.37	$ 2.45	$ 3.08	$ 2.45
2021	$ 3.14	$ 2.74	$ 2.60	$ 2.19	$ 2.13	$ 2.13	$ 2.18	$ 2.46	$ 2.41	$ 2.44	$ 2.53	$ 3.14	$ 2.51
2022	$ 3.19	$ 2.78	$ 2.64	$ 2.23	$ 2.18	$ 2.18	$ 2.22	$ 2.52	$ 2.47	$ 2.50	$ 2.59	$ 3.21	$ 2.56
2023	$ 3.28	$ 2.89	$ 2.76	$ 2.39	$ 2.35	$ 2.39	$ 2.48	$ 2.81	$ 2.82	$ 2.84	$ 2.91	$ 3.65	$ 2.80
2024	$ 3.71	$ 3.22	$ 3.07	$ 2.86	$ 2.79	$ 2.84	$ 2.97	$ 3.30	$ 3.36	$ 3.33	$ 3.34	$ 4.19	$ 3.25
2025	$ 4.25	$ 3.65	$ 3.45	$ 3.32	$ 3.20	$ 3.22	$ 3.34	$ 3.63	$ 3.67	$ 3.59	$ 3.56	$ 4.40	$ 3.61
2026	$ 4.47	$ 3.87	$ 3.65	$ 3.53	$ 3.40	$ 3.42	$ 3.54	$ 3.84	$ 3.88	$ 3.80	$ 3.77	$ 4.62	$ 3.82
2027	$ 4.74	$ 4.12	$ 3.90	$ 3.77	$ 3.64	$ 3.66	$ 3.79	$ 4.09	$ 4.13	$ 4.05	$ 4.02	$ 4.88	$ 4.07
2028	$ 5.03	$ 4.40	$ 4.18	$ 4.04	$ 3.90	$ 3.92	$ 4.05	$ 4.36	$ 4.40	$ 4.31	$ 4.28	$ 5.17	$ 4.34
2029	$ 5.30	$ 4.66	$ 4.43	$ 4.30	$ 4.15	$ 4.18	$ 4.32	$ 4.62	$ 4.67	$ 4.58	$ 4.54	$ 5.45	$ 4.60
2030	$ 5.55	$ 4.91	$ 4.66	$ 4.53	$ 4.38	$ 4.41	$ 4.55	$ 4.86	$ 4.91	$ 4.81	$ 4.78	$ 5.71	$ 4.84
2031	$ 5.80	$ 5.14	$ 4.89	$ 4.76	$ 4.60	$ 4.63	$ 4.78	$ 5.09	$ 5.15	$ 5.04	$ 5.00	$ 5.96	$ 5.07
2032	$ 6.01	$ 5.34	$ 5.08	$ 4.96	$ 4.80	$ 4.83	$ 4.98	$ 5.29	$ 5.36	$ 5.25	$ 5.20	$ 6.18	$ 5.27
2033	$ 6.15	$ 5.47	$ 5.20	$ 5.08	$ 4.92	$ 4.96	$ 5.12	$ 5.43	$ 5.50	$ 5.39	$ 5.34	$ 6.33	$ 5.41
2034	$ 6.49	$ 5.79	$ 5.51	$ 5.39	$ 5.22	$ 5.26	$ 5.43	$ 5.74	$ 5.82	$ 5.70	$ 5.65	$ 6.66	$ 5.72
2035	$ 6.70	$ 5.99	$ 5.71	$ 5.59	$ 5.42	$ 5.47	$ 5.64	$ 5.95	$ 6.03	$ 5.91	$ 5.85	$ 6.89	$ 5.93

Historical Recorded Prices Reported Through February 2018.
Stanfield **Futures through 2022; Splice 2023-2024; Fundamentals' Blend 2025-2035**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	$ 2.79	$ 2.57	$ 2.12	$ 1.87	$ 2.23	$ 2.18	$ 2.59	$ 2.63	$ 2.70	$ 3.37	$ 3.54	$ 3.42
2013	$ 3.46	$ 3.38	$ 3.74	$ 3.94	$ 3.83	$ 3.59	$ 3.41	$ 3.25	$ 3.39	$ 3.66	$ 3.59	$ 4.56
2014	$ 2.53	$ 2.51	$ 3.09	$ 3.95	$ 3.53	$ 3.73	$ 3.77	$ 3.80	$ 4.29	$ 4.34	$ 4.48	$ 4.41
2015	$ 5.83	$ 5.95	$ 4.37	$ 4.16	$ 3.66	$ 3.42	$ 3.37	$ 3.34	$ 3.45	$ 3.77	$ 3.93	$ 3.86
2016	$ 2.27	$ 1.73	$ 1.43	$ 1.54	$ 1.64	$ 2.22	$ 2.49	$ 2.57	$ 2.66	$ 2.59	$ 2.19	$ 3.49
2017	$ 3.28	$ 2.59	$ 2.46	$ 2.63	$ 2.68	$ 2.43	$ 2.48	$ 2.56	$ 2.57	$ 2.54	$ 2.68	$ 2.62
2018	$ 2.72	$ 2.26	$ 2.29	$ 2.36	$ 2.43	$ 2.42	$ 2.48	$ 2.61	$ 2.51	$ 2.53	$ 2.62	$ 2.91
2019	$ 3.08	$ 2.83	$ 2.66	$ 2.29	$ 2.29	$ 2.27	$ 2.32	$ 2.45	$ 2.36	$ 2.39	$ 2.49	$ 2.81
2020	$ 3.01	$ 2.78	$ 2.60	$ 2.25	$ 2.28	$ 2.26	$ 2.30	$ 2.43	$ 2.34	$ 2.37	$ 2.48	$ 2.81
2021	$ 3.03	$ 2.79	$ 2.64	$ 2.32	$ 2.35	$ 2.32	$ 2.36	$ 2.50	$ 2.41	$ 2.44	$ 2.55	$ 2.87
2022	$ 3.07	$ 2.83	$ 2.69	$ 2.36	$ 2.39	$ 2.37	$ 2.41	$ 2.55	$ 2.47	$ 2.50	$ 2.62	$ 2.94
2023	$ 3.17	$ 2.93	$ 2.81	$ 2.52	$ 2.57	$ 2.58	$ 2.67	$ 2.84	$ 2.82	$ 2.85	$ 2.94	$ 3.38
2024	$ 3.59	$ 3.27	$ 3.11	$ 2.99	$ 3.01	$ 3.03	$ 3.16	$ 3.34	$ 3.36	$ 3.34	$ 3.37	$ 3.92
2025	$ 4.13	$ 3.70	$ 3.49	$ 3.45	$ 3.41	$ 3.41	$ 3.52	$ 3.67	$ 3.67	$ 3.60	$ 3.59	$ 4.13
2026	$ 4.35	$ 3.92	$ 3.70	$ 3.66	$ 3.61	$ 3.61	$ 3.73	$ 3.88	$ 3.88	$ 3.80	$ 3.80	$ 4.35
2027	$ 4.62	$ 4.17	$ 3.95	$ 3.90	$ 3.86	$ 3.85	$ 3.97	$ 4.12	$ 4.13	$ 4.05	$ 4.04	$ 4.61
2028	$ 4.91	$ 4.45	$ 4.22	$ 4.17	$ 4.12	$ 4.11	$ 4.24	$ 4.39	$ 4.40	$ 4.32	$ 4.31	$ 4.90
2029	$ 5.18	$ 4.71	$ 4.47	$ 4.43	$ 4.37	$ 4.37	$ 4.50	$ 4.65	$ 4.67	$ 4.58	$ 4.57	$ 5.18
2030	$ 5.44	$ 4.96	$ 4.71	$ 4.66	$ 4.60	$ 4.60	$ 4.73	$ 4.89	$ 4.91	$ 4.82	$ 4.80	$ 5.44
2031	$ 5.68	$ 5.19	$ 4.93	$ 4.89	$ 4.82	$ 4.82	$ 4.97	$ 5.12	$ 5.15	$ 5.05	$ 5.03	$ 5.69
2032	$ 5.90	$ 5.39	$ 5.13	$ 5.09	$ 5.01	$ 5.02	$ 5.17	$ 5.33	$ 5.36	$ 5.25	$ 5.23	$ 5.91
2033	$ 6.04	$ 5.51	$ 5.25	$ 5.21	$ 5.14	$ 5.15	$ 5.31	$ 5.46	$ 5.50	$ 5.39	$ 5.36	$ 6.06
2034	$ 6.37	$ 5.84	$ 5.56	$ 5.52	$ 5.44	$ 5.45	$ 5.62	$ 5.77	$ 5.82	$ 5.70	$ 5.67	$ 6.39
2035	$ 6.59	$ 6.04	$ 5.75	$ 5.72	$ 5.64	$ 5.66	$ 5.82	$ 5.98	$ 6.03	$ 5.91	$ 5.88	$ 6.62

Non Residential Core

Other (EE, Service Area Economic Forecast)

Southern California Gas Company ENERGY EFFICIENCY NET SAVINGS

	Reported 2010 Therms	Reported 2011 Therms	Reported 2012 Therms	Reported 2013	Reported 2014	Reported 2015	Reported 2016	Reported 2017	Forecast 2018
SoCalGas EE Program TOTAL	**27,413,193**	**37,233,416**	**32,077,678**	**25,817,960**	**28,856,008**	**21,620,562**	**30,155,462**	**29,150,327**	50,227,346
PUC Goal	**28,000,000**	**30,000,000**	**32,000,000**	24,120,000	23,190,000	25,300,000	29,100,000	30,300,000	46,000,000
Difference	**(586,807)**	**7,233,416**	**77,678**	**1,697,960**	**5,666,008**	**(3,679,438)**	**1,055,462**	**(1,149,673)**	4,227,346

SoCalGas	2010 therms	2011 therms	2012 therms	2013 therms	2014 therms	2015 therms	2016 therms	2017 therms	2018 therms
Core Residential	9,072,268	12,564,473	8,445,190	8,173,595	7,371,223	7,037,522	14,912,118	17,830,064	28,542,275
Core Commercial	7,457,290	10,030,218	9,608,803	2,380,370	4,093,890	6,286,602	11,216,376	9,558,519	10,971,823
Core Industrial	2,268,570	3,051,276	2,923,078	2,803,233	2,457,183	1,928,820	1,236,543	1,125,795	2,569,917
NonCore Commercial	1,064,214	1,431,391	1,371,252	293,874	2,168,951	1,878,668	335,445	287,429	578,829
NonCore Industrial retail	2,483,166	3,339,913	3,199,588	4,184,881	6,592,493	2,495,191	1,562,769	226,097	3,642,195
NonCore Industrial refinery	5,067,684	6,816,146	6,529,768	7,982,006	6,172,268	1,993,759	892,212	122,423	3,922,307
Total	**27,413,193**	**37,233,416**	**32,077,678**	**25,817,960**	**28,856,008**	**21,620,562**	**30,155,462**	**29,150,327**	**50,227,346**

Proportionally scale it down or up to match PUC Goals for 2010 - 2014

ANNUAL NET SAVINGS	2010 Mdth	2011 Mdth	2012 Mdth	2013 Mdth	2014 Mdth	2015 Mdth	2016 Mdth	2017 Mdth	2018 Mdth
Core Residential	927	1,012	842	764	592	704	1,491	1,783	2,854
Core Commercial	762	808	959	222	329	629	1,122	956	1,097
Core Industrial	232	246	292	262	197	193	124	113	257
NonCore Commercial	109	115	137	27	174	188	34	29	58
NonCore Industrial retail	254	269	319	391	530	250	156	23	364
NonCore Industrial refinery	518	549	651	746	496	199	89	12	392
Total	**2,800**	**3,000**	**3,200**	**2,412**	**2,319**	**2,162**	**3,016**	**2,915**	**5,023**

Cumulative Savings Mdth	2012 Mdth	2013 Mdth	2014 Mdth	2015 Mdth	2016 Mdth	2017 Mdth	2018 Mdth
Core Residential							2,854
Core Commercial							1,097
Core Industrial							257
NonCore Commercial							58
NonCore Industrial regular							364
NonCore Industrial refinery							392
Total Load Impacts							**5,023**

MMCF factor: **1.0353**

Cumulative Savings MMCF	2012 mmcf	2013 mmcf	2014 mmcf	2015 mmcf	2016 mmcf	2017 mmcf	2018 mmcf
Core Residential	-		-	-	-	-	2,757
Core Commercial	-		-	-	-	-	1,060
Core Industrial	-		-	-	-	-	248
NonCore Commercial	-		-	-	-	-	56
NonCore Industrial regular	-		-	-	-	-	352
NonCore Industrial refinery	-		-	-	-	-	379
Total Cumulative Load	**-**		**-**	**-**	**-**	**-**	**4,851**

Forecast Year ====> 1

Life cycle is 15 years.

Southern California Gas Company ENERGY EFFICIENCY NET SAVI

	Forecast 2019	Forecast 2020	Forecast 2021	Forecast 2022	Forecast 2023	Forecast 2024	Forecast 2025	Forecast 2026	Forecast 2027	Forecast 2028
SoCalGas EE Program TOTAL										
PUC Goal	48,000,000	54,000,000	60,000,000	59,000,000	63,000,000	62,000,000	61,000,000	53,000,000	49,000,000	49,000,000
Difference										

SoCalGas
Core Residential
Core Commercial
Core Industrial
NonCore Commercial
NonCore Industrial retail
NonCore Industrial refinery
Total

Proportionally scale it down or up to match PU

ANNUAL NET SAVINGS	2019 Mdth	2020 Mdth	2021 Mdth	2022 Mdth	2023 Mdth	2024 Mdth	2025 Mdth	2026 Mdth	2027 Mdth	2028 Mdth
Core Residential	2,728	3,069	3,410	3,353	3,580	3,523	3,466	3,012	2,784	2,784
Core Commercial	1,049	1,180	1,311	1,289	1,376	1,354	1,333	1,158	1,070	1,070
Core Industrial	246	276	307	302	322	317	312	271	251	251
NonCore Commercial	55	62	69	68	73	71	70	61	56	56
NonCore Industrial retail	348	392	435	428	457	450	442	384	355	355
NonCore Industrial refinery	375	422	469	461	492	484	476	414	383	383
Total	**4,800**	**5,400**	**6,000**	**5,900**	**6,300**	**6,200**	**6,100**	**5,300**	**4,900**	**4,900**

Cumulative Savings Mdth	2019 Mdth	2020 Mdth	2021 Mdth	2022 Mdth	2023 Mdth	2024 Mdth	2025 Mdth	2026 Mdth	2027 Mdth	2028 Mdth
Core Residential	5,582	8,650	12,060	15,413	18,993	22,516	25,982	28,994	31,779	34,563
Core Commercial	2,146	3,325	4,636	5,925	7,301	8,655	9,988	11,146	12,216	13,286
Core Industrial	503	779	1,086	1,388	1,710	2,027	2,339	2,611	2,861	3,112
NonCore Commercial	113	175	245	313	385	457	527	588	644	701
NonCore Industrial regular	712	1,104	1,539	1,967	2,424	2,873	3,316	3,700	4,055	4,411
NonCore Industrial refinery	767	1,189	1,657	2,118	2,610	3,094	3,571	3,984	4,367	4,750
Total Load Impacts	**9,823**	**15,223**	**21,223**	**27,123**	**33,423**	**39,623**	**45,723**	**51,023**	**55,923**	**60,823**

Cumulative Savings MMCF	2019 mmcf	2020 mmcf	2021 mmcf	2022 mmcf	2023 mmcf	2024 mmcf	2025 mmcf	2026 mmcf	2027 mmcf	2028 mmcf
Core Residential	5,392	8,356	11,649	14,887	18,345	21,748	25,097	28,006	30,695	33,385
Core Commercial	2,073	3,212	4,478	5,723	7,052	8,360	9,647	10,766	11,799	12,833
Core Industrial	485	752	1,049	1,340	1,652	1,958	2,260	2,522	2,764	3,006
NonCore Commercial	109	169	236	302	372	441	509	568	622	677
NonCore Industrial regular	688	1,066	1,486	1,900	2,341	2,775	3,202	3,574	3,917	4,260
NonCore Industrial refinery	741	1,148	1,601	2,046	2,521	2,989	3,449	3,849	4,218	4,588
Total Cumulative Load	**9,488**	**14,704**	**20,499**	**26,198**	**32,283**	**38,272**	**44,164**	**49,283**	**54,016**	**58,749**

2 3 4 5 6 7 8 9 10 11

Life cycle is 15 years.

Non Residential Core Service Area Economic Forecast

SOUTHERN CALIFORNIA GAS COMPANY SERVICE AREA ECONOMIC FORECAST

(based on Global Insight's February 2018 Regional Forecast)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
EMPLOYMENT (1000's)												
Total	8,162.3	8,366.3	8,564.2	8,799.4	9,012.7	9,152.9	9,279.7	9,429.0	9,556.4	9,622.6	9,675.3	9,718.7
Agriculture	228.3	235.9	237.4	240.8	240.3	239.5	243.1	245.9	247.9	248.8	249.3	249.8
Total Non-farm	7,934.0	8,130.4	8,326.8	8,558.6	8,772.5	8,913.4	9,036.7	9,183.1	9,308.5	9,373.8	9,425.9	9,468.9
Mining	22.7	22.6	23.1	20.7	16.9	16.2	16.6	17.2	17.4	17.6	17.9	18.1
Construction	301.9	325.7	345.7	371.5	390.5	419.6	439.6	458.7	489.6	516.2	533.7	543.2
Manufacturing	722.1	723.9	725.3	728.1	724.6	718.9	725.3	732.5	736.1	736.4	735.7	733.5
Transportation, Information, Utilities	500.7	515.0	524.8	546.9	580.7	583.6	598.3	605.0	607.0	608.5	606.4	601.9
Trade	1,374.5	1,407.6	1,443.1	1,476.7	1,499.9	1,509.9	1,520.2	1,531.8	1,539.2	1,537.5	1,529.7	1,521.9
Retail	939.9	956.3	978.2	997.9	1,010.2	1,011.5	1,015.0	1,017.3	1,019.2	1,014.9	1,004.6	994.1
Wholesale (including warehousing)	434.6	451.3	464.9	478.9	489.7	498.5	505.2	514.5	520.0	522.6	525.1	527.8
Restaurants	622.8	656.7	693.9	726.4	758.2	779.5	782.3	784.1	785.5	782.2	774.3	766.2
Finance, Insurance & Real Estate	419.4	425.5	424.6	431.9	438.6	443.2	451.0	457.3	461.1	460.3	459.2	459.4
Services	2,548.3	2,630.1	2,704.6	2,783.7	2,858.5	2,919.6	2,978.2	3,059.9	3,117.2	3,150.3	3,190.4	3,232.3
Accomodation	121.4	125.4	129.3	133.4	137.2	140.5	144.4	145.7	146.4	146.9	147.3	147.7
Personal & Laundry Services	84.7	88.3	92.0	94.2	96.5	102.0	103.2	102.2	101.1	100.3	99.7	99.1
Professional & Business Services	1,086.8	1,125.7	1,147.6	1,169.2	1,187.7	1,200.4	1,219.9	1,280.1	1,324.6	1,345.2	1,371.6	1,399.2
Health & Social Services	1,037.6	1,065.5	1,099.8	1,143.1	1,185.8	1,222.1	1,253.0	1,276.7	1,292.5	1,307.5	1,323.0	1,338.9
Misc. Services	217.9	225.1	235.9	243.8	251.3	254.7	257.7	255.1	252.5	250.5	248.8	247.5
Government & Education	1,421.7	1,423.3	1,441.7	1,472.7	1,504.6	1,522.8	1,525.1	1,536.6	1,555.4	1,564.8	1,578.7	1,592.4
OTHER INDICATORS												
Southern California Consumer Inflation*	2.0%	1.1%	1.3%	0.9%	1.9%	2.8%	2.8%	1.7%	2.7%	2.6%	2.4%	2.3%
Inflation--US Gross Domestic Product**	1.8%	1.6%	1.8%	1.1%	1.3%	1.8%	2.3%	2.4%	2.6%	2.6%	2.5%	2.5%

* Consumer Price Index for Greater Los Angeles area (Los Angeles and Orange Counties)

