UNIVERSIDAD PONTIFICIA COMILLAS

ESCUELA TÉCNICA SUPERIOR DE INGENIERÍA (ICAI)

OFFICIAL MASTER´S DEGREE IN THE ELECTRIC POWER INDUSTRY

Master's Thesis

"Assessment of implications of the new methodology for establishing the cost of electricity in Spanish regulated retail tariffs: prices fixed through ex-ante auctions versus real time prices"

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Supervisor: Sánchez Domínguez, Juan José

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Madrid, 3rd of July 2014

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Summary

This thesis aims to assess some of the most relevant potential implications of a recently approved new methodology[1] **for establishing the cost of energy of the Spanish regulated electricity tariffs for low-voltage consumers, which substitutes a much different previous methodology**:

- **The previous methodology was based on quarterly auctions (so-called CESUR auctions)**. The resulting price of these auctions was used to set the cost of energy to be included in the regulated retail tariffs for the next quarter, and so, it was a methodology that allowed the consumers to pay a price for electricity which was known ex-ante by them, and which was stable for the following quarter.

- **The new methodology is based on a real-time pricing (RTP) approach**. It implies that the last-resort retailers will charge their consumers in their (usually bimonthly) bills, a cost of energy based on an electricity-market average-hourly price of the billed period. This average-hourly price is calculated using real hourly prices of day-ahead and intraday markets, as well as an hourly load curve for each consumer. This hourly load curve could be either the actual one if the consumer has a smart meter allowing for hourly metering, or an average one calculated by the system operator if the consumer does not have such a smart meter.

  Thus, this new methodology opens the door, to those consumers with smart meters, to save costs by implementing new demand-response actions by shifting their demand from hours with high prices to hours with low prices.

More concretely, **the specific questions that this thesis attempts to answer are**:

- **Will the consumers pay more or less** than what they used to pay with the previous methodology? **How much**?

- **What will be the maximum savings that the consumers with a smart meter may obtain if they optimize their consumption profile**?

- **What will be the consequences if, instead, they follow the worst possible profile**?

To answer the above, **this thesis proposes and implements an innovative approach**, which **goes beyond current state of the art**, providing the following **original contributions**:

- **A sophisticated bottom-up model for generating realistic consumers' load-profiles**, based on:

  - A detailed representation of the technical characteristics of electric domestic devices or services (DoS);
  - A realistic characterization of the use of these DoS in Spain based on statistics on socio-demographic data.

[1] Royal Decree 216/2014

- **A detailed optimization model to simulate optimal demand-response strategies of individual consumers** that minimizes their electricity costs by shifting their demand to hours with lower prices subject to restrictions based on both technical and behavioral considerations.

In this thesis, **this approach has been applied to a realistic case study based on data of 2010 for Spain**[2]. The **main conclusions** of the analysis carried out are:

- **If the new methodology for establishing the cost of energy would had been approved in 2010**, the **average annual electricity costs' savings obtained by those consumers without smart meters** which are billed according to the average standard load profile published by the system operator **would had been of 12.55%** with respect to the actual costs they paid for electricity that year, with an standard deviation of 1.02%.[3]

- **Those consumers with smart mete**rs, that are billed according to their actual consumption profile, **would had obtained slightly higher annual savings of 12.78% in average**, with a standard deviation of 1.59%, just by following the same consumption profile they had without responding to real time price signals.

- **At a monthly level, the higher savings are obtained those months with lower average and higher standard deviation on hourly prices**. Main reason for this is that for those months with lower hourly prices, the cost of energy established ex-ante through the CESUR auctions was significantly higher than actual hourly prices. So just by changing the methodology to an ex-post establishment of the cost of energy based on actual electricity hourly prices, significant savings would have been obtained.

- **If those consumers with smart meters**, instead of following the same demand profile they actually had, **would had responded to real time prices**, shifting their demand to those hours with lower prices, **they could have achieved additional annual costs' savings of 6.33% in average**. On the other hand, **non-rational consumers following the worst load profile possible would have suffered average costs' increases of 3.21%.**

[2] Although the new methodology for calculating the cost of electricity has been approved in 2014, the case study is based on data of 2010 because is the most recent public available data on the use of DoS by different types of consumers in Spain, at least with the level of detailed required for the implementation of the approach proposed in this thesis.

