(A.18-07-024)

(DATA REQUEST ORA-SEMPRA-2020TCAP-002)

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DATE RESPONDED: 9-6-18

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#### **QUESTION 1:**

For the period from 1995 through 2017, please provide, on an annual basis, weather adjusted residential throughput.

### **RESPONSE 1:**

Please see the attached file.



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#### **QUESTION 2:**

For the period from 1995 through 2017, please provide, on an annual basis, weather adjusted core commercial throughput.

### **RESPONSE 2:**

Please see the attached file. Weather adjusted core commercial throughput at SDG&E is not available for the years 1995-1997.



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#### **QUESTION 3:**

For the period from 1995 through 2017, please provide, on annual basis, weather adjusted core industrial throughput.

### **RESPONSE 3:**

Please see the attached file. Weather adjusted core industrial throughput at SDG&E is not available for the years 1995-1997.



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#### **QUESTION 4:**

For the period from 2000 through 2017, please provide, on annual basis, Gas AC throughput.

### **RESPONSE 4:**

Please see the attached file.



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#### **QUESTION 5:**

For the period from 2000 through 2017, please provide, on annual basis, Gas Engine throughput.

### **RESPONSE 5:**

Please see the attached file.



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#### **QUESTION 6:**

For the period from 2000 through 2017, please provide, on an annual basis, Natural Gas Vehicle, (NGV), throughput.

#### **RESPONSE 6:**

Please see the following table. NGV throughput is not available for the years 2000-2001.

Year	SoCalGas	SDG&E	Total
	MM¹ Therms		
2017	145.36	18.29	163.65
2016	138.17	18.01	156.18
2015	132.03	17.11	149.13
2014	125.39	14.77	140.16
2013	116.96	13.64	130.60
2012	109.79	12.51	122.30
2011	103.01	11.13	114.14
2010	99.05	10.27	109.32
2009	95.14	10.42	105.56
2008	88.07	10.55	98.62
2007	85.34	9.89	95.23
2006	78.55	10.04	88.59
2005	72.04	9.07	81.11
2004	65.79	8.21	74.00
2003	58.97	7.92	66.89
2002	55.24	6.70	61.94

<sup>&</sup>lt;sup>11</sup> MM stands for "million."

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#### **QUESTION 7:**

For the period from 1995 through 2017, please provide, on an annual basis, commercial noncore throughput.

### **RESPONSE 7:**

Annual gas consumptions for noncore commercial customers are provided in the attached Excel file for SoCalGas from 2005 through 2017, and for SDG&E from 2006 through 2017. These are the years for which the categorization of noncore commercial customers based on NAICS available data are available. The use of NAICS to categorize noncore commercial load was not developed for SoCalGas prior to 2005, and for SDG&E prior to 2006.



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#### **QUESTION 8:**

For the period from 1995 through 2017, please provide, on an annual basis, industrial noncore throughput.

### **RESPONSE 8:**

Annual gas consumptions for noncore industrial customers are provided in the attached Excel file for SoCalGas for years 2005 through 2017, and for SDG&E for years 2006 through 2017. These are the years for which the categorization of noncore industrial customers based on NAICS available data are available. The use of NAICS to categorize noncore industrial load was not developed for SoCalGas prior to 2005, and for SDG&E prior to 2006.



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#### **QUESTION 9:**

Does SoCalGas' residential end-use model rely upon estimated price elasticities?

### **RESPONSE 9:**

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#### **QUESTION 10:**

If the answer to question 9 is yes, please provide these price elasticities as well as any and all data used to derive these price elasticities.

#### **RESPONSE 10:**

The price elasticities were calculated from the data analysis performed for a prior SoCalGas regulatory filing (the filing was for SoCalGas' 2005 BCAP which was initially filed, but then withdrawn). These same price elasticities were used in the most recent TCAP (A.15-07-014).

For a description of the model used to generate the residential elasticities, please see the attached Word document.



Included below are the two primary data sets used to support the econometric estimation of the residential price elasticities. Also included is the SAS code that generated the SUR Estimation. The output results are summarized in the PDF file below.