** Chained Price Index--US GDP, from Global Insight's February 2018 Long-Term Forecast of the U.S. Economy.

SOUTHERN CALIFORNIA GAS COMPANY SERVICE AREA ECONOMIC FORECAST

(based on Global Insight's February 2018 Regional Forecast)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
EMPLOYMENT (1000's)												
Total	9,753.8	9,778.6	9,803.5	9,840.5	9,877.9	9,921.5	9,984.0	10,044.3	10,111.9	10,181.5	10,254.9	10,325.0
Agriculture	249.7	249.2	248.5	247.9	247.6	247.3	247.4	247.8	248.3	248.8	249.2	249.3
Total Non-farm	9,504.0	9,529.4	9,555.0	9,592.6	9,630.3	9,674.2	9,736.6	9,796.5	9,863.6	9,932.6	10,005.7	10,075.6
Mining	18.1	18.0	17.7	17.5	17.3	17.1	17.0	16.8	16.7	16.6	16.4	16.3
Construction	549.8	557.1	562.9	569.3	575.5	582.3	590.5	602.3	613.3	624.4	639.3	656.9
Manufacturing	731.9	729.9	728.2	726.5	724.1	721.7	718.6	715.7	712.7	709.7	707.6	706.3
Transportation, Information, Utilities	597.2	594.1	590.5	584.5	577.6	573.7	572.1	571.1	571.0	570.2	569.1	567.8
Trade	1,514.0	1,505.8	1,499.8	1,498.8	1,496.6	1,497.9	1,500.1	1,505.7	1,509.4	1,515.2	1,519.0	1,524.3
Retail	983.8	974.2	968.1	967.3	968.6	972.0	976.4	983.9	990.2	997.9	1,004.3	1,011.6
Wholesale (including warehousing)	530.2	531.5	531.7	531.6	528.0	525.9	523.7	521.9	519.2	517.3	514.7	512.7
Restaurants	758.3	750.9	746.2	745.5	746.5	749.1	752.5	758.3	763.1	769.1	774.0	779.7
Finance, Insurance & Real Estate	459.0	456.2	452.9	449.2	447.5	446.8	447.9	447.7	447.5	448.0	449.5	450.7
Services	3,269.0	3,296.4	3,321.5	3,352.4	3,384.3	3,416.6	3,455.9	3,495.9	3,537.9	3,577.4	3,616.6	3,648.4
Accomodation	147.9	147.7	147.2	147.3	147.7	148.2	148.7	149.6	150.4	151.4	152.1	153.2
Personal & Laundry Services	98.5	97.8	97.4	97.1	96.9	96.7	96.7	96.7	96.6	96.7	96.7	96.7
Professional & Business Services	1,424.2	1,442.3	1,456.7	1,473.1	1,486.3	1,497.1	1,513.7	1,532.4	1,551.5	1,568.1	1,586.4	1,600.3
Health & Social Services	1,352.6	1,364.2	1,377.0	1,392.6	1,411.5	1,432.9	1,455.3	1,475.9	1,498.0	1,519.6	1,539.8	1,556.7
Misc. Services	245.8	244.3	243.3	242.4	241.9	241.6	241.6	241.3	241.3	241.5	241.6	241.5
Government & Education	1,606.8	1,621.2	1,635.4	1,648.9	1,660.9	1,669.0	1,682.2	1,683.0	1,691.9	1,702.1	1,714.1	1,725.1
OTHER INDICATORS												
Southern California Consumer Inflation*	2.2%	2.1%	2.1%	2.1%	2.1%	2.3%	2.5%	2.4%	2.4%	2.4%	2.4%	2.4%
Inflation--US Gross Domestic Product**	2.5%	2.4%	2.3%	2.3%	2.2%	2.2%	2.2%	2.1%	2.1%	2.1%	2.1%	2.1%

* Consumer Price Index for Greater Los Angeles area (Los Angeles and Orange Counties)

** Chained Price Index--US GDP, from Global Insight's February 2018 Long-Term Forecast of the U.S. Economy.

Non Residential Core

San Diego Gas & Electric
Workpapers to Accompany
Direct Testimony of
Rose-Marie Payan

Non Residential Core
Core Commercial
SDG&E

San Diego Gas and Electric
2017 Historical Data Core Commercial Market

Segment	2017 Therm Sales	2017 Meter Count	2017 Meter Count, Existing/Old customers	2017 Meter Count New Customers	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity
Office	36,193,215	6,228	6,112	116	**5,783**	7,321	-0.135376
Restaurant	38,935,662	5,381	5,309	72	**7,206**	9,431	-0.091877
Retail	12,343,322	2,740	2,713	27	**4,495**	5,570	-0.265060
Laundry	6,934,973	388	386	2	**17,942**	4,618	-0.122795
Warehouse	3,689,982	539	536	3	**6,669**	38,543	-0.043035
School	2,782,440	828	823	5	**3,369**	2,035	-0.000001
College	5,808,535	350	348	2	**16,645**	8,116	-0.037179
Health	13,588,400	727	721	6	**18,461**	46,344	-0.096826
Lodging	18,332,246	804	798	6	**22,685**	38,311	-0.105697
Misc	15,309,920	5,771	5,641	130	**2,656**	2,516	-0.000001
Government	12,734,490	722	716	6	**17,612**	20,733	-0.095709
TCU	5,604,441	1,413	1,410	3	**3,932**	19,896	-0.129301
Construction	1,350,067	620	593	27	**2,174**	2,247	-0.161076
Agriculture	2,135,438	96	96	-	**22,244**	-	-0.315282

San Diego Gas & Electric
Core Commercial Market: Employment Forecast

YEAR	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Government	TCU	Constructior	Agriculture
2017	0.305059	0.131514	0.147356	0.020203	0.046195	0.100633	0.04742	0.170932	0.031774	0.0682975	0.1347379	0.050829	0.0797851	0.009525
2018	0.30904	0.135668	0.147334	0.02063	0.047084	0.103298	0.04868	0.175454	0.03278	0.0697438	0.1359672	0.051391	0.0822439	0.009572
2019	0.321297	0.137262	0.147897	0.020531	0.047973	0.105173	0.04956	0.178634	0.033166	0.069409	0.137083	0.05217	0.0856826	0.00962
2020	0.330347	0.138306	0.148401	0.02043	0.048468	0.106394	0.05014	0.180701	0.033418	0.0690668	0.1394627	0.052525	0.0914391	0.009668
2021	0.334929	0.139067	0.147988	0.020353	0.048669	0.107402	0.05061	0.182413	0.033602	0.0688081	0.1397543	0.052819	0.0963918	0.009717
2022	0.340178	0.139728	0.146719	0.020275	0.048854	0.10832	0.05105	0.183972	0.033762	0.0685441	0.1409094	0.0528	0.0996561	0.009765
2023	0.345757	0.140353	0.145445	0.020221	0.049059	0.109182	0.05145	0.185436	0.033913	0.0683619	0.1419763	0.052576	0.1014813	0.009814
2024	0.350748	0.140847	0.144247	0.020148	0.049266	0.109788	0.05174	0.186461	0.034032	0.0681158	0.1431088	0.052273	0.102735	0.009863
2025	0.354404	0.140749	0.143209	0.020074	0.049412	0.110441	0.05205	0.187572	0.034009	0.0678655	0.1442238	0.052092	0.1041103	0.009913

San Diego Gas and Electric
Core Commercial Market
Saturations by Business Type and End Use

zname	bname	nname	SAT	SOURCE
Commercial	Agriculture	Drying	1.0000	Assumed
Commercial	Agriculture	Engine	0.5000	Assumed
Commercial	Agriculture	Other	1.0000	DEFAULT
Commercial	Agriculture	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Agriculture	Water_Heat	0.6900	CI_1996_STUDY
Commercial	College	AC_Compressor	0.8850	CBECS
Commercial	College	Cook_top	0.1470	CBECS
Commercial	College	Fryer	0.1470	CBECS
Commercial	College	Griddle	0.1470	CBECS
Commercial	College	Other	1.0000	DEFAULT
Commercial	College	Other_Cooking	0.1470	CBECS
Commercial	College	Space_Heat	0.7630	SDGE_EUI_STUDY
Commercial	College	Water_Heat	0.9550	SDGE_EUI_STUDY
Commercial	Construction	Other	1.0000	DEFAULT
Commercial	Construction	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Construction	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Government	AC_Compressor	0.8880	CBECS
Commercial	Government	Cook_top	0.1960	CBECS
Commercial	Government	Fryer	0.1960	CBECS
Commercial	Government	Griddle	0.1960	CBECS
Commercial	Government	Other	1.0000	DEFAULT
Commercial	Government	Other_Cooking	0.1960	CBECS
Commercial	Government	Space_Heat	0.8720	SDGE_EUI_STUDY
Commercial	Government	Water_Heat	0.7000	CI_1996_STUDY
Commercial	Grocery	AC_Compressor	0.8560	CBECS
Commercial	Grocery	Cook_top	0.2450	CBECS
Commercial	Grocery	Fryer	0.2450	CBECS
Commercial	Grocery	Griddle	0.2450	CBECS
Commercial	Grocery	Other	1.0000	DEFAULT
Commercial	Grocery	Other_Cooking	0.2450	CBECS
Commercial	Grocery	Space_Heat	0.6470	SDGE_EUI_STUDY
Commercial	Grocery	Water_Heat	0.9300	CI_1996_STUDY
Commercial	Health	AC_Compressor	0.7920	CBECS
Commercial	Health	Cook_top	0.1020	CBECS
Commercial	Health	Drying	0.8200	CI_1996_STUDY
Commercial	Health	Fryer	0.1020	CBECS
Commercial	Health	Griddle	0.1020	CBECS
Commercial	Health	Other	1.0000	DEFAULT
Commercial	Health	Other_Cooking	0.1020	CBECS
Commercial	Health	Space_Heat	0.9360	SDGE_EUI_STUDY
Commercial	Health	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Laundry	Drying	1.0000	CI_1996_STUDY
Commercial	Laundry	Other	1.0000	CI_1996_STUDY

San Diego Gas and Electric
Core Commercial Market
Saturations by Business Type and End Use

zname	bname	nname	SAT	SOURCE
Commercial	Laundry	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Laundry	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Lodging	AC_Compressor	0.7950	CBECS
Commercial	Lodging	Cook_top	0.0840	CBECS
Commercial	Lodging	Drying	0.8200	CI_1996_STUDY
Commercial	Lodging	Fryer	0.0840	CBECS
Commercial	Lodging	Griddle	0.0840	CBECS
Commercial	Lodging	Other	1.0000	CI_1996_STUDY
Commercial	Lodging	Other_Cooking	0.0840	CBECS
Commercial	Lodging	Space_Heat	0.8950	SDGE_EUI_STUDY
Commercial	Lodging	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Misc	AC_Compressor	0.7310	CBECS
Commercial	Misc	Cook_top	0.0210	CBECS
Commercial	Misc	Fryer	0.0210	CBECS
Commercial	Misc	Griddle	0.0210	CBECS
Commercial	Misc	Other	1.0000	CI_1996_STUDY
Commercial	Misc	Other_Cooking	0.0210	CBECS
Commercial	Misc	Space_Heat	0.6950	SDGE_EUI_STUDY
Commercial	Misc	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Office	AC_Compressor	0.9310	CBECS
Commercial	Office	Cooking	0.0820	CBECS
Commercial	Office	Other	1.0000	CI_1996_STUDY
Commercial	Office	Space_Heat	0.8720	SDGE_EUI_STUDY
Commercial	Office	Water_Heat	0.7000	CI_1996_STUDY
Commercial	Restaurant	AC_Compressor	0.8710	CBECS
Commercial	Restaurant	Cook_top	0.7500	SCG_COOKING_STUDY
Commercial	Restaurant	Fryer	0.7290	SCG_COOKING_STUDY
Commercial	Restaurant	Griddle	0.5740	SCG_COOKING_STUDY
Commercial	Restaurant	Other	1.0000	CI_1996_STUDY
Commercial	Restaurant	Other_Cooking	0.9000	CI_1996_STUDY
Commercial	Restaurant	Space_Heat	0.8180	SDGE_EUI_STUDY
Commercial	Restaurant	Water_Heat	0.9600	CI_1996_STUDY
Commercial	Retail	Cooking	0.2450	CBECS
Commercial	Retail	Other	1.0000	CI_1996_STUDY
Commercial	Retail	Space_Heat	0.7710	SDGE_EUI_STUDY
Commercial	Retail	Water_Heat	0.6200	CI_1996_STUDY
Commercial	School	AC_Compressor	0.8850	CBECS
Commercial	School	Cook_top	0.1470	CBECS
Commercial	School	Fryer	0.1470	CBECS
Commercial	School	Griddle	0.1470	CBECS
Commercial	School	Other	1.0000	CI_1996_STUDY
Commercial	School	Other_Cooking	0.1470	CBECS
Commercial	School	Space_Heat	0.9670	SDGE_EUI_STUDY
Commercial	School	Water_Heat	0.9000	CI_1996_STUDY
Commercial	TCU	Engine	0.5000	Assumed

San Diego Gas and Electric
Core Commercial Market
Saturations by Business Type and End Use

zname	bname	nname	SAT	SOURCE
Commercial	TCU	Other	1.0000	CI_1996_STUDY
Commercial	TCU	Space_Heat	0.7200	CI_1996_STUDY
Commercial	TCU	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Warehouse	Engine	0.2500	Assumed
Commercial	Warehouse	Other	1.0000	DEFAULT
Commercial	Warehouse	Space_Heat	0.2310	SDGE_EUI_STUDY
Commercial	Warehouse	Water_Heat	0.8800	SDGE_EUI_STUDY

San Diego Gas & Electric
Core Commercial Market: Fuel Market Shares

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
OfficeSpace_Heat	SDGE_EUI_STUDY	0.7460000000000000	0.8720000000000000	0.8555045871559630
OfficeSpace_Heat	SDGE_EUI_STUDY	0.1260000000000000	0.8720000000000000	0.1444954128440370
OfficeWater_Heat	SDGE_EUI_STUDY	0.1620000000000000	0.9770000000000000	0.1658137154554760
OfficeWater_Heat	SDGE_EUI_STUDY	0.8150000000000000	0.9770000000000000	0.8341862845445240
OfficeCooking	SDGE_EUI_STUDY	0.0180000000000000	0.8700000000000000	0.0206896551724138
OfficeCooking	SDGE_EUI_STUDY	0.8520000000000000	0.8700000000000000	0.9793103448275860
OfficeAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
OfficeAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
OfficeOther	DEFAULT	0.1750000000000000	0.1750000000000000	1.0000000000000000
RestaurantSpace_Heat	SDGE_EUI_STUDY	0.4830000000000000	0.8180000000000000	0.5904645476772620
RestaurantSpace_Heat	SDGE_EUI_STUDY	0.3350000000000000	0.8180000000000000	0.4095354523227380
RestaurantWater_Heat	SDGE_EUI_STUDY	0.8840000000000000	0.9800000000000000	0.9020408163265310
RestaurantWater_Heat	SDGE_EUI_STUDY	0.0960000000000000	0.9800000000000000	0.0979591836734694
RestaurantCook_top	SCG_COOKING_STUDY	0.7330000000000000	0.7500000000000000	0.9773333333333330
RestaurantCook_top	SCG_COOKING_STUDY	0.0170000000000000	0.7500000000000000	0.0226666666666667
RestaurantFryer	SCG_COOKING_STUDY	0.6600000000000000	0.7290000000000000	0.9053497942386830
RestaurantFryer	SCG_COOKING_STUDY	0.0690000000000000	0.7290000000000000	0.0946502057613169
RestaurantGriddle	SCG_COOKING_STUDY	0.5570000000000000	0.5740000000000000	0.9703832752613240
RestaurantGriddle	SCG_COOKING_STUDY	0.0170000000000000	0.5740000000000000	0.0296167247386760
RestaurantOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
RestaurantOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
RestaurantAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
RestaurantAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
RestaurantOther	DEFAULT	0.0050000000000000	0.0050000000000000	1.0000000000000000
RetailSpace_Heat	SDGE_EUI_STUDY	0.3990000000000000	0.7710000000000000	0.5175097276264590
RetailSpace_Heat	SDGE_EUI_STUDY	0.3720000000000000	0.7710000000000000	0.4824902723735410
RetailWater_Heat	SDGE_EUI_STUDY	0.2800000000000000	0.9030000000000000	0.3100775193798450
RetailWater_Heat	SDGE_EUI_STUDY	0.6230000000000000	0.9030000000000000	0.6899224806201550
RetailCooking	SDGE_EUI_STUDY	0.0740000000000000	0.7900000000000000	0.0936708860759494
RetailCooking	SDGE_EUI_STUDY	0.7160000000000000	0.7900000000000000	0.9063291139240510
RetailOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000

San Diego Gas & Electric
Core Commercial Market: Fuel Market Shares

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
LaundrySpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
LaundrySpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
LaundryWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
LaundryWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
LaundryDrying	CI_1996_STUDY	0.6000000000000000	1.1000000000000000	0.6000000000000000
LaundryDrying	CI_1996_STUDY	0.4400000000000000	1.1000000000000000	0.4000000000000000
LaundryOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
WarehouseSpace_Heat	SDGE_EUI_STUDY	0.1010000000000000	0.2310000000000000	0.4372294372294370
WarehouseSpace_Heat	SDGE_EUI_STUDY	0.1300000000000000	0.2310000000000000	0.5627705627705630
WarehouseWater_Heat	SDGE_EUI_STUDY	0.0630000000000000	0.8800000000000000	0.0715909090909091
WarehouseWater_Heat	SDGE_EUI_STUDY	0.8170000000000000	0.8800000000000000	0.9284090909090910
WarehouseEngine	Assumed same as AC	0.0600000000000000	1.0000000000000000	0.0600000000000000
WarehouseEngine	Assumed same as AC	0.9400000000000000	1.0000000000000000	0.9400000000000000
WarehouseOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
SchoolSpace_Heat	SDGE_EUI_STUDY	0.7280000000000000	0.9670000000000000	0.7528438469493280
SchoolSpace_Heat	SDGE_EUI_STUDY	0.2390000000000000	0.9670000000000000	0.2471561530506720
SchoolWater_Heat	SDGE_EUI_STUDY	0.6970000000000000	0.9190000000000000	0.7584330794341680
SchoolWater_Heat	SDGE_EUI_STUDY	0.2220000000000000	0.9190000000000000	0.2415669205658320
SchoolCook_top	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolCook_top	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolFryer	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolFryer	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolGriddle	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolGriddle	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolOther_Cooking	SDGE_EUI_STUDY	0.3900000000000000	0.9100000000000000	0.4285714285714290
SchoolOther_Cooking	SDGE_EUI_STUDY	0.5200000000000000	0.9100000000000000	0.5714285714285710
SchoolAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
SchoolAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
SchoolOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
CollegeSpace_Heat	SDGE_EUI_STUDY	0.2520000000000000	0.7630000000000000	0.3302752293577980
CollegeSpace_Heat	SDGE_EUI_STUDY	0.5110000000000000	0.7630000000000000	0.6697247706422020