[3] These percentages, as well as the rest of results presented in this summary refer to savings with respect to just the cost of energy included in the electricity bill of the consumer, not considering then other parts of the bill such as access tariffs or taxes.

- **Above figures are based on perfect-flexibility assumptions**. That is, they could only be obtained by consumers equipped with a kind of smart-box that would allow them to optimize and manage each DoS without restrictions regarding when to switch on and off them. **On a more realistic situation** with consumers not equipped with this device, considering that, usually, they will not be awake at certain hours to switch on or off some DoS (i.e.: from 1 am to 7am), **the average annual maximum costs' savings estimated** by the case study of this thesis **are of 4.35%.** In this case, **an average consumer following the worst profile possible would have seen its annual costs increasing by 2.92%**.

- **On a monthly basis, those months presenting a higher volatility with regard to day-ahead hourly prices are those in which rational consumers obtain higher savings**. This is due to the fact that higher volatility implies higher differences of prices between different hours, and so, more opportunities to obtain savings by shifting demand from expensive to cheap hours. In the analyzed cases, these months are usually those with the lowest average day-ahead price. The reason for that is that these months were usually those with a higher penetration of variable wind energy, which introduced higher volatility.

- Although **maximum annual average savings** obtained through demand-response strategies in both cases, with (6.33%) or without a smart-box (4.35%), are not negligible, **when expressed on absolute terms**, these **would have meant annual average savings of 8.78 euros and 5.96 euros respectively in 2010**[4]. Thus, consumers with a smart-box that could shift their demand to hours between 1 am and 7 am, could obtain **2.82 euros more of additional average annual savings than consumers without such a smart-box.**. On the other hand, non-rational consumers following the worst profile possible do not obtain significantly different losses when they can shift their demand to the period 1 am – 7am and when they cannot.**.**

- **In any case, the observed savings are probably a low incentive for consumers to change their consuming behavior (**although higher market electricity prices could increase this incentive). **Thus, this thesis suggests that** in a context of electricity market prices similar to those in 2010, it seems that, **if regulatory authorities still aim to modify consumers' demand profile**, provided that they consider this important enough to reduce other system costs (i.e.: system operation costs; required additional investments on new generation and network capacities to cope with peak demand; etc.), **they will have to think on additional measures beyond a mere real time pricing of electricity to provide incentives attractive enough for consumers to modify their behavior**.

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[4] These figures do not consider the effect of taxes (electricity tax and VAT). A lower cost of electricity within the bill will mean less tax to pay in absolute values. Considering an electricity tax rate in 2010 of 5,1127% and an average VAT rate of 17%, these figures on average annual savings will increase to 10.8 and 7.33 euros respectively.

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Thank you all and I wish you happiness in your lives!

Contents

List of Abbreviations

AC	Air conditioning
CPP	Critical peak pricing
CPP-F	Fixed period critical peak pricing
CPR	Critical peak rebates
FR	Fixed rate
CPP-V	Variable period critical peak pricing
DA-RTP	Day ahead real time pricing
DoS	Device or Service
DR	Demand response
D&S	Device and Service
RTP	Real time pricing
TOU	time-of-use pricing
VPP	Variable peak pricing

1. Introduction: motivation and objectives

The Spanish Ministry of Industry, Energy and Tourism (hereinafter, 'the Ministry') has recently approved[5] a new methodology to calculate the cost of energy, which has to be introduced as part of the regulated retail tariffs (for consumers with a contracted capacity below 10 KW). This new proposal modified the previous method significantly.

The previous method was based on quarterly auctions (so-called CESUR auctions). In these auctions, the last-resort retailers bought in a centralized manner their estimated demand for the next quarter. CESUR auctions were dynamic descending-bid auctions that worked as follows[6]:

- Before the auction, the participants were informed of the products and amounts to be auctioned.

- Throughout the auctions´ process, the participants bid for the awarding of a certain amount of blocks of a concrete number of MW, competing with the other participants to obtain such award.

- The supply was awarded through the procedure of dynamic descending-bid auction, departing from an opening price, initially high that was progressively reduced until a balance was reached between supply and demand (amount tendered at such a price equal to 100% of the supply tendered).