Data 2.xls

Data 1.xls

SAS Code.doc

Elasticities.pdf

All of the elasticity output values were used except for the elasticity #5, the elasticity for the submeter market. The estimated price elasticity for the submeter market was -.34371. It was deemed inappropriate to use the value -.34371. Instead, in the end use model, we substituted the value -.105 for the submeter segment. The impact on the forecast was minimal (approximately a 1% difference in submeter load).

The SAS software was used to develop the price elasticities. A copy of the program is above.

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#### **QUESTION 11:**

Does SDG&E's residential end-use model rely upon estimated price elasticities?

### **RESPONSE 11:**

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### **QUESTION 12:**

If the answer to question 11 is yes, please provide these price elasticities as well as any and all data used to derive these price elasticities

### **RESPONSE 12:**

Please see the response to Question 10 above.

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### **QUESTION 13:**

On page 78 of SoCalGas' commercial core throughput workpapers SoCalGas lists a series of price elasticities by sector. Please provide any and all data used to derive these price elasticities.

#### **RESPONSE 13:**

Please see page 9 of the attached document for the price elasticities (parameter estimate 'c'). The attached document contains an explanation of how the elasticities for the commercial market were produced.



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### **QUESTION 15:**

Does SoCalGas' commercial core end-use model rely upon any employment elasticities?

### **RESPONSE 15:**

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### **QUESTION 16:**

If the answer to question 15 is yes, please provide any and all data used to derive the employment elasticities.

#### **RESPONSE 16:**

Please see page 9 of the document included in Response 13 for the employment elasticities (parameter estimate 'm'). The document included in Response 9 contains an explanation of how the elasticities for the commercial market were produced.

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#### **QUESTION 17:**

Does SoCalGas' G-10 Industrial Core end-use model rely upon estimated price elasticities?

### **RESPONSE 17:**

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#### **QUESTION 18:**

If the answer to question 17 is yes, please provide these elasticities as well as any and all data used to derive these elasticities.

#### **RESPONSE 18:**

The price elasticities were from the 2005 Biennial Cost Allocation Proceeding (BCAP) (A.03-09-008) workpapers.

The column headed with "c" is the price elasticities by sector in the Table 3.a of the attached Core Industrial model specification and results.



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#### **QUESTION 19:**

Does SoCalGas' G-10 Industrial Core end-use model rely upon estimated employment elasticities?

### **RESPONSE 19:**

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#### **QUESTION 20:**

If the answer to question 19 is yes, please provide these elasticities as well as any and all data used to estimate these employment elasticities.

#### **RESPONSE 20:**

Please see the Response 18.

The column headed with "m" is the employment elasticities by sector in the Table 3.a of the attached file under Response 18.

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### **QUESTION 21:**

In Mr. Wei Bin Guo's noncore commercial throughput workpapers (page not identified) he reports a price elasticity of -0.046 and an employment elasticity of 0.474. Please provide any and all data used to derive these price and employment elasticities.

#### **RESPONSE 21:**

A price elasticity of -0.046 and an employment elasticity of 0.474 are used for SoCalGas noncore commercial demand forecast.

### Noncore commercial price elasticity

The noncore commercial price elasticities by building type are estimated using linear regression equations with data from January 2002 through December 2006 for premises (specific meters) that had gas service in December 2001 as well as December 2006. The building type of the premise in December 2006 was assigned the entire historical period regardless if the customer changed or not.

The price term (PTERM1) used in the analysis was the monthly weighted average cost of gas (WACOG) for the Southern California Gas service territory. This price indicator was chosen since all customers pay for the cost of gas whether they are volumetric or just transportation customers. The WACOG was adjusted to account for changes in the gas producer price index. In order to interpret the price term regression coefficient as an elasticity value, the real WACOG was interacted with the ratio of the average building type usage to the average real WACOG.