San Diego Gas & Electric
Core Commercial Market: Fuel Market Shares

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
CollegeWater_Heat	SDGE_EUI_STUDY	0.7800000000000000	0.9550000000000000	0.8167539267015710
CollegeWater_Heat	SDGE_EUI_STUDY	0.1750000000000000	0.9550000000000000	0.1832460732984290
CollegeCook_top	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeCook_top	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeFryer	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeFryer	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeGriddle	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeGriddle	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeOther_Cooking	SDGE_EUI_STUDY	0.0350000000000000	0.7290000000000000	0.0480109739368999
CollegeOther_Cooking	SDGE_EUI_STUDY	0.6940000000000000	0.7290000000000000	0.9519890260631000
CollegeAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
CollegeAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
CollegeOther	DEFAULT	0.0930000000000000	0.0930000000000000	1.0000000000000000
HealthSpace_Heat	SDGE_EUI_STUDY	0.6180000000000000	0.9360000000000000	0.6602564102564100
HealthSpace_Heat	SDGE_EUI_STUDY	0.3180000000000000	0.9360000000000000	0.3397435897435900
HealthWater_Heat	SDGE_EUI_STUDY	0.7220000000000000	0.8760000000000000	0.8242009132420090
HealthWater_Heat	SDGE_EUI_STUDY	0.1540000000000000	0.8760000000000000	0.1757990867579910
HealthCook_top	SDGE_EUI_STUDY	0.0870000000000000	0.9170000000000000	0.0948745910577972
HealthCook_top	SDGE_EUI_STUDY	0.8300000000000000	0.9170000000000000	0.9051254089422030
HealthFryer	SDGE_EUI_STUDY	0.0870000000000000	0.9170000000000000	0.0948745910577972
HealthFryer	SDGE_EUI_STUDY	0.8300000000000000	0.9170000000000000	0.9051254089422030
HealthGriddle	SDGE_EUI_STUDY	0.0870000000000000	0.9170000000000000	0.0948745910577972
HealthGriddle	SDGE_EUI_STUDY	0.8300000000000000	0.9170000000000000	0.9051254089422030
HealthOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
HealthOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
HealthDrying	CI_1996_STUDY	0.6000000000000000	1.1000000000000000	0.6000000000000000
HealthDrying	CI_1996_STUDY	0.4400000000000000	1.1000000000000000	0.4000000000000000
HealthAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
HealthAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
HealthOther	DEFAULT	0.2110000000000000	0.2110000000000000	1.0000000000000000
LodgingSpace_Heat	SDGE_EUI_STUDY	0.2430000000000000	0.8950000000000000	0.2715083798882680

San Diego Gas & Electric
Core Commercial Market: Fuel Market Shares

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
LodgingSpace_Heat	SDGE_EUI_STUDY	0.6520000000000000	0.8950000000000000	0.7284916201117320
LodgingWater_Heat	SDGE_EUI_STUDY	0.9410000000000000	0.9510000000000000	0.9894847528916930
LodgingWater_Heat	SDGE_EUI_STUDY	0.0100000000000000	0.9510000000000000	0.0105152471083070
LodgingCook_top	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingCook_top	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingFryer	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingFryer	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingGriddle	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingGriddle	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingOther_Cooking	SDGE_EUI_STUDY	0.3210000000000000	0.7140000000000000	0.4495798319327730
LodgingOther_Cooking	SDGE_EUI_STUDY	0.3930000000000000	0.7140000000000000	0.5504201680672270
LodgingDrying	CI_1996_STUDY	0.6600000000000000	1.1000000000000000	0.6000000000000000
LodgingDrying	CI_1996_STUDY	0.4400000000000000	1.1000000000000000	0.4000000000000000
LodgingAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
LodgingAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
LodgingOther	DEFAULT	0.4330000000000000	0.4330000000000000	1.0000000000000000
MiscSpace_Heat	SDGE_EUI_STUDY	0.3820000000000000	0.6950000000000000	0.5496402877697840
MiscSpace_Heat	SDGE_EUI_STUDY	0.3130000000000000	0.6950000000000000	0.4503597122302160
MiscWater_Heat	SDGE_EUI_STUDY	0.5040000000000000	0.9050000000000000	0.5569060773480660
MiscWater_Heat	SDGE_EUI_STUDY	0.4010000000000000	0.9050000000000000	0.4430939226519340
MiscCook_top	SCG_COOKING_STUDY	0.7330000000000000	0.7500000000000000	0.9773333333333330
MiscCook_top	SCG_COOKING_STUDY	0.0170000000000000	0.7500000000000000	0.0226666666666667
MiscFryer	SCG_COOKING_STUDY	0.6600000000000000	0.7290000000000000	0.9053497942386830
MiscFryer	SCG_COOKING_STUDY	0.0690000000000000	0.7290000000000000	0.0946502057613169
MiscGriddle	SCG_COOKING_STUDY	0.5570000000000000	0.5740000000000000	0.9703832752613240
MiscGriddle	SCG_COOKING_STUDY	0.0170000000000000	0.5740000000000000	0.0296167247386760
MiscOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
MiscOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
MiscAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
MiscAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
MiscOther	DEFAULT	0.0600000000000000	0.0600000000000000	1.0000000000000000

San Diego Gas & Electric
Core Commercial Market: Fuel Market Shares

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
GovernmentSpace_Heat	SDGE_EUI_STUDY	0.7460000000000000	0.8720000000000000	0.8555045871559630
GovernmentSpace_Heat	SDGE_EUI_STUDY	0.1260000000000000	0.8720000000000000	0.1444954128440370
GovernmentWater_Heat	SDGE_EUI_STUDY	0.1620000000000000	0.9770000000000000	0.1658137154554760
GovernmentWater_Heat	SDGE_EUI_STUDY	0.8150000000000000	0.9770000000000000	0.8341862845445240
GovernmentCook_top	SCG_COOKING_STUDY	0.7330000000000000	0.7500000000000000	0.9773333333333330
GovernmentCook_top	SCG_COOKING_STUDY	0.0170000000000000	0.7500000000000000	0.0226666666666667
GovernmentFryer	SCG_COOKING_STUDY	0.6600000000000000	0.7290000000000000	0.9053497942386830
GovernmentFryer	SCG_COOKING_STUDY	0.0690000000000000	0.7290000000000000	0.0946502057613169
GovernmentGriddle	SCG_COOKING_STUDY	0.5570000000000000	0.5740000000000000	0.9703832752613240
GovernmentGriddle	SCG_COOKING_STUDY	0.0170000000000000	0.5740000000000000	0.0296167247386760
GovernmentOther_Cooking	SDGE_EUI_STUDY	0.6600000000000000	1.0000000000000000	0.6600000000000000
GovernmentOther_Cooking	SDGE_EUI_STUDY	0.3400000000000000	1.0000000000000000	0.3400000000000000
GovernmentAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
GovernmentAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
GovernmentOther	DEFAULT	0.1750000000000000	0.1750000000000000	1.0000000000000000
TCUSpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
TCUSpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
TCUWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
TCUWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
TCUEngine	Assumed same as AC	0.0600000000000000	1.0000000000000000	0.0600000000000000
TCUEngine	Assumed same as AC	0.9400000000000000	1.0000000000000000	0.9400000000000000
TCUOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
ConstructionSpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
ConstructionSpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
ConstructionWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
ConstructionWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060
ConstructionOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
AgricultureSpace_Heat	CI_1996_STUDY	0.6000000000000000	1.0400000000000000	0.5769230769230770
AgricultureSpace_Heat	CI_1996_STUDY	0.4400000000000000	1.0400000000000000	0.4230769230769230
AgricultureWater_Heat	CI_1996_STUDY	0.6900000000000000	1.0200000000000000	0.6764705882352940
AgricultureWater_Heat	CI_1996_STUDY	0.3300000000000000	1.0200000000000000	0.3235294117647060

San Diego Gas & Electric
Core Commercial Market: Fuel Market Shares

SAT_LOOKUP	SOURCE	FASHARE_ORIG	BNSUM_SAT	FASHARE_SDGE
AgricultureDrying	NEED DATA	1.0000000000000000	1.0000000000000000	1.0000000000000000
AgricultureDrying	NEED DATA	0.0000000000000000	1.0000000000000000	0.0000000000000000
AgricultureEngine	Assumed same as AC	0.0600000000000000	1.0000000000000000	0.0600000000000000
AgricultureEngine	Assumed same as AC	0.9400000000000000	1.0000000000000000	0.9400000000000000
AgricultureOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000
GrocerySpace_Heat	SDGE_EUI_STUDY	0.4830000000000000	0.6470000000000000	0.7465224111282840
GrocerySpace_Heat	SDGE_EUI_STUDY	0.1640000000000000	0.6470000000000000	0.2534775888717160
GroceryWater_Heat	SDGE_EUI_STUDY	0.6950000000000000	0.9810000000000000	0.7084607543323140
GroceryWater_Heat	SDGE_EUI_STUDY	0.2860000000000000	0.9810000000000000	0.2915392456676860
GroceryCook_top	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryCook_top	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryFryer	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryFryer	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryGriddle	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryGriddle	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryOther_Cooking	SDGE_EUI_STUDY	0.3210000000000000	0.9010000000000000	0.3562708102108770
GroceryOther_Cooking	SDGE_EUI_STUDY	0.5800000000000000	0.9010000000000000	0.6437291897891230
GroceryAC_Compressor	CI_1996_STUDY	0.0600000000000000	1.0000000000000000	0.0600000000000000
GroceryAC_Compressor	CI_1996_STUDY	0.9400000000000000	1.0000000000000000	0.9400000000000000
GroceryOther	DEFAULT	1.0000000000000000	1.0000000000000000	1.0000000000000000

San Diego Gas & Electric
EUI Values by Business Type and End Use

bname	nname	fname	_NAME_	SOURCE	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Agriculture	Drying	Electric	B0	SDGE_EUI_STUDY	0.3120000	0.2808000	N/A	N/A
Agriculture	Drying	Natural_Gas	B0	SDGE_EUI_STUDY	0.2013300	0.1811970	N/A	N/A
Agriculture	Engine	Electric	B0	SDGE_EUI_STUDY	1.3416000	1.2074400	N/A	N/A
Agriculture	Engine	Natural_Gas	B0	SDGE_EUI_STUDY	0.8657190	0.7791471	N/A	N/A
Agriculture	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Agriculture	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.6010000	0.5409000	N/A	N/A
Agriculture	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1468600	0.1321740	0.1202783	0.1083827
Agriculture	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.3120000	0.2808000	0.2732184	0.2656368
Agriculture	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2013300	0.1811970	0.1585474	0.1358978
College	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	3.4630000	3.1167000	N/A	N/A
College	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.1181922	0.1063730	N/A	N/A
College	Cook_top	Electric	B0	SDGE_EUI_STUDY	0.7620000	0.6858000	N/A	N/A
College	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.0486000	0.0437400	N/A	N/A
College	Fryer	Electric	B0	SDGE_EUI_STUDY	0.7620000	0.6858000	N/A	N/A
College	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.0485700	0.0437130	N/A	N/A
College	Griddle	Electric	B0	SDGE_EUI_STUDY	0.7620000	0.6858000	N/A	N/A
College	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.0485700	0.0437130	N/A	N/A
College	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
College	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	0.7620000	0.6858000	N/A	N/A
College	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0486000	0.0437400	N/A	N/A
College	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.1990000	0.1791000	N/A	N/A
College	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2664300	0.2397870	0.2182062	0.1966253
College	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.6400000	0.5760000	0.5604480	0.5448960
College	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2871500	0.2584350	0.2261306	0.1938263
Construction	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Construction	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.6010000	0.5409000	N/A	N/A
Construction	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1468600	0.1321740	0.1202783	0.1083827
Construction	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.3120000	0.2808000	0.2732184	0.2656368
Construction	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2013300	0.1811970	0.1585474	0.1358978
Government	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	3.0560000	2.7504000	N/A	N/A
Government	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.1043013	0.0938712	N/A	N/A
Government	Cook_top	Electric	B0	SDGE_EUI_STUDY	0.4510000	0.4059000	N/A	N/A
Government	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.0346000	0.0311400	N/A	N/A
Government	Fryer	Electric	B0	SDGE_EUI_STUDY	0.4510000	0.4059000	N/A	N/A
Government	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.0345900	0.0311310	N/A	N/A
Government	Griddle	Electric	B0	SDGE_EUI_STUDY	0.4510000	0.4059000	N/A	N/A
Government	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.0345900	0.0311310	N/A	N/A
Government	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Government	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	0.4510000	0.4059000	N/A	N/A
Government	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0346000	0.0311400	N/A	N/A
Government	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.8450000	N/A	N/A	N/A
Government	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.3046400	0.2741760	0.2495002	0.2248243
Government	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.1790000	0.1611000	0.1567503	0.1524006
Government	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.0473900	0.0426510	0.0373196	0.0319883
Grocery	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	5.5860000	5.0274000	N/A	N/A
Grocery	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.1906502	0.1715852	N/A	N/A
Grocery	Cook_top	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Grocery	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.0418300	0.0376470	N/A	N/A
Grocery	Fryer	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Grocery	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.4183200	0.3764880	N/A	N/A

San Diego Gas & Electric
EUI Values by Business Type and End Use

bname	nname	fname	_NAME_	SOURCE	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Grocery	Griddle	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Grocery	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.4183200	0.3764880	N/A	N/A
Grocery	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Grocery	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Grocery	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0418300	0.0376470	N/A	N/A
Grocery	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.7350000	N/A	N/A	N/A
Grocery	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.0976200	0.0878580	0.0799508	0.0720436
Grocery	Water_Heat	Electric	B0	SDGE_EUI_STUDY	1.7630000	1.5867000	1.5438591	1.5010182
Grocery	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.3182700	0.2864430	0.2506376	0.2148323
Health	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	3.3360000	3.0024000	N/A	N/A
Health	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.1138577	0.1024719	N/A	N/A
Health	Cook_top	Electric	B0	SDGE_EUI_STUDY	1.1540000	1.0386000	N/A	N/A
Health	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.2635800	0.2372220	N/A	N/A
Health	Drying	Electric	B0	SDGE_EUI_STUDY	0.7619500	0.6857550	N/A	N/A
Health	Drying	Natural_Gas	B0	SDGE_EUI_STUDY	0.1459815	0.1313834	N/A	N/A
Health	Fryer	Electric	B0	SDGE_EUI_STUDY	1.1540000	1.0386000	N/A	N/A
Health	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.2635800	0.2372220	N/A	N/A
Health	Griddle	Electric	B0	SDGE_EUI_STUDY	1.1540000	1.0386000	N/A	N/A
Health	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.2635800	0.2372220	N/A	N/A
Health	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Health	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	1.1540000	1.0386000	N/A	N/A
Health	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0263600	0.0237240	N/A	N/A
Health	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.4050000	0.3645000	N/A	N/A
Health	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.0689400	0.0620460	0.0564619	0.0508777
Health	Water_Heat	Electric	B0	SDGE_EUI_STUDY	2.1770000	1.9593000	1.9063989	1.8534978
Health	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.4170900	0.3753810	0.3284584	0.2815358
Laundry	Drying	Electric	B0	SDGE_EUI_STUDY	85.5136937	76.9623243	N/A	N/A
Laundry	Drying	Natural_Gas	B0	SDGE_EUI_STUDY	14.9366516	13.4429864	N/A	N/A
Laundry	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Laundry	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.6010000	0.5409000	N/A	N/A
Laundry	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1468600	0.1321740	0.1202783	0.1083827
Laundry	Water_Heat	Electric	B0	SDGE_EUI_STUDY	15.8040000	14.2236000	13.8395628	13.4555256
Laundry	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	2.7604800	2.4844320	2.1738780	1.8633240
Lodging	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	1.6700000	1.5030000	N/A	N/A
Lodging	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.0569971	0.0512974	N/A	N/A
Lodging	Cook_top	Electric	B0	SDGE_EUI_STUDY	39.3000000	35.3700000	N/A	N/A
Lodging	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.3210000	0.2889000	N/A	N/A
Lodging	Drying	Electric	B0	SDGE_EUI_STUDY	0.9877500	0.8889750	N/A	N/A
Lodging	Drying	Natural_Gas	B0	SDGE_EUI_STUDY	0.1725300	0.1552770	N/A	N/A
Lodging	Fryer	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Lodging	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.4183200	0.3764880	N/A	N/A
Lodging	Griddle	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Lodging	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.4183200	0.3764880	N/A	N/A
Lodging	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Lodging	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	5.2450000	4.7205000	N/A	N/A
Lodging	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0410000	0.0369000	N/A	N/A
Lodging	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.5490000	0.4941000	N/A	N/A
Lodging	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.3869800	0.3482820	0.3169366	0.2855912
Lodging	Water_Heat	Electric	B0	SDGE_EUI_STUDY	3.9510000	3.5559000	3.4598907	3.3638814
Lodging	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.6901200	0.6211080	0.5434695	0.4658310

San Diego Gas & Electric
EUI Values by Business Type and End Use

bname	nname	fname	_NAME_	SOURCE	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
Misc	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	3.8720000	3.4848000	N/A	N/A
Misc	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.1321514	0.1189362	N/A	N/A
Misc	Cook_top	Electric	B0	SDGE_EUI_STUDY	0.5390000	0.4851000	N/A	N/A
Misc	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.0430000	0.0387000	N/A	N/A
Misc	Fryer	Electric	B0	SDGE_EUI_STUDY	0.5390000	0.4851000	N/A	N/A
Misc	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.0430200	0.0387180	N/A	N/A
Misc	Griddle	Electric	B0	SDGE_EUI_STUDY	0.5390000	0.4851000	N/A	N/A
Misc	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.0430200	0.0387180	N/A	N/A
Misc	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Misc	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	0.5390000	0.4851000	N/A	N/A
Misc	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0430000	0.0387000	N/A	N/A
Misc	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.6010000	0.5409000	N/A	N/A
Misc	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1468600	0.1321740	0.1202783	0.1083827
Misc	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.3120000	0.2808000	0.2732184	0.2656368
Misc	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2013300	0.1811970	0.1585474	0.1358978
Office	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	3.0560000	2.7504000	N/A	N/A
Office	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.1043013	0.0938712	N/A	N/A
Office	Cooking	Electric	B0	SDGE_EUI_STUDY	0.4510000	0.4059000	N/A	N/A
Office	Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0345900	0.0311310	N/A	N/A
Office	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Office	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.8450000	0.7605000	N/A	N/A
Office	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.3046400	0.2741760	0.2495002	0.2248243
Office	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.1790000	0.1611000	0.1567503	0.1524006
Office	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.0473900	0.0426510	0.0373196	0.0319883
Restaurant	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	5.9430000	5.3487000	N/A	N/A
Restaurant	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.2028346	0.1825511	N/A	N/A
Restaurant	Cook_top	Electric	B0	SDGE_EUI_STUDY	1.5190269	1.3671242	N/A	N/A
Restaurant	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	1.1985040	1.0786536	N/A	N/A
Restaurant	Fryer	Electric	B0	SDGE_EUI_STUDY	6.1654621	5.5489159	N/A	N/A
Restaurant	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	1.0791441	0.9712297	N/A	N/A
Restaurant	Griddle	Electric	B0	SDGE_EUI_STUDY	1.5190269	1.3671242	N/A	N/A
Restaurant	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.9107322	0.8196590	N/A	N/A
Restaurant	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Restaurant	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	27.3424841	24.6082357	N/A	N/A
Restaurant	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.9712297	0.8741067	N/A	N/A
Restaurant	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.3430000	0.3087000	N/A	N/A
Restaurant	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1176700	0.1059030	0.0963717	0.0868405
Restaurant	Water_Heat	Electric	B0	SDGE_EUI_STUDY	4.2600000	3.8340000	3.7304820	3.6269640
Restaurant	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.8665900	0.7799310	0.6824396	0.5849483
Retail	Cooking	Electric	B0	SDGE_EUI_STUDY	0.6930000	0.6237000	N/A	N/A
Retail	Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.3078600	0.2770740	N/A	N/A
Retail	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Retail	Space_Heat	Electric	B0	SDGE_EUI_STUDY	1.3560000	1.2204000	N/A	N/A
Retail	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2455200	0.2209680	0.2010809	0.1811938
Retail	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.5280000	0.4752000	0.4623696	0.4495392
Retail	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1092600	0.0983340	0.0860423	0.0737505
School	AC_Compressor	Electric	B0	SDGE_EUI_STUDY	1.9130000	1.7217000	N/A	N/A
School	AC_Compressor	Natural_Gas	B0	SDGE_EUI_STUDY	0.0652907	0.0587616	N/A	N/A
School	Cook_top	Electric	B0	SDGE_EUI_STUDY	0.5020000	0.4518000	N/A	N/A
School	Cook_top	Natural_Gas	B0	SDGE_EUI_STUDY	0.0460000	0.0414000	N/A	N/A