The price resulting in these auctions was considered to calculate the cost of energy to be included in the regulated retail tariffs for the next quarter, and so, it was a cost which was known ex-ante by consumers, and which was stable for the following quarter.

On 19th of December 2013, the 25th and last CESUR auction was held. On the 20th of December 2013, the National Markets and Competition Commission of Spain, hereinafter CNMC (Comision nacional de los mercados y la competencia), concluded that it should not be validated because it was developed in an environment of insufficient competitive pressure[7]. Therefore the Ministry rendered the auction null and void for all intents and purposes and set a transitional cost of energy to be included in the regulated tariffs until a new methodology substituting the old one would be in place.

[5] Royal Decree 216/2014
[6] More details in (OMEL, 2013).
[7] More details in (CNMC, 2014).

The new methodology was finally approved on the 28th of March of 2014 and implies that the regulated retailers (now called reference retailers instead of last-resort retailers) will charge their consumers in their regulated retail tariffs (now called voluntary price for small consumers, instead of last-resort tariff), through usually bimonthly bills, a cost of energy based on the electricity-market average-hourly price in the billed period. Thus, consumers do not know ex-ante the cost of energy that they will have to pay in their next-quarter bills, which will be based on volatile real hourly prices. This does not exactly mean that consumers are not able to know this cost of energy before consuming because consumers will be able to know in advance the price resulting from the market the day before[8].

In this methodology it is important to differentiate two different types of consumers:

- Those who have smart meters that can meter on an hourly basis, who will be billed according to their actual hourly consumption during the billing period;

- Those who do not have these meters, who will be billed according to a standard consumption hourly-profile to be published by the system operator.

Thus, this new methodology opens the door, to those consumers with smart meters, to save costs by implementing new demand-response (hereinafter also 'DR') actions by shifting their demand from hours with high prices to hours with low prices.

Since the Ministry proposed this new methodology a hot debate has taken place with regard to its economic pros and cons. However, the Ministry has not made public any economic study supporting or assessing the methodology. Moreover, the CNMC just made a preliminary and limited analysis to support its report reviewing the Ministerial proposal.

In this context, this thesis aims to contribute to the debate, filling some of its gaps by providing a rigorous economic assessment of some of the most relevant implications of this methodology.

More concretely, the specific questions that this thesis attempts to answer are:

- Will the consumers pay more or less than what they used to pay with the previous methodology? How much?

- What will be the maximum savings that the consumers with a smart meter may obtain if they optimize their consumption profile?

- What will be the consequences if, instead, they follow the worst possible profile?

The analysis carried out in this thesis to answer the questions above is presented in this document structured as follows:

[8] The system operator releases the hourly prices resulting from the day-ahead market in its website and it has even developed a cell phone application, so that all consumer can check the hourly prices in their Smartphone.

- Chapter 2 presents a review of the state of the art regarding to:

  – The most common electricity retail pricing methodologies found in the literature and/or adopted by the regulators or the ministries of several countries;
  – The notion of demand response;
  – Demand response-modeling approaches.

- In chapter 3, further information is given on the new and the old methodologies for establishing the cost of energy component in the Spanish electricity retail tariffs.

- In chapter 4 an assessment on potential impacts of the new methodology versus the old one on the cost of energy for consumers is carried out under a static approach that considers that consumers do not modify their consuming behavior. The methodological approach, the modeling and validation details and the results and conclusions are presented in a structured way.

- Chapter 5 presents an assessment on how potential impacts anticipated in chapter 4 would change when consumers equipped with smart meters follow demand response strategies. Again, this chapter describes in a structured manner the methodological approach, the modeling and validation details and main results and conclusions.

- Finally, in chapter 6, the main conclusions of the thesis are summarized and recommendations on future research are proposed.

2. State of the Art

With the objective of putting the issues of this thesis into proper context and of laying the theoretical basis of the analysis, this chapter summarizes a review of the state of the art with regard to the following aspects:

- First, various electricity retail pricing schemes are presented. Namely, these are: fixed rate, critical peak pricing, time of use pricing and real-time pricing, this last being divided in day-ahead real time pricing and one-part /two-part real-time consumer base line pricing.