The general form of the monthly regression model by building type is as follows:

Where:

THM monthly usage in therm for a given building type

HDD monthly heating degree days

PTERM1 monthly WACOG interacted by the ratio of average use to average price

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Summer	indicator equal to one June – September; zero otherwise
Fall	indicator equal to one October – November; zero otherwise
Spring	indicator equal to one April - May; zero otherwise
Yr03	indicator equal to one in 2003; zero otherwise
Yr04	indicator equal to one in 2004; zero otherwise
Yr05	indicator equal to one in 2005; zero otherwise
Yr06	indicator equal to one in 2006; zero otherwise
<b>EMPLOY</b>	monthly employment for a given building type

As the results show, the yearly indicator terms as well as the Employ variable were excluded from some of the building type models due to insignificant coefficient values or unexpected signs (e.g. a negative Employ coefficient value).

For the noncore commercial market segments, the file attached below provides the statistical estimation results for each relevant noncore commercial business type:



Additionally, the Excel workbook file below provides the underlying data and worksheet tabs that are used to calculate these estimation results.



Below is a detailed explanation of all the spreadsheet tabs in the Excel file:

- 1. Sheet "Com NonCore" lists calculated price elasticity for all business types. It also shows how these individual gas price elasticity estimates were aggregated to a consumption-weighted average value for the entire noncore commercial market. Noncore commercial price elasticity -0.046 in cell "F17" is the calculated final price elasticity.
- 2. Sheet "NCore\_Com" contains the complete underlying data used to generate the econometric results. All variable names are explained above in the equation section.

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- 3. Sheet "RegData" provides a convenient way to retrieve data for each business type. For example, if the value of cell "C1" is changed to 2, all the data in this sheet will be updated so it contains the data for business type "2-Restaurant". Commercial business types and descriptions are listed in Sheet "Com NonCore".
- 4. Sheet "BType1(Office)" is the linear regression result generated by Excel. Price elasticity for business type "1-office" is saved in cell "B22".

### Noncore C&I employment elasticity:

SoCalGas noncore employment elasticity was calculated from the data analysis performed for a prior SoCalGas regulatory filing (the filing was for SoCalGas' 2005 BCAP which was initially filed, but then withdrawn). This analysis used total monthly consumption for non-core Commercial and Industrial market segments – G30 non-refinery customers. Please see page 4 in the attached pdf file for the detailed model specification.



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## QUESTION 22:

In Mr. Wei Bin Guo's noncore industrial throughput workpapers (page not specified) he reports a price elasticity of -0.0710 and an employment elasticity 0.474. Please provide any and all data used to derive these price and employment elasticities.

#### **RESPONSE 22:**

A price elasticity of -0.071 and an employment elasticity of 0.474 are used for SoCalGas noncore industrial demand forecast.

### Noncore industrial price elasticity

The noncore industrial price elasticity is estimated using data from January 2002 through December 2006. The data structure, estimating method and regression models are the same as those of noncore commercial explained in Response 21.

For the noncore industrial market segments, the file attached below provides the statistical estimation results for each relevant noncore industrial business type:



In additional, the Excel workbook file below provides the underlying data and worksheet tabs that are used to calculate these estimation results.



Below is a detailed explanation of all the spreadsheet tabs in the Excel file:

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- 1. Sheet "Ind NonCore Summary" lists calculated price elasticity for all business types. It also shows how these individual gas price elasticity estimates were aggregated to a consumption-weighted average value for the entire noncore industrial market. Noncore industrial price elasticity -0.071 in cell "F17" is the calculated final price elasticity.
- 2. Sheet "NCore\_Ind" contains the complete underlying data used to generate the econometric results. All variable names are explained above in the equation section in RESPONSE #21.
- 3. Sheet "RegData" provides a convenient way to retrieve data for each business type. For example, if the value of cell "C1" is changed to 2, all the data in this sheet will be updated so it contains the data for business type "2- Food". Industrial business types and descriptions are listed in the first sheet "Ind NonCore Summary".
- 4. Sheet "BType1(Mining)" is the linear regression result generated by Excel. Price elasticity for business type "1- Mining" is saved in cell "B26".

### Noncore industrial employment elasticity:

Please see Response 21 for the estimation of noncore C&I employment elasticity.