San Diego Gas & Electric
EUI Values by Business Type and End Use

bname	nname	fname	_NAME_	SOURCE	Stock_Existing	Standard_Existing	High_Existing	Premium_Existing
School	Fryer	Electric	B0	SDGE_EUI_STUDY	0.5020000	0.4518000	N/A	N/A
School	Fryer	Natural_Gas	B0	SDGE_EUI_STUDY	0.0461000	0.0414900	N/A	N/A
School	Griddle	Electric	B0	SDGE_EUI_STUDY	0.5020000	0.4518000	N/A	N/A
School	Griddle	Natural_Gas	B0	SDGE_EUI_STUDY	0.0461000	0.0414900	N/A	N/A
School	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
School	Other_Cooking	Electric	B0	SDGE_EUI_STUDY	0.5020000	0.4518000	N/A	N/A
School	Other_Cooking	Natural_Gas	B0	SDGE_EUI_STUDY	0.0460000	0.0414000	N/A	N/A
School	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.4840000	0.4356000	N/A	N/A
School	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.0923800	0.0831420	0.0756592	0.0681764
School	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.6880000	0.6192000	0.6024816	0.5857632
School	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1232800	0.1109520	0.0970830	0.0832140
TCU	Engine	Electric	B0	SDGE_EUI_STUDY	3.7825983	3.4043385	N/A	N/A
TCU	Engine	Natural_Gas	B0	SDGE_EUI_STUDY	2.4408670	2.1967803	N/A	N/A
TCU	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
TCU	Space_Heat	Electric	B0	SDGE_EUI_STUDY	0.6010000	0.5409000	N/A	N/A
TCU	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.1468600	0.1321740	0.1202783	0.1083827
TCU	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.3120000	0.2808000	0.2732184	0.2656368
TCU	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2013300	0.1811970	0.1585474	0.1358978
Warehouse	Engine	Electric	B0	SDGE_EUI_STUDY	33.4700769	30.1230692	N/A	N/A
Warehouse	Engine	Natural_Gas	B0	SDGE_EUI_STUDY	8.8838738	7.9954865	N/A	N/A
Warehouse	Other	Natural_Gas	B0	SDGE_EUI_STUDY	0.00	N/A	N/A	N/A
Warehouse	Space_Heat	Electric	B0	SDGE_EUI_STUDY	2.3400000	2.1060000	N/A	N/A
Warehouse	Space_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.6211000	0.5589900	0.5086809	0.4583718
Warehouse	Water_Heat	Electric	B0	SDGE_EUI_STUDY	0.1300000	0.1170000	0.1138410	0.1106820
Warehouse	Water_Heat	Natural_Gas	B0	SDGE_EUI_STUDY	0.2048000	0.1843200	0.1612800	0.1382400

San Diego Gas & Electric
Core Commercial E Share Values by Business Type and End Use

bname	nname	fname	_NAME_	SAT_LOOKUP	Stock_Qtec	Standard_Qtec	High_Qtec	Premium_Qtec
Agriculture	Drying	Electric	EASHARE	AgricultureDryingElectric	0.65	0.35	N/A	N/A
Agriculture	Drying	Natural_Gas	EASHARE	AgricultureDryingNatural_Gas	0.65	0.35	N/A	N/A
Agriculture	Engine	Electric	EASHARE	AgricultureEngineElectric	0.65	0.35	N/A	N/A
Agriculture	Engine	Natural_Gas	EASHARE	AgricultureEngineNatural_Gas	0.65	0.35	N/A	N/A
Agriculture	Other	Natural_Gas	EASHARE	AgricultureOtherNatural_Gas	1	N/A	N/A	N/A
Agriculture	Space_Heat	Electric	EASHARE	AgricultureSpace_HeatElectric	1	999	999	999
Agriculture	Space_Heat	Natural_Gas	EASHARE	AgricultureSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Agriculture	Water_Heat	Electric	EASHARE	AgricultureWater_HeatElectric	0.4	0.5	0.08	0.02
Agriculture	Water_Heat	Natural_Gas	EASHARE	AgricultureWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
College	AC_Compressor	Electric	EASHARE	CollegeAC_CompressorElectric	0.65	0.35	N/A	N/A
College	AC_Compressor	Natural_Gas	EASHARE	CollegeAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
College	Cook_top	Electric	EASHARE	CollegeCook_topElectric	0.65	0.35	N/A	N/A
College	Cook_top	Natural_Gas	EASHARE	CollegeCook_topNatural_Gas	0.65	0.35	N/A	N/A
College	Fryer	Electric	EASHARE	CollegeFryerElectric	0.65	0.35	N/A	N/A
College	Fryer	Natural_Gas	EASHARE	CollegeFryerNatural_Gas	0.65	0.35	N/A	N/A
College	Griddle	Electric	EASHARE	CollegeGriddleElectric	0.65	0.35	N/A	N/A
College	Griddle	Natural_Gas	EASHARE	CollegeGriddleNatural_Gas	0.65	0.35	N/A	N/A
College	Other	Natural_Gas	EASHARE	CollegeOtherNatural_Gas	1	N/A	N/A	N/A
College	Other_Cooking	Electric	EASHARE	CollegeOther_CookingElectric	0.65	0.35	N/A	N/A
College	Other_Cooking	Natural_Gas	EASHARE	CollegeOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
College	Space_Heat	Electric	EASHARE	CollegeSpace_HeatElectric	1	999	999	999
College	Space_Heat	Natural_Gas	EASHARE	CollegeSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
College	Water_Heat	Electric	EASHARE	CollegeWater_HeatElectric	0.4	0.5	0.08	0.02
College	Water_Heat	Natural_Gas	EASHARE	CollegeWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Construction	Other	Natural_Gas	EASHARE	ConstructionOtherNatural_Gas	1	N/A	N/A	N/A
Construction	Space_Heat	Electric	EASHARE	ConstructionSpace_HeatElectric	1	999	999	999
Construction	Space_Heat	Natural_Gas	EASHARE	ConstructionSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Construction	Water_Heat	Electric	EASHARE	ConstructionWater_HeatElectric	0.4	0.5	0.08	0.02
Construction	Water_Heat	Natural_Gas	EASHARE	ConstructionWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Government	AC_Compressor	Electric	EASHARE	GovernmentAC_CompressorElectric	0.65	0.35	N/A	N/A
Government	AC_Compressor	Natural_Gas	EASHARE	GovernmentAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Government	Cook_top	Electric	EASHARE	GovernmentCook_topElectric	0.65	0.35	N/A	N/A
Government	Cook_top	Natural_Gas	EASHARE	GovernmentCook_topNatural_Gas	0.65	0.35	N/A	N/A
Government	Fryer	Electric	EASHARE	GovernmentFryerElectric	0.65	0.35	N/A	N/A
Government	Fryer	Natural_Gas	EASHARE	GovernmentFryerNatural_Gas	0.65	0.35	N/A	N/A
Government	Griddle	Electric	EASHARE	GovernmentGriddleElectric	0.65	0.35	N/A	N/A
Government	Griddle	Natural_Gas	EASHARE	GovernmentGriddleNatural_Gas	0.65	0.35	N/A	N/A
Government	Other	Natural_Gas	EASHARE	GovernmentOtherNatural_Gas	1	N/A	N/A	N/A
Government	Other_Cooking	Electric	EASHARE	GovernmentOther_CookingElectric	0.65	0.35	N/A	N/A
Government	Other_Cooking	Natural_Gas	EASHARE	GovernmentOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Government	Space_Heat	Electric	EASHARE	GovernmentSpace_HeatElectric	1	999	999	999
Government	Space_Heat	Natural_Gas	EASHARE	GovernmentSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Government	Water_Heat	Electric	EASHARE	GovernmentWater_HeatElectric	0.4	0.5	0.08	0.02
Government	Water_Heat	Natural_Gas	EASHARE	GovernmentWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Grocery	AC_Compressor	Electric	EASHARE	GroceryAC_CompressorElectric	0.65	0.35	N/A	N/A
Grocery	AC_Compressor	Natural_Gas	EASHARE	GroceryAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Cook_top	Electric	EASHARE	GroceryCook_topElectric	0.65	0.35	N/A	N/A
Grocery	Cook_top	Natural_Gas	EASHARE	GroceryCook_topNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Fryer	Electric	EASHARE	GroceryFryerElectric	0.65	0.35	N/A	N/A
Grocery	Fryer	Natural_Gas	EASHARE	GroceryFryerNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Griddle	Electric	EASHARE	GroceryGriddleElectric	0.65	0.35	N/A	N/A
Grocery	Griddle	Natural_Gas	EASHARE	GroceryGriddleNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Other	Natural_Gas	EASHARE	GroceryOtherNatural_Gas	1	N/A	N/A	N/A
Grocery	Other_Cooking	Electric	EASHARE	GroceryOther_CookingElectric	0.65	0.35	N/A	N/A
Grocery	Other_Cooking	Natural_Gas	EASHARE	GroceryOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Grocery	Space_Heat	Electric	EASHARE	GrocerySpace_HeatElectric	1	999	999	999
Grocery	Space_Heat	Natural_Gas	EASHARE	GrocerySpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Grocery	Water_Heat	Electric	EASHARE	GroceryWater_HeatElectric	0.4	0.5	0.08	0.02
Grocery	Water_Heat	Natural_Gas	EASHARE	GroceryWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Health	AC_Compressor	Electric	EASHARE	HealthAC_CompressorElectric	0.65	0.35	N/A	N/A
Health	AC_Compressor	Natural_Gas	EASHARE	HealthAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Health	Cook_top	Electric	EASHARE	HealthCook_topElectric	0.65	0.35	N/A	N/A
Health	Cook_top	Natural_Gas	EASHARE	HealthCook_topNatural_Gas	0.65	0.35	N/A	N/A
Health	Drying	Electric	EASHARE	HealthDryingElectric	0.65	0.35	N/A	N/A
Health	Drying	Natural_Gas	EASHARE	HealthDryingNatural_Gas	0.65	0.35	N/A	N/A
Health	Fryer	Electric	EASHARE	HealthFryerElectric	0.65	0.35	N/A	N/A
Health	Fryer	Natural_Gas	EASHARE	HealthFryerNatural_Gas	0.65	0.35	N/A	N/A
Health	Griddle	Electric	EASHARE	HealthGriddleElectric	0.65	0.35	N/A	N/A
Health	Griddle	Natural_Gas	EASHARE	HealthGriddleNatural_Gas	0.65	0.35	N/A	N/A
Health	Other	Natural_Gas	EASHARE	HealthOtherNatural_Gas	1	N/A	N/A	N/A
Health	Other_Cooking	Electric	EASHARE	HealthOther_CookingElectric	0.65	0.35	N/A	N/A
Health	Other_Cooking	Natural_Gas	EASHARE	HealthOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Health	Space_Heat	Electric	EASHARE	HealthSpace_HeatElectric	1	999	999	999
Health	Space_Heat	Natural_Gas	EASHARE	HealthSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Health	Water_Heat	Electric	EASHARE	HealthWater_HeatElectric	0.4	0.5	0.08	0.02
Health	Water_Heat	Natural_Gas	EASHARE	HealthWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Laundry	Drying	Electric	EASHARE	LaundryDryingElectric	0.65	0.35	N/A	N/A
Laundry	Drying	Natural_Gas	EASHARE	LaundryDryingNatural_Gas	0.65	0.35	N/A	N/A

San Diego Gas & Electric
Core Commercial E Share Values by Business Type and End Use

bname	nname	fname	_NAME_	SAT_LOOKUP	Stock_Qtec	Standard_Qtec	High_Qtec	Premium_Qtec
Laundry	Other	Natural_Gas	EASHARE	LaundryOtherNatural_Gas	1	N/A	N/A	N/A
Laundry	Space_Heat	Electric	EASHARE	LaundrySpace_HeatElectric	1	999	999	999
Laundry	Space_Heat	Natural_Gas	EASHARE	LaundrySpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Laundry	Water_Heat	Electric	EASHARE	LaundryWater_HeatElectric	0.4	0.5	0.08	0.02
Laundry	Water_Heat	Natural_Gas	EASHARE	LaundryWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Lodging	AC_Compressor	Electric	EASHARE	LodgingAC_CompressorElectric	0.65	0.35	N/A	N/A
Lodging	AC_Compressor	Natural_Gas	EASHARE	LodgingAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Cook_top	Electric	EASHARE	LodgingCook_topElectric	0.65	0.35	N/A	N/A
Lodging	Cook_top	Natural_Gas	EASHARE	LodgingCook_topNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Drying	Electric	EASHARE	LodgingDryingElectric	0.65	0.35	N/A	N/A
Lodging	Drying	Natural_Gas	EASHARE	LodgingDryingNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Fryer	Electric	EASHARE	LodgingFryerElectric	0.65	0.35	N/A	N/A
Lodging	Fryer	Natural_Gas	EASHARE	LodgingFryerNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Griddle	Electric	EASHARE	LodgingGriddleElectric	0.65	0.35	N/A	N/A
Lodging	Griddle	Natural_Gas	EASHARE	LodgingGriddleNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Other	Natural_Gas	EASHARE	LodgingOtherNatural_Gas	1	N/A	N/A	N/A
Lodging	Other_Cooking	Electric	EASHARE	LodgingOther_CookingElectric	0.65	0.35	N/A	N/A
Lodging	Other_Cooking	Natural_Gas	EASHARE	LodgingOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Lodging	Space_Heat	Electric	EASHARE	LodgingSpace_HeatElectric	1	999	999	999
Lodging	Space_Heat	Natural_Gas	EASHARE	LodgingSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Lodging	Water_Heat	Electric	EASHARE	LodgingWater_HeatElectric	0.4	0.5	0.08	0.02
Lodging	Water_Heat	Natural_Gas	EASHARE	LodgingWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Misc	AC_Compressor	Electric	EASHARE	MiscAC_CompressorElectric	0.65	0.35	N/A	N/A
Misc	AC_Compressor	Natural_Gas	EASHARE	MiscAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Misc	Cook_top	Electric	EASHARE	MiscCook_topElectric	0.65	0.35	N/A	N/A
Misc	Cook_top	Natural_Gas	EASHARE	MiscCook_topNatural_Gas	0.65	0.35	N/A	N/A
Misc	Fryer	Electric	EASHARE	MiscFryerElectric	0.65	0.35	N/A	N/A
Misc	Fryer	Natural_Gas	EASHARE	MiscFryerNatural_Gas	0.65	0.35	N/A	N/A
Misc	Griddle	Electric	EASHARE	MiscGriddleElectric	0.65	0.35	N/A	N/A
Misc	Griddle	Natural_Gas	EASHARE	MiscGriddleNatural_Gas	0.65	0.35	N/A	N/A
Misc	Other	Natural_Gas	EASHARE	MiscOtherNatural_Gas	1	N/A	N/A	N/A
Misc	Other_Cooking	Electric	EASHARE	MiscOther_CookingElectric	0.65	0.35	N/A	N/A
Misc	Other_Cooking	Natural_Gas	EASHARE	MiscOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Misc	Space_Heat	Electric	EASHARE	MiscSpace_HeatElectric	1	999	999	999
Misc	Space_Heat	Natural_Gas	EASHARE	MiscSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Misc	Water_Heat	Electric	EASHARE	MiscWater_HeatElectric	0.4	0.5	0.08	0.02
Misc	Water_Heat	Natural_Gas	EASHARE	MiscWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Office	AC_Compressor	Electric	EASHARE	OfficeAC_CompressorElectric	0.65	0.35	N/A	N/A
Office	AC_Compressor	Natural_Gas	EASHARE	OfficeAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Office	Cooking	Electric	EASHARE	OfficeCookingElectric	0.65	0.35	N/A	N/A
Office	Cooking	Natural_Gas	EASHARE	OfficeCookingNatural_Gas	0.65	0.35	N/A	N/A
Office	Other	Natural_Gas	EASHARE	OfficeOtherNatural_Gas	1	N/A	N/A	N/A
Office	Space_Heat	Electric	EASHARE	OfficeSpace_HeatElectric	1	999	999	999
Office	Space_Heat	Natural_Gas	EASHARE	OfficeSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Office	Water_Heat	Electric	EASHARE	OfficeWater_HeatElectric	0.4	0.5	0.08	0.02
Office	Water_Heat	Natural_Gas	EASHARE	OfficeWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Restaurant	AC_Compressor	Electric	EASHARE	RestaurantAC_CompressorElectric	0.65	0.35	N/A	N/A
Restaurant	AC_Compressor	Natural_Gas	EASHARE	RestaurantAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Cook_top	Electric	EASHARE	RestaurantCook_topElectric	0.65	0.35	N/A	N/A
Restaurant	Cook_top	Natural_Gas	EASHARE	RestaurantCook_topNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Fryer	Electric	EASHARE	RestaurantFryerElectric	0.65	0.35	N/A	N/A
Restaurant	Fryer	Natural_Gas	EASHARE	RestaurantFryerNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Griddle	Electric	EASHARE	RestaurantGriddleElectric	0.65	0.35	N/A	N/A
Restaurant	Griddle	Natural_Gas	EASHARE	RestaurantGriddleNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Other	Natural_Gas	EASHARE	RestaurantOtherNatural_Gas	1	N/A	N/A	N/A
Restaurant	Other_Cooking	Electric	EASHARE	RestaurantOther_CookingElectric	0.65	0.35	N/A	N/A
Restaurant	Other_Cooking	Natural_Gas	EASHARE	RestaurantOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
Restaurant	Space_Heat	Electric	EASHARE	RestaurantSpace_HeatElectric	1	999	999	999
Restaurant	Space_Heat	Natural_Gas	EASHARE	RestaurantSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Restaurant	Water_Heat	Electric	EASHARE	RestaurantWater_HeatElectric	0.4	0.5	0.08	0.02
Restaurant	Water_Heat	Natural_Gas	EASHARE	RestaurantWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Retail	Cooking	Electric	EASHARE	RetailCookingElectric	0.65	0.35	N/A	N/A
Retail	Cooking	Natural_Gas	EASHARE	RetailCookingNatural_Gas	0.65	0.35	N/A	N/A
Retail	Other	Natural_Gas	EASHARE	RetailOtherNatural_Gas	1	N/A	N/A	N/A
Retail	Space_Heat	Electric	EASHARE	RetailSpace_HeatElectric	1	999	999	999
Retail	Space_Heat	Natural_Gas	EASHARE	RetailSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Retail	Water_Heat	Electric	EASHARE	RetailWater_HeatElectric	0.4	0.5	0.08	0.02
Retail	Water_Heat	Natural_Gas	EASHARE	RetailWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
School	AC_Compressor	Electric	EASHARE	SchoolAC_CompressorElectric	0.65	0.35	N/A	N/A
School	AC_Compressor	Natural_Gas	EASHARE	SchoolAC_CompressorNatural_Gas	0.65	0.35	N/A	N/A
School	Cook_top	Electric	EASHARE	SchoolCook_topElectric	0.65	0.35	N/A	N/A
School	Cook_top	Natural_Gas	EASHARE	SchoolCook_topNatural_Gas	0.65	0.35	N/A	N/A
School	Fryer	Electric	EASHARE	SchoolFryerElectric	0.65	0.35	N/A	N/A
School	Fryer	Natural_Gas	EASHARE	SchoolFryerNatural_Gas	0.65	0.35	N/A	N/A
School	Griddle	Electric	EASHARE	SchoolGriddleElectric	0.65	0.35	N/A	N/A
School	Griddle	Natural_Gas	EASHARE	SchoolGriddleNatural_Gas	0.65	0.35	N/A	N/A
School	Other	Natural_Gas	EASHARE	SchoolOtherNatural_Gas	1	N/A	N/A	N/A
School	Other_Cooking	Electric	EASHARE	SchoolOther_CookingElectric	0.65	0.35	N/A	N/A

San Diego Gas & Electric
Core Commercial E Share Values by Business Type and End Use

bname	nname	fname	_NAME_	SAT_LOOKUP	Stock_Qtec	Standard_Qtec	High_Qtec	Premium_Qtec
School	Other_Cooking	Natural_Gas	EASHARE	SchoolOther_CookingNatural_Gas	0.65	0.35	N/A	N/A
School	Space_Heat	Electric	EASHARE	SchoolSpace_HeatElectric	1	999	999	999
School	Space_Heat	Natural_Gas	EASHARE	SchoolSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
School	Water_Heat	Electric	EASHARE	SchoolWater_HeatElectric	0.4	0.5	0.08	0.02
School	Water_Heat	Natural_Gas	EASHARE	SchoolWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
TCU	Engine	Electric	EASHARE	TCUEngineElectric	0.65	0.35	N/A	N/A
TCU	Engine	Natural_Gas	EASHARE	TCUEngineNatural_Gas	0.65	0.35	N/A	N/A
TCU	Other	Natural_Gas	EASHARE	TCUOtherNatural_Gas	1	N/A	N/A	N/A
TCU	Space_Heat	Electric	EASHARE	TCUSpace_HeatElectric	1	999	999	999
TCU	Space_Heat	Natural_Gas	EASHARE	TCUSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
TCU	Water_Heat	Electric	EASHARE	TCUWater_HeatElectric	0.4	0.5	0.08	0.02
TCU	Water_Heat	Natural_Gas	EASHARE	TCUWater_HeatNatural_Gas	0.4	0.5	0.08	0.02
Warehouse	Engine	Electric	EASHARE	WarehouseEngineElectric	0.65	0.35	N/A	N/A
Warehouse	Engine	Natural_Gas	EASHARE	WarehouseEngineNatural_Gas	0.65	0.35	N/A	N/A
Warehouse	Other	Natural_Gas	EASHARE	WarehouseOtherNatural_Gas	1	999	N/A	N/A
Warehouse	Space_Heat	Electric	EASHARE	WarehouseSpace_HeatElectric	1	999	999	999
Warehouse	Space_Heat	Natural_Gas	EASHARE	WarehouseSpace_HeatNatural_Gas	0.65	0.3	0.04	0.01
Warehouse	Water_Heat	Electric	EASHARE	WarehouseWater_HeatElectric	0.4	0.5	0.08	0.02
Warehouse	Water_Heat	Natural_Gas	EASHARE	WarehouseWater_HeatNatural_Gas	0.4	0.5	0.08	0.02

San Diego Gas & Electric
Average Equipment Age

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other
Office	1977	1978	1974	1978	1979	1976	1980	1975	1978	1975	1973
Restaurant	1980	1983	1980	1980	1982	1981	1983	1977	1983	1978	1980
Retail	1976	1979	1977	1977	1984	1981	1977	1976	1978	1984	1977
Laundry	1979	1975	1981	1986	1986	1986	1986	1975	1976	1981	1975
Warehouse	1977	1977	1975	1981	1979	1979	1939	1975	1983	1981	1978
School	1975	1977	1971	1972	1975	1972	1972	1973	1975	1974	1972
College	1974	1976	1973	1974	1975	1975	1973	1979	1974	1973	1970
Health	1976	1979	1974	1975	1977	1975	1973	1975	1977	1974	1975
Lodging	1974	1981	1975	1979	1983	1979	1984	1975	1980	1975	1981
Misc	1974	1977	1972	1972	1976	1973	1979	1974	1978	1974	1978
Government	1975	1977	1973	1979	1975	1976	1978	1975	1980	1978	1972
TCU	1975	1979	1975	1978	1982	1979	1990	1975	1983	1978	1981
Construction	1977	1977	1972	1974	1975	1974	1953	1973	1980	1975	1976
Agriculture	1982	1980	1973	1979	1980	1979	1970	1976	1971	1987	1985

San Diego Gas & Electric
Use Per Meter (new)

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	5400	17920	708	3655	3	1461	270	3	3	3	32	29446
Restaurant	2225	7385	292	1506	1	602	111	1	1	1	13	12135
Retail	1871	6209	245	1266	1	506	93	1	1	1	11	10202
Laundry	4735	15713	620	3205	3	1281	237	3	3	3	28	25819
Warehouse	13683	45407	1793	9261	7	3702	683	7	7	7	81	74610
School	846	2808	111	573	0	229	42	0	0	0	5	4613
College	3830	12711	502	2592	2	1036	191	2	2	2	23	20886
Health	0	1	0	0	0	0	0	0	0	0	0	1
Lodging	11847	39315	1552	8018	6	3205	592	6	6	6	70	64599
Misc	631	2094	83	427	0	171	32	0	0	0	4	3440
Government	11138	36961	1459	7538	6	3013	556	6	6	6	66	60732
TCU	64	213	8	43	0	17	3	0	0	0	0	349
Construction	0	1	0	0	0	0	0	0	0	0	0	1
Agriculture	0	1	0	0	0	0	0	0	0	0	0	1

San Diego Gas & Electric
Use Per Meter (Average of All)

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	552	229	28	9	7	29	6	9	27	8	550	1455
Restaurant	460	890	1485	611	1173	1298	316	18	8	0	292	6551
Retail	485	295	107	18	119	206	127	28	54	4	672	2116
Laundry	42	666	5	1	1	8	0	1	6694	0	6233	13652
Warehouse	425	123	18	5	42	49	62	48	141	42	1366	2321
School	2450	826	140	10	31	257	26	31	5	33	717	4526
College	3469	1714	167	49	86	206	48	217	53	74	2359	8441
Health	2467	1546	248	48	67	191	108	45	339	25	2608	7692
Lodging	1680	3432	474	116	148	577	284	28	894	1	3879	11512
Misc	706	431	87	17	29	72	23	73	28	5	476	1947
Government	2573	1496	131	65	38	108	59	69	35	380	1008	5961
TCU	780	280	25	6	12	22	15	38	2	1224	1294	3697
Construction	531	166	13	0	2	7	5	16	99	0	783	1623
Agriculture	3433	832	141	24	294	653	594	8	866	5677	11463	23985

San Diego Gas & Electric
Natural Gas Prices (AVERAGE)
$/Therm

Year	Com Price Deflator	C Agriculture Average Price	C College Average Price	C Construction Average Price	C Government Average Price	C Health Average Price	C Laundry Average Price	C Lodging Average Price	C Misc Average Price	C Office Average Price	C Restaurant Average Price	C Retail Average Price	C School Average Price	C TCU Average Price	C Warehouse Average Price
2017	100.00	0.7852	0.8485	0.8128	0.7896	0.7790	0.8519	0.7625	0.7576	0.7709	0.8416	0.7499	0.7628	0.8281	0.7488
2018	102.78	0.6367	0.7045	0.6660	0.6422	0.6303	0.7068	0.6133	0.6080	0.6223	0.6954	0.5998	0.6126	0.6809	0.5987
2019	104.50	0.6585	0.7277	0.6883	0.6643	0.6520	0.7297	0.6348	0.6294	0.6440	0.7179	0.6209	0.6338	0.7031	0.6198
2020	107.29	0.6854	0.7577	0.7163	0.6919	0.6787	0.7591	0.6611	0.6555	0.6708	0.7465	0.6466	0.6595	0.7310	0.6456
2021	110.05	0.7281	0.8073	0.7615	0.7362	0.7210	0.8070	0.7025	0.6964	0.7132	0.7927	0.6867	0.6994	0.7757	0.6856
2022	112.70	0.8020	0.8971	0.8413	0.8138	0.7940	0.8932	0.7734	0.7661	0.7865	0.8749	0.7544	0.7670	0.8544	0.7534
2023	115.27	0.8790	0.9733	0.9180	0.8906	0.8710	0.9696	0.8505	0.8433	0.8635	0.9514	0.8317	0.8443	0.9311	0.8307
2024	117.81	0.9429	1.0332	0.9804	0.9536	0.9351	1.0304	0.9152	0.9082	0.9275	1.0133	0.8971	0.9098	0.9938	0.8961
2025	120.30	1.0103	1.0994	1.0473	1.0207	1.0026	1.0969	0.9828	0.9760	0.9950	1.0800	0.9650	0.9777	1.0608	0.9640

San Diego Gas & Electric
Natural Gas Prices (Marginal)
$/Therm

Year	Com Price Deflator	C Agriculture Marginal Price	C College Marginal Price	C Construction Marginal Price	C Government Marginal Price	C Health Marginal Price	C Laundry Marginal Price	C Lodging Marginal Price	C Misc Marginal Price	C Office Marginal Price	C Restaurant Marginal Price	C Retail Marginal Price	C School Marginal Price	C TCU Marginal Price	C Warehouse Marginal Price
2017	100.00	0.7420	0.8027	0.7569	0.7506	0.7372	0.7936	0.7314	0.7245	0.7358	0.7735	0.7225	0.7218	0.7616	0.7182
2018	102.78	0.5918	0.6567	0.6077	0.6010	0.5866	0.6470	0.5804	0.5731	0.5852	0.6254	0.5710	0.5702	0.6127	0.5663
2019	104.50	0.6130	0.6792	0.6292	0.6224	0.6077	0.6693	0.6014	0.5938	0.6062	0.6473	0.5917	0.5909	0.6343	0.5869
2020	107.29	0.6386	0.7079	0.6556	0.6484	0.6331	0.6975	0.6265	0.6186	0.6315	0.6745	0.6163	0.6155	0.6609	0.6114
2021	110.05	0.6785	0.7543	0.6971	0.6892	0.6724	0.7430	0.6652	0.6565	0.6707	0.7178	0.6541	0.6532	0.7029	0.6486
2022	112.70	0.7459	0.8370	0.7682	0.7588	0.7386	0.8234	0.7299	0.7196	0.7366	0.7931	0.7166	0.7155	0.7752	0.7101
2023	115.27	0.8232	0.9136	0.8453	0.8360	0.8159	0.9001	0.8073	0.7970	0.8139	0.8700	0.7941	0.7930	0.8523	0.7876
2024	117.81	0.8887	0.9753	0.9099	0.9010	0.8818	0.9623	0.8735	0.8637	0.8798	0.9336	0.8609	0.8598	0.9166	0.8547
2025	120.30	0.9567	1.0420	0.9776	0.9688	0.9498	1.0292	0.9417	0.9320	0.9479	1.0009	0.9292	0.9282	0.9841	0.9231

San Diego Gas & Electric
ELECTRIC Prices (AVERAGE)
Cents/KWh

Year	C Agriculture Average Price	C College Average Price	C Construction Average Price	C Government Average Price	C Health Average Price	C Laundry Average Price	C Lodging Average Price	C Misc Average Price	C Office Average Price	C Restaurant Average Price	C Retail Average Price	C School Average Price	C TCU Average Price	C Warehouse Average Price
2017	23.77	25.69	24.61	23.91	23.59	25.79	23.09	22.94	23.34	25.48	22.71	23.10	25.07	22.67
2018	23.91	26.46	25.01	24.12	23.67	26.55	23.03	22.84	23.37	26.12	22.52	23.01	25.57	22.48
2019	24.53	27.10	25.64	24.74	24.28	27.18	23.64	23.44	23.99	26.74	23.13	23.61	26.19	23.09
2020	25.38	28.06	26.52	25.62	25.13	28.10	24.48	24.27	24.84	27.64	23.94	24.42	27.06	23.90
2021	26.51	29.39	27.73	26.81	26.25	29.39	25.58	25.36	25.97	28.86	25.00	25.47	28.24	24.96
2022	26.05	29.14	27.33	26.44	25.79	29.01	25.12	24.89	25.55	28.42	24.51	24.91	27.75	24.47
2023	26.75	29.62	27.93	27.10	26.50	29.51	25.88	25.66	26.28	28.95	25.31	25.69	28.33	25.28
2024	27.34	29.96	28.43	27.65	27.12	29.88	26.54	26.34	26.90	29.38	26.01	26.38	28.82	25.98
2025	28.09	30.57	29.12	28.38	27.88	30.50	27.33	27.14	27.67	30.03	26.83	27.19	29.50	26.81

San Diego Gas & Electric
ELECTRIC PRICES (Marginal)
Cents/KWh

Year	C Agriculture Marginal Price	C College Marginal Price	C Construction Marginal Price	C Government Marginal Price	C Health Marginal Price	C Laundry Marginal Price	C Lodging Marginal Price	C Misc Marginal Price	C Office Marginal Price	C Restaurant Marginal Price	C Retail Marginal Price	C School Marginal Price	C TCU Marginal Price	C Warehouse Marginal Price
2017	23.79	25.74	24.27	24.07	23.64	25.45	23.45	23.23	23.59	24.80	23.17	23.14	24.42	23.03
2018	23.93	26.55	24.57	24.30	23.72	26.16	23.47	23.17	23.66	25.29	23.09	23.06	24.78	22.90
2019	24.55	27.20	25.20	24.92	24.33	26.80	24.08	23.78	24.27	25.92	23.69	23.66	25.40	23.50
2020	25.40	28.15	26.07	25.79	25.18	27.74	24.91	24.60	25.11	26.82	24.51	24.48	26.28	24.31
2021	26.53	29.50	27.26	26.95	26.29	29.05	26.01	25.67	26.23	28.07	25.58	25.54	27.48	25.36
2022	26.07	29.25	26.85	26.52	25.81	28.78	25.51	25.15	25.74	27.72	25.05	25.01	27.09	24.82
2023	26.77	29.71	27.49	27.18	26.53	29.27	26.25	25.92	26.46	28.29	25.82	25.79	27.71	25.61
2024	27.36	30.03	28.01	27.74	27.15	29.63	26.89	26.59	27.09	28.74	26.50	26.47	28.22	26.31
2025	28.11	30.62	28.73	28.47	27.91	30.25	27.67	27.39	27.85	29.41	27.31	27.28	28.92	27.13

San Diego Gas & Electric
Core Commercial Market
Average Year Forecast

SOURCE	DELCOI	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
GN3Commercia	N+T	**2017**	1940.00	1826.12	1695.34	1530.42	1304.26	1173.16	1135.84	1133.60	1136.79	1208.88	1517.66	1972.22	17574.31
GN3Commercia	N+T	2018	1996.21	1879.03	1744.46	1574.76	1342.05	1207.15	1168.74	1166.45	1169.73	1243.91	1561.63	2029.36	18083.46
GN3Commercia	N+T	2019	1999.82	1882.43	1747.62	1577.61	1344.48	1209.33	1170.86	1168.56	1171.85	1246.16	1564.46	2033.03	18116.23
GN3Commercia	N+T	2020	2000.49	1883.06	1748.20	1578.14	1344.93	1209.73	1171.25	1168.95	1172.24	1246.57	1564.98	2033.71	18122.24
GN3Commercia	N+T	2021	1991.01	1874.14	1739.91	1570.66	1338.55	1204.00	1165.70	1163.41	1166.68	1240.67	1557.57	2024.07	18036.36
GN3Commercia	N+T	2022	1974.88	1858.96	1725.82	1557.94	1327.71	1194.25	1156.26	1153.99	1157.23	1230.62	1544.95	2007.68	17890.29
GN3Commercia	N+T	2023	1956.01	1841.19	1709.33	1543.05	1315.03	1182.84	1145.21	1142.96	1146.18	1218.86	1530.19	1988.50	17719.34
GN3Commercia	N+T	2024	1939.89	1826.01	1695.24	1530.33	1304.18	1173.09	1135.77	1133.54	1136.73	1208.81	1517.57	1972.10	17573.26
GN3Commercia	N+T	2025	1921.30	1808.52	1679.00	1515.67	1291.69	1161.85	1124.89	1122.68	1125.84	1197.23	1503.03	1953.21	17404.90

San Diego Gas & Electric
Core Commercial Market
COLD Year Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
GN3Commercia	**2017**	2097.80	1961.67	1805.16	1607.88	1337.79	1180.96	1136.13	1133.60	1137.66	1223.62	1592.80	2136.37	18351.43
GN3Commercia	2018	2154.00	2014.57	1854.28	1652.21	1375.57	1214.95	1169.03	1166.45	1170.60	1258.65	1636.77	2193.51	18860.58
GN3Commercia	2019	2157.62	2017.97	1857.44	1655.07	1378.00	1217.14	1171.15	1168.56	1172.71	1260.90	1639.60	2197.19	18893.35
GN3Commercia	2020	2158.28	2018.60	1858.02	1655.59	1378.45	1217.54	1171.54	1168.95	1173.10	1261.31	1640.12	2197.86	18899.36
GN3Commercia	2021	2148.80	2009.68	1849.73	1648.11	1372.08	1211.81	1165.99	1163.41	1167.55	1255.41	1632.71	2188.22	18813.48
GN3Commercia	2022	2132.68	1994.50	1835.64	1635.39	1361.24	1202.05	1156.55	1153.99	1158.10	1245.36	1620.09	2171.83	18667.41
GN3Commercia	2023	2113.81	1976.74	1819.15	1620.51	1348.55	1190.64	1145.50	1142.96	1147.04	1233.60	1605.33	2152.65	18496.46
GN3Commercia	2024	2097.68	1961.56	1805.06	1607.78	1337.71	1180.89	1136.06	1133.54	1137.59	1223.55	1592.71	2136.25	18350.38
GN3Commercia	2025	2079.10	1944.06	1788.82	1593.12	1325.21	1169.65	1125.18	1122.68	1126.70	1211.97	1578.17	2117.36	18182.02

San Diego Gas & Electric
Core Commercial Market
HOT Year Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
GN3Commercia	**2017**	1782.21	1690.58	1585.23	1452.68	1271.03	1165.36	1135.26	1133.60	1136.22	1194.15	1442.52	1808.07	16796.90
GN3Commercia	2018	1838.41	1743.49	1634.35	1497.02	1308.81	1199.34	1168.17	1166.45	1169.15	1229.17	1486.49	1865.21	17306.05
GN3Commercia	2019	1842.03	1746.89	1637.51	1499.87	1311.24	1201.53	1170.28	1168.56	1171.27	1231.42	1489.32	1868.88	17338.82
GN3Commercia	2020	1842.69	1747.52	1638.09	1500.40	1311.69	1201.93	1170.67	1168.95	1171.66	1231.84	1489.84	1869.56	17344.83
GN3Commercia	2021	1833.21	1738.59	1629.80	1492.92	1305.32	1196.20	1165.12	1163.41	1166.10	1225.93	1482.43	1859.92	17258.95
GN3Commercia	2022	1817.09	1723.42	1615.71	1480.20	1294.48	1186.45	1155.68	1153.99	1156.66	1215.88	1469.81	1843.53	17112.88
GN3Commercia	2023	1798.22	1705.65	1599.22	1465.31	1281.79	1175.04	1144.63	1142.96	1145.60	1204.12	1455.05	1824.34	16941.93
GN3Commercia	2024	1782.09	1690.47	1585.13	1452.59	1270.95	1165.28	1135.19	1133.54	1136.15	1194.07	1442.43	1807.95	16795.85
GN3Commercia	2025	1763.51	1672.98	1568.89	1437.93	1258.45	1154.05	1124.31	1122.68	1125.26	1182.49	1427.89	1789.06	16627.49

San Diego Gas & Electric
Core Commercial Market
BASE Year Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
GN3Commercia	**2017**	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	1128.40	13540.82
GN3Commercia	2018	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	1161.24	13934.93
GN3Commercia	2019	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	1163.36	13960.29
GN3Commercia	2020	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	1163.75	13964.94
GN3Commercia	2021	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	1158.21	13898.47
GN3Commercia	2022	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	1148.78	13785.41
GN3Commercia	2023	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	1137.76	13653.08
GN3Commercia	2024	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	1128.33	13540.01
GN3Commercia	2025	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	1117.47	13409.69

Non Residential Core
Core Industrial

GN3 Industrial DATA TABLES

San Diego Gas and Electric Company

Industrial GN3

The Year the Equipment Was Installed by Business Types

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	2002	1980	1979	1980	1968	1978	.	1970	1976
Food	2004	1999	2002	1992	1992	2002	1965	1994	1983
Textile	1999	1998	1994	1982	1992	1982	.	.	1980
Wood_Paper	1997	1994	1995	1981	1981	2006	.	.	1975
Chemical	2005	1995	2002	1986	1985	1981	.	1999	1976
Petroleum	2006	1990	2002	1975	1981	1971	.	.	1977
Stone	2007	1983	1996	1982	1982	1982	1985	2014	1975
Prim_Metal	1993	1991	1987	1982	1978	1982	.	1996	1976
Fab_Metal	2002	1989	1986	1980	1984	1980	.	1984	1975
Transport	1993	1994	1996	1981	1987	1983	1973	2003	1976
Misc	1996	1995	1994	1981	1987	1978	1984	1999	1978

San Diego Gas and Electric Company
Industrial GN3
Electric Price Forecasat (Cent/KWH)

(a) Average Price Forecast

Year	Chemical	Fab_Metal	Food	Mining	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Misc
2017	18.22	18.10	20.89	21.65	17.36	20.39	17.76	17.64	18.50	17.44	17.90
2018	18.24	18.09	21.71	22.64	17.12	21.07	17.63	17.48	18.60	17.21	17.82
2019	18.72	18.56	22.21	23.14	17.59	21.58	18.10	17.96	19.08	17.68	18.29
2020	19.38	19.22	22.96	23.89	18.21	22.33	18.74	18.59	19.75	18.31	18.93
2021	20.25	20.08	24.02	24.94	19.01	23.38	19.57	19.42	20.64	19.11	19.77
2022	19.91	19.72	23.78	24.60	18.61	23.17	19.18	19.05	20.31	18.71	19.39
2023	20.48	20.31	24.09	24.86	19.26	23.52	19.80	19.68	20.85	19.36	20.00
2024	20.97	20.81	24.29	25.03	19.85	23.76	20.35	20.23	21.31	19.94	20.53
2025	21.57	21.42	24.73	25.43	20.51	24.22	20.98	20.87	21.90	20.60	21.16
2035	27.05	26.92	29.72	30.25	26.14	29.33	26.54	26.46	27.33	26.21	26.69

(b) Marginal Price Forecast

Year	Chemical	Fab_Metal	Food	Mining	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Misc
2017	14.32	14.30	16.41	16.55	13.94	15.77	14.29	14.14	14.54	13.91	14.17
2018	14.30	14.27	17.10	17.29	13.78	16.24	14.25	14.06	14.59	13.75	14.10
2019	14.67	14.65	17.51	17.70	14.15	16.64	14.62	14.43	14.96	14.12	14.47
2020	15.18	15.15	18.12	18.32	14.63	17.22	15.13	14.92	15.48	14.61	14.97
2021	15.84	15.82	19.01	19.23	15.26	18.04	15.79	15.57	16.17	15.23	15.62
2022	15.53	15.50	18.92	19.15	14.90	17.88	15.47	15.23	15.87	14.86	15.28
2023	15.99	15.97	19.13	19.35	15.41	18.17	15.94	15.72	16.32	15.38	15.77
2024	16.40	16.38	19.26	19.45	15.87	18.38	16.35	16.15	16.69	15.85	16.20
2025	16.89	16.87	19.58	19.76	16.39	18.75	16.84	16.66	17.17	16.36	16.70

San Diego Gas and Electric Company
Industrial GN3
Gas Price Forecasat ($/Therm)

(a) Average Price Forecast

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2017	100.00	0.7782	0.7733	0.8924	0.9246	0.7417	0.8708	0.7585	0.7535	0.7901	0.7448	0.7647
2018	102.78	0.6300	0.6246	0.7497	0.7820	0.5913	0.7278	0.6089	0.6039	0.6423	0.5945	0.6155
2019	**104.50**	0.6517	0.6463	0.7733	0.8057	0.6123	0.7513	0.6302	0.6252	0.6643	0.6156	0.6369
2020	107.29	0.6788	0.6731	0.8043	0.8368	0.6378	0.7821	0.6563	0.6513	0.6917	0.6412	0.6632
2021	110.05	0.7216	0.7154	0.8559	0.8885	0.6772	0.8331	0.6971	0.6921	0.7355	0.6809	0.7045
2022	112.70	0.7961	0.7885	0.9505	0.9835	0.7438	0.9264	0.7668	0.7616	0.8119	0.7480	0.7753
2023	115.27	0.8730	0.8655	1.0265	1.0595	0.8211	1.0025	0.8439	0.8388	0.8888	0.8253	0.8524
2024	117.81	0.9368	0.9296	1.0852	1.1181	0.8868	1.0615	0.9089	0.9038	0.9520	0.8909	0.9171
2025	120.30	1.0042	0.9971	1.1510	1.1838	0.9549	1.1274	0.9767	0.9716	1.0192	0.9589	0.9848

(b) Marginal Price Forecasat

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2017	100.00	0.7368	0.7359	0.8443	0.8517	0.7170	0.8113	0.7350	0.7275	0.7479	0.7159	0.7292
2018	102.78	0.5863	0.5853	0.7012	0.7090	0.5650	0.6659	0.5843	0.5763	0.5981	0.5639	0.5781
2019	104.50	0.6073	0.6063	0.7247	0.7327	0.5856	0.6887	0.6053	0.5971	0.6194	0.5844	0.5990
2020	107.29	0.6327	0.6316	0.7554	0.7638	0.6100	0.7178	0.6306	0.6221	0.6453	0.6088	0.6240
2021	110.05	0.6720	0.6708	0.8064	0.8155	0.6471	0.7651	0.6697	0.6603	0.6858	0.6458	0.6625
2022	112.70	0.7381	0.7367	0.8995	0.9105	0.7083	0.8500	0.7354	0.7241	0.7547	0.7067	0.7267
2023	115.27	0.8154	0.8140	0.9756	0.9865	0.7858	0.9265	0.8127	0.8016	0.8319	0.7842	0.8041
2024	117.81	0.8813	0.8800	1.0347	1.0451	0.8529	0.9876	0.8787	0.8680	0.8971	0.8514	0.8704
2025	120.30	0.9494	0.9480	1.1006	1.1109	0.9214	1.0541	0.9468	0.9363	0.9649	0.9199	0.9386

San Diego Gas and Electric Company
Industrial GN3
Historical Throughput and Customer Counts

Business Type	therms_ 2017 Temp. Adj.	meters_ 2017	meters_ 2017 ExCust	meters_ 2017 NewCust	avgUse_ 2017 ExCust	avgUse_ 2017 NewCust	Price Elasticity	Employment Elasticity
Mining	93463	6	6	0	15577	0	0.00000	0.32145
Food	3262268	226	212	14	14680	10723	-0.19080	1.24251
Textile	26929	18	18	0	1496	0	0.00000	0.03333
Wood_Paper	18884	13	13	0	1453	0	0.00000	0.50827
Chemical	1797501	75	75	0	23967	0	-0.08052	0.65007
Petroleum	16563	3	3	0	5521	0	-0.18056	0.08454
Stone	345436	30	29	1	11653	7497	0.00000	0.41691
Prim_Metal	305971	11	10	1	24013	65838	0.00000	0.95669
Fab_Metal	1076801	143	143	0	7530	0	-0.13744	1.02388
Transport	1822406	51	51	0	35733	0	0.00000	0.40251
Misc	5485757	463	460	3	11903	3471	-0.10831	0.87931
Total	14,251,978	1,039	1,020					

San Diego Gas and Electric Company
Industrial GN3
Average Use Per Meter **therm**

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other	Total
Mining	0.00	6225.80	43.44	1922.69	76.05	0.56	0.00	2.75	4786.37	13057.66
Food	3180.78	10141.03	82.75	2847.86	5310.90	7.92	71.91	83.96	2503.74	24230.85
Textile	5027.39	6783.50	56.56	1340.65	7765.90	71.23	0.00	0.00	1098.82	22144.05
Wood_Paper	4463.96	11983.97	458.96	1285.89	1606.17	119.80	0.00	3.78	2324.39	22246.91
Chemical	1972.76	7552.98	2767.33	1673.42	2070.49	665.27	2.19	85.13	4219.74	21009.32
Petroleum	2197.09	20863.92	133.26	129.32	41681.87	8.61	0.00	9165.75	15693.36	89873.19
Stone	428.23	1589.00	45.91	474.03	3876.33	3293.73	0.59	0.02	1787.29	11495.13
Prim_Metal	1513.70	2386.00	313.35	1878.50	6092.33	16202.71	10.64	0.00	3538.66	31935.90
Fab_Metal	336.91	656.28	208.11	1452.36	3112.68	2689.72	0.05	7.80	2730.58	11194.48
Transport	488.08	1995.77	1128.58	1115.44	1053.17	659.96	0.00	196.93	1456.32	8094.24
Misc	230.00	1031.13	332.14	501.28	1535.53	375.48	0.01	17.60	1179.66	5202.83

San Diego Gas and Electric Company
Industrial GN3
Use Per Meter for New Customers therm

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other	Total
Mining	0.00	2.24	0.23	23947.31	0.00	0.00	0.00	0.00	9314.20	33263.98
Food	3155.88	12674.65	38.57	1919.40	1967.47	0.00	0.00	0.00	1249.16	21005.14
Textile	1329.08	131.16	1.11	7181.12	1647.02	0.00	0.00	0.00	17.62	10307.11
Wood_Paper	0.00	30721.53	214.64	20.21	9238.90	0.00	0.00	0.00	0.00	40195.28
Chemical	5624.56	11816.67	3290.36	2592.56	3709.92	0.00	0.00	35.54	587.66	27657.26
Petroleum	3649.78	91492.09	145.82	0.00	26440.15	0.00	0.00	0.00	868.47	122596.30
Stone	0.00	0.00	198.09	0.00	1636.20	0.00	0.00	0.00	0.00	1834.29
Prim_Metal	0.00	18017.06	0.00	0.00	1290.93	39287.08	0.00	0.00	0.00	58595.07
Fab_Metal	0.00	317.56	14.86	42.94	6237.87	33.44	0.00	0.00	2118.72	8765.39
Transport	0.00	3204.72	1876.33	589.64	2009.99	3173.04	0.00	5922.60	0.00	16776.31
Misc	1325.47	1281.96	223.24	588.39	2609.70	138.67	0.00	10.79	2858.83	9037.05

San Diego Gas and Electric Company
Industrial GN3
Electric UEC (Kwh/SqFt)

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	0.00	153.78	1.07	47.49	1.88	0.01	0.00	0.07	118.22
Food	894.74	2834.31	23.37	805.10	1507.57	2.24	20.33	23.73	719.30
Textile	255.39	344.60	2.87	68.10	394.52	3.62	0.00	0.00	55.82
Wood_Paper	205.34	551.26	21.11	59.15	73.88	5.51	0.00	0.17	106.92
Chemical	195.90	750.01	274.80	166.17	205.60	66.06	0.22	8.45	419.02
Petroleum	29.22	277.49	1.77	1.72	554.37	0.12	0.00	121.90	208.72
Stone	18.50	68.64	1.98	20.48	167.46	142.29	0.03	0.00	77.21
Primary_Metal	51.77	81.60	10.23	64.25	208.37	554.59	0.36	0.00	121.04
Fabricated_Metal	72.67	141.61	44.89	313.22	671.40	580.17	0.01	1.68	588.99
Transportation	83.56	341.15	193.01	191.35	180.35	112.99	0.00	33.71	249.62
Miscellaneous	160.38	722.32	227.50	349.39	1066.90	261.82	0.00	12.28	825.79

San Diego Gas and Electric Company
Industrial GN3
Gas UEC (Therm per SqFt.)

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	587697	5728	1099	281	163309	67709	159	140010	4169
Food	48371	11453	3801	1088	51807	38092	1210	56748	3383
Textile	69640	18095	1014	2073	185827	52133	3638	0	905
Wood_Paper	538832	176840	2355	199	25503	48049	160	0	1333
Chemical	57040	32092	1693	1327	1288	28940	79	36	3051
Petroleum	74485	18782	766	1037	670974	2971	0	4932	10241
Stone	241878	48074	1559	1558	334016	304106	1844	0	1204
Primary_Metal	8499	26852	2693	636	1243	678517	3232	0	2343
Fabricated_Metal	29520	28816	2697	591	2811	101640	281	0	2435
Transportation	3723	2169	1490	443	11159	19127	71	353	373
Miscellaneous	7219	5077	1109	319	8838	49023	413	859	952

San Diego Gas and Electric Company
Industrial GN3
Gas Market Shares

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Chemical	0.00	0.28	0.24	0.50	0.03	0.01	0.00	0.03	1
Fabricated_Metal	0.06	0.21	0.14	0.77	0.24	0.01	0.00	0.01	1
Food	0.20	0.31	0.16	0.43	0.57	0.03	0.00	0.00	0
Mining	0.05	0.21	0.20	0.53	0.23	0.05	0.00	0.01	1
Miscllaneous	0.07	0.32	0.27	0.58	0.21	0.03	0.00	0.03	1
Petroleum	0.07	0.24	0.17	0.22	0.26	0.04	0.00	0.06	1
Primary_Metal	0.03	0.11	0.22	0.47	0.26	0.32	0.02	0.01	1
Stone	0.03	0.09	0.21	0.55	0.33	0.49	0.01	0.01	1
Textile	0.01	0.08	0.17	0.57	0.32	0.12	0.00	0.01	1
Transportation	0.02	0.07	0.20	0.50	0.20	0.08	0.00	0.01	1
Wood_Paper	0.02	0.12	0.21	0.53	0.24	0.07	0.00	0.01	1

San Diego Gas and Electric Company
Industrial GN3
Saturation Rate

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Food	0.45	0.45	0.60	0.85	0.12	0.33	0.73	0.70	1.00
Textile	0.26	0.26	0.70	0.71	0.14	0.09	0.72	0.46	1.00
Wood_Paper	0.01	0.01	0.62	0.77	0.09	0.07	0.71	0.50	1.00
Chemical	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Petroleum	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Stone	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Prim_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Fab_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Transport	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Misc	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00

San Diego Gas and Electric Company
Industrial GN3
UEC, Equipment Cost and Efficiency Shares

Where Fuel = 1 (gas) and = 2 (electric), and
Efficiency =1 (stock), =2 (standard), =3 (high) and =4 (premium)

Business Type	End Use	Fuel	Efficiency	EQcost
Mining	Fire_Tube_Boiler	1	1	3,907,010
Mining	Fire_Tube_Boiler	1	2	4,297,711
Mining	Fire_Tube_Boiler	1	3	4,688,412
Mining	Fire_Tube_Boiler	2	1	3,125,608
Mining	Fire_Tube_Boiler	2	2	3,438,169
Mining	Fire_Tube_Boiler	2	3	3,750,729
Mining	Water_Tube_Boiler	1	1	38,080
Mining	Water_Tube_Boiler	1	2	41,888
Mining	Water_Tube_Boiler	1	3	45,696
Mining	Water_Tube_Boiler	2	1	30,464
Mining	Water_Tube_Boiler	2	2	33,510
Mining	Water_Tube_Boiler	2	3	36,557
Mining	Space_Heat	1	1	7,306
Mining	Space_Heat	1	2	8,037
Mining	Space_Heat	1	3	8,767
Mining	Space_Heat	2	1	5,845
Mining	Space_Heat	2	2	6,429
Mining	Space_Heat	2	3	7,014
Mining	Water_Heat	1	1	1,868
Mining	Water_Heat	1	2	2,055
Mining	Water_Heat	1	3	2,242
Mining	Water_Heat	2	1	1,494
Mining	Water_Heat	2	2	1,644
Mining	Water_Heat	2	3	1,793
Mining	Dryer	1	1	1,085,678
Mining	Dryer	1	2	1,194,246
Mining	Dryer	1	3	1,302,814
Mining	Dryer	2	1	868,543
Mining	Dryer	2	2	955,397
Mining	Dryer	2	3	1,042,251
Mining	Furnace_Oven_Kiln	1	1	450,129
Mining	Furnace_Oven_Kiln	1	2	495,142
Mining	Furnace_Oven_Kiln	1	3	540,155
Mining	Furnace_Oven_Kiln	2	1	360,104
Mining	Furnace_Oven_Kiln	2	2	396,114
Mining	Furnace_Oven_Kiln	2	3	432,124
Mining	AC	1	1	1,057
Mining	AC	1	2	1,163
Mining	AC	1	3	1,268
Mining	AC	2	1	846
Mining	AC	2	2	930
Mining	AC	2	3	1,015
Mining	Engine	1	1	930,786
Mining	Engine	1	2	1,023,865
Mining	Engine	1	3	1,116,944
Mining	Engine	2	1	744,629
Mining	Engine	2	2	819,092
Mining	Engine	2	3	893,555
Mining	Other	1	1	-
Mining	Other	1	2	-
Mining	Other	1	3	-
Mining	Other	2	1	-
Mining	Other	2	2	-
Mining	Other	2	3	-
Food	Fire_Tube_Boiler	1	1	303,093
Food	Fire_Tube_Boiler	1	2	333,402
Food	Fire_Tube_Boiler	1	3	363,711
Food	Fire_Tube_Boiler	2	1	242,474
Food	Fire_Tube_Boiler	2	2	266,722
Food	Fire_Tube_Boiler	2	3	290,969
Food	Water_Tube_Boiler	1	1	71,765

Food	Water_Tube_Boiler	1	2	78,941
Food	Water_Tube_Boiler	1	3	86,117
Food	Water_Tube_Boiler	2	1	57,412
Food	Water_Tube_Boiler	2	2	63,153
Food	Water_Tube_Boiler	2	3	68,894
Food	Space_Heat	1	1	23,817
Food	Space_Heat	1	2	26,199
Food	Space_Heat	1	3	28,580
Food	Space_Heat	2	1	19,054
Food	Space_Heat	2	2	20,959
Food	Space_Heat	2	3	22,864
Food	Water_Heat	1	1	6,817
Food	Water_Heat	1	2	7,499
Food	Water_Heat	1	3	8,181
Food	Water_Heat	2	1	5,454
Food	Water_Heat	2	2	5,999
Food	Water_Heat	2	3	6,545
Food	Dryer	1	1	324,623
Food	Dryer	1	2	357,085
Food	Dryer	1	3	389,547
Food	Dryer	2	1	259,698
Food	Dryer	2	2	285,668
Food	Dryer	2	3	311,638
Food	Furnace_Oven_Kiln	1	1	238,684
Food	Furnace_Oven_Kiln	1	2	262,553
Food	Furnace_Oven_Kiln	1	3	286,421
Food	Furnace_Oven_Kiln	2	1	190,948
Food	Furnace_Oven_Kiln	2	2	210,042
Food	Furnace_Oven_Kiln	2	3	229,137
Food	AC	1	1	7,582
Food	AC	1	2	8,340
Food	AC	1	3	9,098
Food	AC	2	1	6,065
Food	AC	2	2	6,672
Food	AC	2	3	7,279
Food	Engine	1	1	355,583
Food	Engine	1	2	391,141
Food	Engine	1	3	426,700
Food	Engine	2	1	284,466
Food	Engine	2	2	312,913
Food	Engine	2	3	341,360
Food	Other	1	1	-
Food	Other	1	2	-
Food	Other	1	3	-
Food	Other	2	1	-
Food	Other	2	2	-
Food	Other	2	3	-
Textile	Fire_Tube_Boiler	1	1	440,682
Textile	Fire_Tube_Boiler	1	2	484,750
Textile	Fire_Tube_Boiler	1	3	528,818
Textile	Fire_Tube_Boiler	2	1	352,546
Textile	Fire_Tube_Boiler	2	2	387,800
Textile	Fire_Tube_Boiler	2	3	423,055
Textile	Water_Tube_Boiler	1	1	114,505
Textile	Water_Tube_Boiler	1	2	125,956
Textile	Water_Tube_Boiler	1	3	137,406
Textile	Water_Tube_Boiler	2	1	91,604
Textile	Water_Tube_Boiler	2	2	100,765
Textile	Water_Tube_Boiler	2	3	109,925
Textile	Space_Heat	1	1	6,417
Textile	Space_Heat	1	2	7,058
Textile	Space_Heat	1	3	7,700
Textile	Space_Heat	2	1	5,133
Textile	Space_Heat	2	2	5,647
Textile	Space_Heat	2	3	6,160
Textile	Water_Heat	1	1	13,118
Textile	Water_Heat	1	2	14,430
Textile	Water_Heat	1	3	15,742
Textile	Water_Heat	2	1	10,494
Textile	Water_Heat	2	2	11,544
Textile	Water_Heat	2	3	12,593
Textile	Dryer	1	1	1,175,913

Textile	Dryer	1	2	1,293,505
Textile	Dryer	1	3	1,411,096
Textile	Dryer	2	1	940,731
Textile	Dryer	2	2	1,034,804
Textile	Dryer	2	3	1,128,877
Textile	Furnace_Oven_Kiln	1	1	329,898
Textile	Furnace_Oven_Kiln	1	2	362,887
Textile	Furnace_Oven_Kiln	1	3	395,877
Textile	Furnace_Oven_Kiln	2	1	263,918
Textile	Furnace_Oven_Kiln	2	2	290,310
Textile	Furnace_Oven_Kiln	2	3	316,702
Textile	AC	1	1	23,021
Textile	AC	1	2	25,323
Textile	AC	1	3	27,626
Textile	AC	2	1	18,417
Textile	AC	2	2	20,259
Textile	AC	2	3	22,100
Textile	Engine	1	1	-
Textile	Engine	1	2	-
Textile	Engine	1	3	-
Textile	Engine	2	1	-
Textile	Engine	2	2	-
Textile	Engine	2	3	-
Textile	Other	1	1	-
Textile	Other	1	2	-
Textile	Other	1	3	-
Textile	Other	2	1	-
Textile	Other	2	2	-
Textile	Other	2	3	-
Wood_Paper	Fire_Tube_Boiler	1	1	3,531,505
Wood_Paper	Fire_Tube_Boiler	1	2	3,884,655
Wood_Paper	Fire_Tube_Boiler	1	3	4,237,806
Wood_Paper	Fire_Tube_Boiler	2	1	2,825,204
Wood_Paper	Fire_Tube_Boiler	2	2	3,107,724
Wood_Paper	Fire_Tube_Boiler	2	3	3,390,245
Wood_Paper	Water_Tube_Boiler	1	1	1,159,009
Wood_Paper	Water_Tube_Boiler	1	2	1,274,910
Wood_Paper	Water_Tube_Boiler	1	3	1,390,811
Wood_Paper	Water_Tube_Boiler	2	1	927,207
Wood_Paper	Water_Tube_Boiler	2	2	1,019,928
Wood_Paper	Water_Tube_Boiler	2	3	1,112,649
Wood_Paper	Space_Heat	1	1	15,435
Wood_Paper	Space_Heat	1	2	16,978
Wood_Paper	Space_Heat	1	3	18,522
Wood_Paper	Space_Heat	2	1	12,348
Wood_Paper	Space_Heat	2	2	13,583
Wood_Paper	Space_Heat	2	3	14,817
Wood_Paper	Water_Heat	1	1	1,304
Wood_Paper	Water_Heat	1	2	1,435
Wood_Paper	Water_Heat	1	3	1,565
Wood_Paper	Water_Heat	2	1	1,043
Wood_Paper	Water_Heat	2	2	1,148
Wood_Paper	Water_Heat	2	3	1,252
Wood_Paper	Dryer	1	1	167,147
Wood_Paper	Dryer	1	2	183,861
Wood_Paper	Dryer	1	3	200,576
Wood_Paper	Dryer	2	1	133,717
Wood_Paper	Dryer	2	2	147,089
Wood_Paper	Dryer	2	3	160,461
Wood_Paper	Furnace_Oven_Kiln	1	1	314,913
Wood_Paper	Furnace_Oven_Kiln	1	2	346,404
Wood_Paper	Furnace_Oven_Kiln	1	3	377,896
Wood_Paper	Furnace_Oven_Kiln	2	1	251,931
Wood_Paper	Furnace_Oven_Kiln	2	2	277,124
Wood_Paper	Furnace_Oven_Kiln	2	3	302,317
Wood_Paper	AC	1	1	1,049
Wood_Paper	AC	1	2	1,154
Wood_Paper	AC	1	3	1,258
Wood_Paper	AC	2	1	839
Wood_Paper	AC	2	2	923
Wood_Paper	AC	2	3	1,007
Wood_Paper	Engine	1	1	-

Wood_Paper	Engine	1	2	-
Wood_Paper	Engine	1	3	-
Wood_Paper	Engine	2	1	-
Wood_Paper	Engine	2	2	-
Wood_Paper	Engine	2	3	-
Wood_Paper	Other	1	1	-
Wood_Paper	Other	1	2	-
Wood_Paper	Other	1	3	-
Wood_Paper	Other	2	1	-
Wood_Paper	Other	2	2	-
Wood_Paper	Other	2	3	-
Chemical	Fire_Tube_Boiler	1	1	374,525
Chemical	Fire_Tube_Boiler	1	2	411,977
Chemical	Fire_Tube_Boiler	1	3	449,430
Chemical	Fire_Tube_Boiler	2	1	299,620
Chemical	Fire_Tube_Boiler	2	2	329,582
Chemical	Fire_Tube_Boiler	2	3	359,544
Chemical	Water_Tube_Boiler	1	1	210,716
Chemical	Water_Tube_Boiler	1	2	231,788
Chemical	Water_Tube_Boiler	1	3	252,859
Chemical	Water_Tube_Boiler	2	1	168,573
Chemical	Water_Tube_Boiler	2	2	185,430
Chemical	Water_Tube_Boiler	2	3	202,287
Chemical	Space_Heat	1	1	11,116
Chemical	Space_Heat	1	2	12,228
Chemical	Space_Heat	1	3	13,339
Chemical	Space_Heat	2	1	8,893
Chemical	Space_Heat	2	2	9,782
Chemical	Space_Heat	2	3	10,672
Chemical	Water_Heat	1	1	8,713
Chemical	Water_Heat	1	2	9,584
Chemical	Water_Heat	1	3	10,456
Chemical	Water_Heat	2	1	6,970
Chemical	Water_Heat	2	2	7,668
Chemical	Water_Heat	2	3	8,365
Chemical	Dryer	1	1	8,457
Chemical	Dryer	1	2	9,303
Chemical	Dryer	1	3	10,148
Chemical	Dryer	2	1	6,766
Chemical	Dryer	2	2	7,442
Chemical	Dryer	2	3	8,119
Chemical	Furnace_Oven_Kiln	1	1	190,020
Chemical	Furnace_Oven_Kiln	1	2	209,022
Chemical	Furnace_Oven_Kiln	1	3	228,024
Chemical	Furnace_Oven_Kiln	2	1	152,016
Chemical	Furnace_Oven_Kiln	2	2	167,218
Chemical	Furnace_Oven_Kiln	2	3	182,419
Chemical	AC	1	1	519
Chemical	AC	1	2	571
Chemical	AC	1	3	622
Chemical	AC	2	1	415
Chemical	AC	2	2	456
Chemical	AC	2	3	498
Chemical	Engine	1	1	236
Chemical	Engine	1	2	260
Chemical	Engine	1	3	284
Chemical	Engine	2	1	189
Chemical	Engine	2	2	208
Chemical	Engine	2	3	227
Chemical	Other	1	1	-
Chemical	Other	1	2	-
Chemical	Other	1	3	-
Chemical	Other	2	1	-
Chemical	Other	2	2	-
Chemical	Other	2	3	-
Petroleum	Fire_Tube_Boiler	1	1	461,658
Petroleum	Fire_Tube_Boiler	1	2	507,824
Petroleum	Fire_Tube_Boiler	1	3	553,990
Petroleum	Fire_Tube_Boiler	2	1	369,326
Petroleum	Fire_Tube_Boiler	2	2	406,259
Petroleum	Fire_Tube_Boiler	2	3	443,192
Petroleum	Water_Tube_Boiler	1	1	116,411

Petroleum	Water_Tube_Boiler	1	2	128,052
Petroleum	Water_Tube_Boiler	1	3	139,693
Petroleum	Water_Tube_Boiler	2	1	93,129
Petroleum	Water_Tube_Boiler	2	2	102,442
Petroleum	Water_Tube_Boiler	2	3	111,754
Petroleum	Space_Heat	1	1	4,748
Petroleum	Space_Heat	1	2	5,222
Petroleum	Space_Heat	1	3	5,697
Petroleum	Space_Heat	2	1	3,798
Petroleum	Space_Heat	2	2	4,178
Petroleum	Space_Heat	2	3	4,558
Petroleum	Water_Heat	1	1	6,427
Petroleum	Water_Heat	1	2	7,070
Petroleum	Water_Heat	1	3	7,713
Petroleum	Water_Heat	2	1	5,142
Petroleum	Water_Heat	2	2	5,656
Petroleum	Water_Heat	2	3	6,170
Petroleum	Dryer	1	1	4,158,697
Petroleum	Dryer	1	2	4,574,567
Petroleum	Dryer	1	3	4,990,436
Petroleum	Dryer	2	1	3,326,957
Petroleum	Dryer	2	2	3,659,653
Petroleum	Dryer	2	3	3,992,349
Petroleum	Furnace_Oven_Kiln	1	1	18,414
Petroleum	Furnace_Oven_Kiln	1	2	20,256
Petroleum	Furnace_Oven_Kiln	1	3	22,097
Petroleum	Furnace_Oven_Kiln	2	1	14,731
Petroleum	Furnace_Oven_Kiln	2	2	16,205
Petroleum	Furnace_Oven_Kiln	2	3	17,678
Petroleum	AC	1	1	-
Petroleum	AC	1	2	-
Petroleum	AC	1	3	-
Petroleum	AC	2	1	-
Petroleum	AC	2	2	-
Petroleum	AC	2	3	-
Petroleum	Engine	1	1	30,569
Petroleum	Engine	1	2	33,625
Petroleum	Engine	1	3	36,682
Petroleum	Engine	2	1	24,455
Petroleum	Engine	2	2	26,900
Petroleum	Engine	2	3	29,346
Petroleum	Other	1	1	-
Petroleum	Other	1	2	-
Petroleum	Other	1	3	-
Petroleum	Other	2	1	-
Petroleum	Other	2	2	-
Petroleum	Other	2	3	-
Stone	Fire_Tube_Boiler	1	1	1,591,073
Stone	Fire_Tube_Boiler	1	2	1,750,181
Stone	Fire_Tube_Boiler	1	3	1,909,288
Stone	Fire_Tube_Boiler	2	1	1,272,859
Stone	Fire_Tube_Boiler	2	2	1,400,145
Stone	Fire_Tube_Boiler	2	3	1,527,431
Stone	Water_Tube_Boiler	1	1	316,231
Stone	Water_Tube_Boiler	1	2	347,854
Stone	Water_Tube_Boiler	1	3	379,477
Stone	Water_Tube_Boiler	2	1	252,985
Stone	Water_Tube_Boiler	2	2	278,283
Stone	Water_Tube_Boiler	2	3	303,582
Stone	Space_Heat	1	1	10,255
Stone	Space_Heat	1	2	11,281
Stone	Space_Heat	1	3	12,306
Stone	Space_Heat	2	1	8,204
Stone	Space_Heat	2	2	9,024
Stone	Space_Heat	2	3	9,845
Stone	Water_Heat	1	1	10,249
Stone	Water_Heat	1	2	11,273
Stone	Water_Heat	1	3	12,298
Stone	Water_Heat	2	1	8,199
Stone	Water_Heat	2	2	9,019
Stone	Water_Heat	2	3	9,839
Stone	Dryer	1	1	2,197,157

Stone	Dryer	1	2	2,416,873
Stone	Dryer	1	3	2,636,589
Stone	Dryer	2	1	1,757,726
Stone	Dryer	2	2	1,933,498
Stone	Dryer	2	3	2,109,271
Stone	Furnace_Oven_Kiln	1	1	2,000,409
Stone	Furnace_Oven_Kiln	1	2	2,200,450
Stone	Furnace_Oven_Kiln	1	3	2,400,491
Stone	Furnace_Oven_Kiln	2	1	1,600,327
Stone	Furnace_Oven_Kiln	2	2	1,760,360
Stone	Furnace_Oven_Kiln	2	3	1,920,393
Stone	AC	1	1	12,130
Stone	AC	1	2	13,343
Stone	AC	1	3	14,556
Stone	AC	2	1	9,704
Stone	AC	2	2	10,674
Stone	AC	2	3	11,645
Stone	Engine	1	1	-
Stone	Engine	1	2	-
Stone	Engine	1	3	-
Stone	Engine	2	1	-
Stone	Engine	2	2	-
Stone	Engine	2	3	-
Stone	Other	1	1	-
Stone	Other	1	2	-
Stone	Other	1	3	-
Stone	Other	2	1	-
Stone	Other	2	2	-
Stone	Other	2	3	-
Prim_Metal	Fire_Tube_Boiler	1	1	54,853
Prim_Metal	Fire_Tube_Boiler	1	2	60,338
Prim_Metal	Fire_Tube_Boiler	1	3	65,823
Prim_Metal	Fire_Tube_Boiler	2	1	43,882
Prim_Metal	Fire_Tube_Boiler	2	2	48,270
Prim_Metal	Fire_Tube_Boiler	2	3	52,658
Prim_Metal	Water_Tube_Boiler	1	1	173,303
Prim_Metal	Water_Tube_Boiler	1	2	190,633
Prim_Metal	Water_Tube_Boiler	1	3	207,963
Prim_Metal	Water_Tube_Boiler	2	1	138,642
Prim_Metal	Water_Tube_Boiler	2	2	152,506
Prim_Metal	Water_Tube_Boiler	2	3	166,371
Prim_Metal	Space_Heat	1	1	17,381
Prim_Metal	Space_Heat	1	2	19,119
Prim_Metal	Space_Heat	1	3	20,857
Prim_Metal	Space_Heat	2	1	13,905
Prim_Metal	Space_Heat	2	2	15,295
Prim_Metal	Space_Heat	2	3	16,685
Prim_Metal	Water_Heat	1	1	4,105
Prim_Metal	Water_Heat	1	2	4,515
Prim_Metal	Water_Heat	1	3	4,926
Prim_Metal	Water_Heat	2	1	3,284
Prim_Metal	Water_Heat	2	2	3,612
Prim_Metal	Water_Heat	2	3	3,941
Prim_Metal	Dryer	1	1	8,022
Prim_Metal	Dryer	1	2	8,825
Prim_Metal	Dryer	1	3	9,627
Prim_Metal	Dryer	2	1	6,418
Prim_Metal	Dryer	2	2	7,060
Prim_Metal	Dryer	2	3	7,701
Prim_Metal	Furnace_Oven_Kiln	1	1	4,379,149
Prim_Metal	Furnace_Oven_Kiln	1	2	4,817,064
Prim_Metal	Furnace_Oven_Kiln	1	3	5,254,978
Prim_Metal	Furnace_Oven_Kiln	2	1	3,503,319
Prim_Metal	Furnace_Oven_Kiln	2	2	3,853,651
Prim_Metal	Furnace_Oven_Kiln	2	3	4,203,983
Prim_Metal	AC	1	1	20,859
Prim_Metal	AC	1	2	22,945
Prim_Metal	AC	1	3	25,031
Prim_Metal	AC	2	1	16,687
Prim_Metal	AC	2	2	18,356
Prim_Metal	AC	2	3	20,025
Prim_Metal	Engine	1	1	-

Prim_Metal	Engine	1	2	-
Prim_Metal	Engine	1	3	-
Prim_Metal	Engine	2	1	-
Prim_Metal	Engine	2	2	-
Prim_Metal	Engine	2	3	-
Prim_Metal	Other	1	1	-
Prim_Metal	Other	1	2	-
Prim_Metal	Other	1	3	-
Prim_Metal	Other	2	1	-
Prim_Metal	Other	2	2	-
Prim_Metal	Other	2	3	-
Fab_Metal	Fire_Tube_Boiler	1	1	199,496
Fab_Metal	Fire_Tube_Boiler	1	2	219,446
Fab_Metal	Fire_Tube_Boiler	1	3	239,395
Fab_Metal	Fire_Tube_Boiler	2	1	159,597
Fab_Metal	Fire_Tube_Boiler	2	2	175,557
Fab_Metal	Fire_Tube_Boiler	2	3	191,516
Fab_Metal	Water_Tube_Boiler	1	1	194,739
Fab_Metal	Water_Tube_Boiler	1	2	214,212
Fab_Metal	Water_Tube_Boiler	1	3	233,686
Fab_Metal	Water_Tube_Boiler	2	1	155,791
Fab_Metal	Water_Tube_Boiler	2	2	171,370
Fab_Metal	Water_Tube_Boiler	2	3	186,949
Fab_Metal	Space_Heat	1	1	18,226
Fab_Metal	Space_Heat	1	2	20,049
Fab_Metal	Space_Heat	1	3	21,872
Fab_Metal	Space_Heat	2	1	14,581
Fab_Metal	Space_Heat	2	2	16,039
Fab_Metal	Space_Heat	2	3	17,497
Fab_Metal	Water_Heat	1	1	3,994
Fab_Metal	Water_Heat	1	2	4,393
Fab_Metal	Water_Heat	1	3	4,793
Fab_Metal	Water_Heat	2	1	3,195
Fab_Metal	Water_Heat	2	2	3,515
Fab_Metal	Water_Heat	2	3	3,834
Fab_Metal	Dryer	1	1	18,997
Fab_Metal	Dryer	1	2	20,896
Fab_Metal	Dryer	1	3	22,796
Fab_Metal	Dryer	2	1	15,197
Fab_Metal	Dryer	2	2	16,717
Fab_Metal	Dryer	2	3	18,237
Fab_Metal	Furnace_Oven_Kiln	1	1	686,883
Fab_Metal	Furnace_Oven_Kiln	1	2	755,571
Fab_Metal	Furnace_Oven_Kiln	1	3	824,260
Fab_Metal	Furnace_Oven_Kiln	2	1	549,507
Fab_Metal	Furnace_Oven_Kiln	2	2	604,457
Fab_Metal	Furnace_Oven_Kiln	2	3	659,408
Fab_Metal	AC	1	1	1,899
Fab_Metal	AC	1	2	2,089
Fab_Metal	AC	1	3	2,279
Fab_Metal	AC	2	1	1,519
Fab_Metal	AC	2	2	1,671
Fab_Metal	AC	2	3	1,823
Fab_Metal	Engine	1	1	-
Fab_Metal	Engine	1	2	-
Fab_Metal	Engine	1	3	-
Fab_Metal	Engine	2	1	-
Fab_Metal	Engine	2	2	-
Fab_Metal	Engine	2	3	-
Fab_Metal	Other	1	1	-
Fab_Metal	Other	1	2	-
Fab_Metal	Other	1	3	-
Fab_Metal	Other	2	1	-
Fab_Metal	Other	2	2	-
Fab_Metal	Other	2	3	-
Transport	Fire_Tube_Boiler	1	1	27,156
Transport	Fire_Tube_Boiler	1	2	29,871
Transport	Fire_Tube_Boiler	1	3	32,587
Transport	Fire_Tube_Boiler	2	1	21,724
Transport	Fire_Tube_Boiler	2	2	23,897
Transport	Fire_Tube_Boiler	2	3	26,069
Transport	Water_Tube_Boiler	1	1	15,821

Transport	Water_Tube_Boiler	1	2	17,403
Transport	Water_Tube_Boiler	1	3	18,985
Transport	Water_Tube_Boiler	2	1	12,657
Transport	Water_Tube_Boiler	2	2	13,922
Transport	Water_Tube_Boiler	2	3	15,188
Transport	Space_Heat	1	1	10,868
Transport	Space_Heat	1	2	11,955
Transport	Space_Heat	1	3	13,042
Transport	Space_Heat	2	1	8,694
Transport	Space_Heat	2	2	9,564
Transport	Space_Heat	2	3	10,433
Transport	Water_Heat	1	1	3,231
Transport	Water_Heat	1	2	3,554
Transport	Water_Heat	1	3	3,877
Transport	Water_Heat	2	1	2,585
Transport	Water_Heat	2	2	2,843
Transport	Water_Heat	2	3	3,102
Transport	Dryer	1	1	81,394
Transport	Dryer	1	2	89,533
Transport	Dryer	1	3	97,673
Transport	Dryer	2	1	65,115
Transport	Dryer	2	2	71,627
Transport	Dryer	2	3	78,138
Transport	Furnace_Oven_Kiln	1	1	139,512
Transport	Furnace_Oven_Kiln	1	2	153,464
Transport	Furnace_Oven_Kiln	1	3	167,415
Transport	Furnace_Oven_Kiln	2	1	111,610
Transport	Furnace_Oven_Kiln	2	2	122,771
Transport	Furnace_Oven_Kiln	2	3	133,932
Transport	AC	1	1	518
Transport	AC	1	2	570
Transport	AC	1	3	621
Transport	AC	2	1	414
Transport	AC	2	2	456
Transport	AC	2	3	497
Transport	Engine	1	1	2,575
Transport	Engine	1	2	2,832
Transport	Engine	1	3	3,090
Transport	Engine	2	1	2,060
Transport	Engine	2	2	2,266
Transport	Engine	2	3	2,472
Transport	Other	1	1	-
Transport	Other	1	2	-
Transport	Other	1	3	-
Transport	Other	2	1	-
Transport	Other	2	2	-
Transport	Other	2	3	-
Misc	Fire_Tube_Boiler	1	1	50,324
Misc	Fire_Tube_Boiler	1	2	55,356
Misc	Fire_Tube_Boiler	1	3	60,388
Misc	Fire_Tube_Boiler	2	1	40,259
Misc	Fire_Tube_Boiler	2	2	44,285
Misc	Fire_Tube_Boiler	2	3	48,311
Misc	Water_Tube_Boiler	1	1	35,392
Misc	Water_Tube_Boiler	1	2	38,931
Misc	Water_Tube_Boiler	1	3	42,470
Misc	Water_Tube_Boiler	2	1	28,313
Misc	Water_Tube_Boiler	2	2	31,145
Misc	Water_Tube_Boiler	2	3	33,976
Misc	Space_Heat	1	1	7,731
Misc	Space_Heat	1	2	8,504
Misc	Space_Heat	1	3	9,277
Misc	Space_Heat	2	1	6,185
Misc	Space_Heat	2	2	6,803
Misc	Space_Heat	2	3	7,422
Misc	Water_Heat	1	1	2,224
Misc	Water_Heat	1	2	2,446
Misc	Water_Heat	1	3	2,669
Misc	Water_Heat	2	1	1,779
Misc	Water_Heat	2	2	1,957
Misc	Water_Heat	2	3	2,135
Misc	Dryer	1	1	61,610

Misc	Dryer	1	2	67,771
Misc	Dryer	1	3	73,932
Misc	Dryer	2	1	49,288
Misc	Dryer	2	2	54,217
Misc	Dryer	2	3	59,145
Misc	Furnace_Oven_Kiln	1	1	341,739
Misc	Furnace_Oven_Kiln	1	2	375,913
Misc	Furnace_Oven_Kiln	1	3	410,087
Misc	Furnace_Oven_Kiln	2	1	273,391
Misc	Furnace_Oven_Kiln	2	2	300,731
Misc	Furnace_Oven_Kiln	2	3	328,070
Misc	AC	1	1	2,879
Misc	AC	1	2	3,167
Misc	AC	1	3	3,455
Misc	AC	2	1	2,303
Misc	AC	2	2	2,534
Misc	AC	2	3	2,764
Misc	Engine	1	1	5,988
Misc	Engine	1	2	6,587
Misc	Engine	1	3	7,186
Misc	Engine	2	1	4,790
Misc	Engine	2	2	5,270
Misc	Engine	2	3	5,749
Misc	Other	1	1	-
Misc	Other	1	2	-
Misc	Other	1	3	-
Misc	Other	2	1	-
Misc	Other	2	2	-
Misc	Other	2	3	-

San Diego Gas and Electric Company
Industrial GN3
Employment Forecast (in thousands)

YEAR	Mining	Food	Textile	Wood_Paper	Chemical	Petroleum	Stone	Primary_Metal	Fabricated_Metal	Transportation	Miscellaneous	Total
2017	2374	18957	1334	4506	7454	1178	2667	1630	12647	11162	44061	107970
2018	2462	19361	1317	4596	7559	1184	2769	1661	12978	11281	44771	109940
2019	2557	19721	1290	4693	7608	1183	2839	1677	13260	11211	45368	111408
2020	2596	20055	1258	4793	7605	1181	2877	1682	13519	11123	45581	112270
2021	2631	20312	1225	4886	7570	1165	2911	1654	13636	11039	45588	112616
2022	2684	20571	1190	4963	7505	1141	2935	1622	13783	10855	45545	112794
2023	2711	20821	1156	5056	7424	1115	2939	1594	13940	10520	45474	112750
2024	2723	21080	1124	5149	7338	1087	2937	1573	14129	10183	45500	112822
2025	2718	21305	1112	5235	7290	1062	2944	1560	14290	9943	45505	112963

San Diego Gas and Electric Company
Industrial GN3
Core Industrial Demand Forecast (Mdth)
Average Temperature

YEAR	Model Output GN-3 - Ind	IndGN3 EE/DSM	Core Ind Final
2017	1425.2	0.0	1425.2
2018	1468.9	0.4	1468.5
2019	1474.0	0.8	1473.2
2020	1474.1	1.3	1472.8
2021	1466.0	1.9	1464.1
2022	1449.9	2.6	1447.4
2023	1432.0	3.3	1428.7
2024	1417.2	4.0	1413.2
2025	1401.7	4.7	1397.0

San Diego Gas and Electric Company
Industrial GN3
Core Industrial Demand Forecast (Mdth)
Cold Temperature

YEAR	Model Output GN-3 - Ind	IndGN3 EE/DSM	Core Ind Final
2017	1492.1	0.0	1492.1
2018	1537.9	0.4	1537.5
2019	1543.2	0.8	1542.4
2020	1543.4	1.3	1542.0
2021	1534.9	1.9	1532.9
2022	1518.0	2.6	1515.5
2023	1499.2	3.3	1496.0
2024	1483.7	4.0	1479.8
2025	1467.5	4.7	1462.9

San Diego Gas and Electric Company
Industrial GN3
Core Industrial Demand Forecast **(Mdth)**
Hot Temperature

YEAR	Model Output GN-3 - Ind	IndGN3 EE/DSM	Core Ind Final
2017	1358.3	0.0	1358.3
2018	1399.9	0.4	1399.5
2019	1404.7	0.8	1403.9
2020	1404.9	1.3	1403.6
2021	1397.2	1.9	1395.2
2022	1381.9	2.6	1379.3
2023	1364.7	3.3	1361.5
2024	1350.6	4.0	1346.7
2025	1335.9	4.7	1331.2

San Diego Gas and Electric Company
Industrial GN3
Core Industrial Demand Forecast **(Mdth)**
Base Temperature

YEAR	Model Output GN-3 - Ind	IndGN3 EE/DSM	Core Ind Final
2017	1115.2	0.0	1115.2
2018	1149.4	0.4	1148.9
2019	1153.3	0.8	1152.5
2020	1153.5	1.3	1152.1
2021	1147.1	1.9	1145.2
2022	1134.5	2.6	1132.0
2023	1120.5	3.3	1117.2
2024	1108.9	4.0	1104.9
2025	1096.8	4.7	1092.1

Non Residential Core
NGV
SDG&E

Table 1 - SDG&E Volume Forecast Growth Through 2035

Years	Volumes	
	Compressed	Uncompressed
	MM CCF	MM CCF
2018	0.50	18.44
2019	0.55	19.75
2020	0.60	21.16
2021	0.66	22.67
2022	0.72	24.28
2023	0.79	26.01
2024	0.87	27.86
2025	0.96	29.85
2026	1.05	31.97
[redacted]	[redacted]	[redacted]

Year	January	February	March	April	May	June	July	August	Septembe	October	Novembe	Decembe	Annual
Compressed Volumes (M decatherms)													
2017	2.78	5.29	5.10	3.58	3.57	3.76	3.78	3.93	3.87	4.11	3.97	3.90	47.65
2018	3.05	5.72	5.60	3.91	3.91	4.12	4.14	4.32	4.24	4.52	4.34	4.27	52.14
2019	3.35	6.19	6.15	4.28	4.28	4.51	4.54	4.74	4.64	4.96	4.75	4.67	57.07
2020	3.69	6.70	6.75	4.68	4.70	4.95	4.97	5.21	5.09	5.46	5.20	5.12	62.50
2021	4.05	7.27	7.42	5.12	5.15	5.43	5.45	5.73	5.57	6.00	5.69	5.62	68.48
2022	4.45	7.89	8.16	5.60	5.65	5.96	5.97	6.29	6.11	6.60	6.23	6.16	75.07
2023	4.90	8.57	8.96	6.13	6.20	6.54	6.55	6.92	6.70	7.26	6.82	6.76	82.32
2024	5.39	9.31	9.86	6.72	6.81	7.18	7.19	7.61	7.35	7.99	7.48	7.43	90.32
2025	5.93	10.13	10.84	7.36	7.48	7.89	7.89	8.38	8.07	8.80	8.20	8.16	99.13

Compressed Volumes - Public Use (M decatherms)													
2017	2.61	3.83	4.75	3.09	3.22	3.41	3.38	3.69	3.45	3.89	3.46	3.51	42.28
2018	2.88	4.22	5.24	3.41	3.55	3.76	3.73	4.07	3.81	4.29	3.82	3.87	46.64
2019	3.17	4.66	5.78	3.76	3.92	4.15	4.11	4.49	4.20	4.74	4.21	4.27	51.46
2020	3.50	5.14	6.38	4.15	4.32	4.57	4.54	4.95	4.63	5.23	4.65	4.71	56.77
2021	3.86	5.67	7.04	4.58	4.77	5.05	5.00	5.46	5.11	5.77	5.12	5.19	62.63
2022	4.26	6.26	7.76	5.05	5.26	5.57	5.52	6.03	5.64	6.36	5.65	5.73	69.09
2023	4.70	6.90	8.57	5.57	5.80	6.14	6.09	6.65	6.22	7.02	6.24	6.32	76.22
2024	5.19	7.62	9.45	6.15	6.40	6.77	6.72	7.33	6.86	7.74	6.88	6.98	84.09
2025	5.72	8.40	10.43	6.78	7.06	7.47	7.41	8.09	7.57	8.54	7.59	7.70	92.77

[redacted]

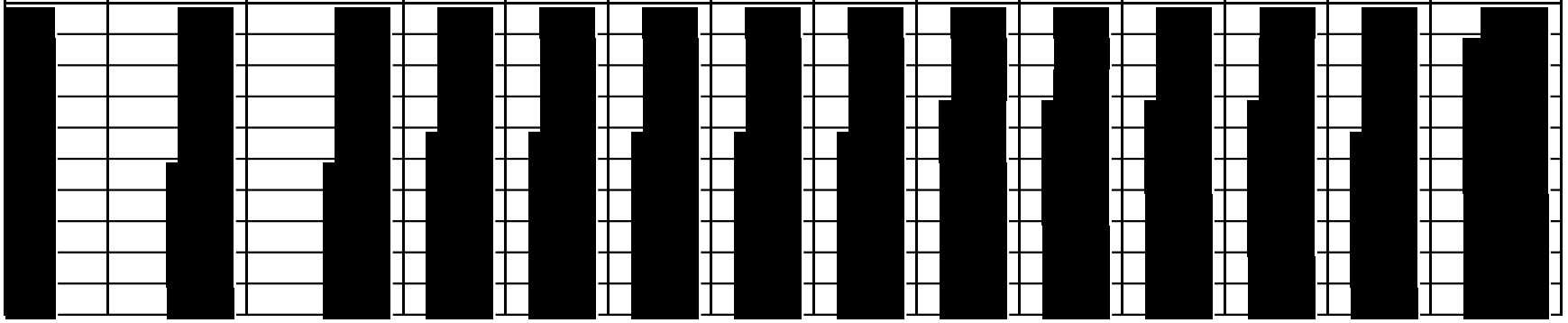
Compressed Volumes - Utility Use (M decatherms)													
2017	0.17	1.46	0.35	0.49	0.35	0.35	0.41	0.24	0.42	0.22	0.52	0.39	5.37
2018	0.18	1.50	0.36	0.51	0.36	0.36	0.42	0.25	0.43	0.22	0.53	0.40	5.49
2019	0.18	1.53	0.37	0.52	0.37	0.37	0.42	0.25	0.44	0.23	0.54	0.41	5.61
2020	0.18	1.56	0.38	0.53	0.37	0.37	0.43	0.26	0.45	0.23	0.55	0.42	5.74
2021	0.19	1.59	0.38	0.54	0.38	0.38	0.44	0.26	0.46	0.24	0.56	0.42	5.86
2022	0.19	1.63	0.39	0.55	0.39	0.39	0.45	0.27	0.47	0.24	0.57	0.43	5.98
2023	0.19	1.66	0.40	0.56	0.40	0.40	0.46	0.28	0.48	0.25	0.58	0.44	6.10
2024	0.20	1.70	0.41	0.57	0.41	0.41	0.47	0.28	0.49	0.25	0.60	0.45	6.23
2025	0.20	1.73	0.42	0.58	0.41	0.41	0.48	0.29	0.50	0.26	0.61	0.46	6.35

[redacted]

Uncompressed Volumes - Total (M Decatherms)													
2017	137.17	138.34	160.04	150.25	152.75	151.89	151.49	156.96	133.56	158.61	146.04	144.65	1,781.77
2018	146.94	148.20	171.44	160.95	163.63	162.71	162.28	168.14	143.07	169.91	156.45	154.96	1,908.70
2019	157.41	158.76	183.66	172.42	175.29	174.30	173.84	180.12	153.27	182.02	167.59	165.99	2,044.66
2020	168.62	170.07	196.74	184.70	187.78	186.71	186.23	192.95	164.18	194.98	179.53	177.82	2,190.31
2021	180.64	182.18	210.75	197.86	201.15	200.01	199.49	206.69	175.88	208.87	192.32	190.48	2,346.33
2022	193.50	195.16	225.77	211.95	215.48	214.26	213.70	221.41	188.41	223.75	206.02	204.05	2,513.46
2023	207.29	209.06	241.85	227.05	230.83	229.52	228.93	237.19	201.83	239.69	220.69	218.59	2,692.50
2024	222.05	223.95	259.08	243.22	247.27	245.87	245.23	254.08	216.21	256.76	236.41	234.16	2,884.30
2025	237.87	239.90	277.53	260.55	264.89	263.39	262.70	272.18	231.61	275.05	253.25	250.84	3,089.76
2026	254.81	256.99	297.30	279.11	283.76	282.15	281.41	291.57	248.10	294.64	271.29	268.71	3,309.85
2027	272.97	275.30	318.48	298.99	303.97	302.25	301.46	312.34	265.78	315.63	290.62	287.85	3,545.62

2028	292.41	294.91	341.16	320.29	325.62	323.78	322.93	334.59	284.71	338.11	311.32	308.35	3,798.18
2029	313.24	315.92	365.47	343.10	348.82	346.84	345.94	358.42	304.99	362.20	333.50	330.32	4,068.74
2030	335.55	338.42	391.50	367.54	373.66	371.55	370.58	383.95	326.72	388.00	357.25	353.85	4,358.57
2031	359.45	362.53	419.39	393.72	400.28	398.01	396.98	411.30	349.99	415.64	382.70	379.05	4,669.04
2032	385.06	388.35	449.26	421.77	428.79	426.36	425.26	440.60	374.92	445.24	409.96	406.05	5,001.63
2033	412.49	416.01	481.26	451.81	459.34	456.74	455.55	471.99	401.63	476.96	439.17	434.98	5,357.91
2034	441.87	445.65	515.55	484.00	492.06	489.27	488.00	505.61	430.24	510.94	470.45	465.96	5,739.57
2035	473.35	477.39	552.27	518.47	527.11	524.12	522.76	541.62	460.88	547.33	503.96	499.15	6,148.42

Uncompressed Volumes - Utility Procurement Customers (M Decatherms)													
2017	39.92	38.86	42.16	42.60	42.90	42.93	43.48	44.51	44.76	45.97	44.16	43.56	515.81
2018	42.76	41.62	45.17	45.63	45.95	45.99	46.58	47.68	47.94	49.24	47.31	46.67	552.55
2019	45.81	44.59	48.38	48.88	49.23	49.26	49.90	51.07	51.36	52.75	50.68	49.99	591.91
2020	49.07	47.77	51.83	52.36	52.73	52.77	53.46	54.71	55.02	56.51	54.29	53.55	634.07
2021	52.57	51.17	55.52	56.09	56.49	56.53	57.26	58.61	58.94	60.53	58.16	57.37	679.24
2022	56.31	54.81	59.48	60.09	60.51	60.56	61.34	62.78	63.14	64.84	62.30	61.45	727.62
2023	60.33	58.72	63.71	64.37	64.82	64.87	65.71	67.26	67.63	69.46	66.74	65.83	779.46
2024	64.62	62.90	68.25	68.95	69.44	69.50	70.39	72.05	72.45	74.41	71.49	70.52	834.98
2025	69.23	67.38	73.12	73.87	74.39	74.45	75.41	77.18	77.61	79.71	76.59	75.54	894.46



Uncompressed Volumes - Customer Owned Gas (M Decatherms)													
2017	97.25	99.49	117.88	107.65	109.86	108.96	108.01	112.45	88.80	112.65	101.88	101.09	1,265.97
2018	104.18	106.57	126.28	115.32	117.68	116.72	115.70	120.46	95.13	120.67	109.14	108.29	1,356.15
2019	111.60	114.17	135.27	123.54	126.06	125.03	123.94	129.04	101.91	129.27	116.91	116.00	1,452.75
2020	119.55	122.30	144.91	132.34	135.04	133.94	132.77	138.23	109.17	138.47	125.24	124.27	1,556.23
2021	128.07	131.01	155.23	141.76	144.66	143.48	142.23	148.08	116.94	148.34	134.16	133.12	1,667.09
2022	137.19	140.34	166.29	151.86	154.97	153.70	152.36	158.63	125.27	158.91	143.72	142.60	1,785.84
2023	146.96	150.34	178.13	162.68	166.01	164.65	163.21	169.93	134.20	170.22	153.96	152.76	1,913.05

2024	157.43	161.05	190.82	174.27	177.83	176.38	174.84	182.03	143.76	182.35	164.92	163.64	2,049.32
2025	168.64	172.52	204.42	186.68	190.50	188.94	187.29	195.00	154.00	195.34	176.67	175.30	2,195.30
2026	180.66	184.81	218.98	199.98	204.07	202.40	200.64	208.89	164.97	209.25	189.25	187.78	2,351.68
2027	193.53	197.97	234.57	214.23	218.60	216.82	214.93	223.77	176.72	224.16	202.74	201.16	2,519.20
2028	207.31	212.08	251.28	229.49	234.18	232.26	230.24	239.71	189.30	240.13	217.18	215.49	2,698.65
2029	222.08	227.18	269.18	245.83	250.86	248.81	246.64	256.79	202.79	257.23	232.65	230.84	2,890.88
2030	237.90	243.37	288.36	263.34	268.73	266.53	264.21	275.08	217.23	275.56	249.22	247.28	3,096.80
2031	254.84	260.70	308.90	282.10	287.87	285.52	283.03	294.67	232.71	295.18	266.97	264.90	3,317.40
2032	273.00	279.27	330.90	302.20	308.38	305.85	303.19	315.66	249.28	316.21	285.99	283.77	3,553.71
2033	292.44	299.17	354.47	323.72	330.34	327.64	324.79	338.15	267.04	338.74	306.36	303.98	3,806.85
2034	313.28	320.48	379.73	346.78	353.87	350.98	347.92	362.24	286.06	362.87	328.18	325.63	4,078.02
2035	335.59	343.31	406.77	371.49	379.08	375.98	372.70	388.04	306.44	388.71	351.56	348.83	4,368.51

Table 1 - Historical Annual Growth Rates		
Historical Period	Uncompressed Annual Growth Rate	
	SoCalGas	SDG&E
5-Year (2013-2017)	5.40%	7.1%

Table 2 - Compressed Volumes - Public Use Annual Growth Rate		
Description	Units	Value
Price Elasticity of Demand	-	(0.43)
2017 Utility CNG Station Sales	GGEs	1,801,319
2017 Utility CNG Station Revenue	$ per year	$4,202,168
2017 Utility CNG Station Average Pump Price	$ per GGE	$2.33
Estimated Utility LCFS Credit	$ per GGE	($0.56)
Compressed Volumes - Public Use Annual Growth Rate	-	10.32%

Table 3 - Utility Fleet Forecast		
Description	SoCalGas	SDG&E
Current Fleet	1,005	89
Annual Fleet Addition	90	2
2018	1,005	89
2019	1,095	91
2020	1,185	93
2021	1,275	95
2022	1,365	97