- Second, the notion of demand-response concept is introduced, describing main advantages and disadvantages of demand response policies and/or strategies.

- Finally, main approaches found in the literature for modeling DR policies and/or strategies.

2.1. Electricity retail regulated prices: pricing methodologies

2.1.1. Fixed rate

The fixed rate (FR) pricing is a tariff scheme in which the consumers pay a predefined price per kWh they consume within a pre-specified period. No matter how much power is actually used at any moment, the consumer will always pay the same amount per unit of energy.

2.1.2. Critical Peak Pricing

The critical peak pricing (CPP) is a tariff scheme with very high price in certain periods called critical peak periods. These periods are triggered usually when the reserve margins in the power system are low or at periods of peak demand. By considering this, the consumers could predict when it is most likely that the events will trigger but they don´t know the exact time or day because the events occur without warning.

According to (Batlle & Rodilla, 2009) this scheme can appear in various forms such as “Fixed period critical peak pricing, CPP-F”, “Variable period critical peak pricing, CPP-V”, “Variable peak pricing, VPP” and “Critical peak rebates, CPR”. In the first case, CPP-F, the consumers know the time and the duration of the events but not the exact day, in the second case, CPP-V, the consumers don´t know neither the time, duration nor the day of the events, in the third case, VPP, the consumers have the same information with the CPP-F but the prices are established in terms of local marginal prices (LMPs) and last in the fourth case, CPR, the consumers are rewarded when reducing their consumption in these periods.

2.1.3.Time of Use Pricing

The time-of-use pricing (TOU) is a tariff scheme in which the electricity prices are set in advance for a specific period. These prices don´t change many times per year, usually they are revised once or twice. They often include at least a peak price and an off peak price, as well as sometimes a third medium price (Zhao et al., 2013). The peak price is charged to the consumers during the peak hours of the day to incentivize them to reduce or shift their load and the off peak price during the remaining hours of the day when the demand is lower.

2.1.4.Real-Time Pricing

The real time pricing (RTP) rates vary throughout the day according to the wholesale price of the electricity. Consequently, there is a direct connection between the wholesale market and the retail market. Consumers are exposed to the fluctuations of the price, which questions the stability of their electricity bills. Some of the most common forms of RTP techniques are described below. (FERC, 2006)

2.1.4.1. Day-Ahead Real-Time Pricing (DA-RTP)

In DA-RTP the customers are given notice of the prices for each of the next day's 24 hours. (FERC, 2006) This could be done either by telephone, or by viewing an Internet website or by receiving the information automatically on a smart phone.

2.1.4.2. One-Part or Two Part Real-Time Consumer Base Line (CBL) Pricing

In the one or two part real-time pricing a unique customer baseline load (CBL) profile is calculated for every consumer based on his/her historical billing data. Consumption below or above this profile is charged according to the wholesale market prices. (FERC, 2006) The difference between the one and the two-part version is that the one-part assesses only a volumetric charge whilst the two-part has a fixed or access component and a volumetric component to constitute the consumer charge. The difference between the two is shown graphically in Figure 1. (Barbose & Goldman, 2004)

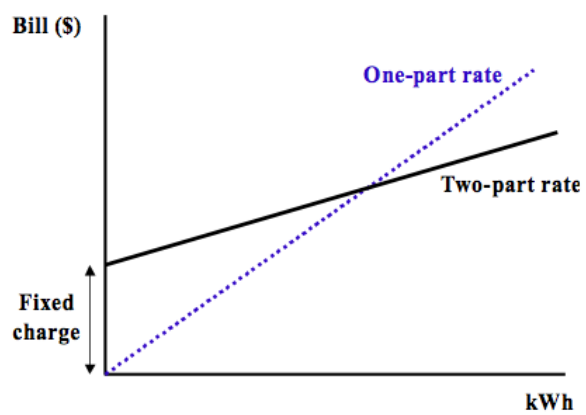

Figure 1: One part versus two-part CBL RTP

2.2. Demand response (DR)

2.2.1. DR concept and its advantages and disadvantages

A very representative definition of demand response was written by (Cappers et al., 2010) as "*Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized*".

Dynamic pricing schemes could motivate the consumers to follow DR strategies, basically by increasing their consumption of electricity when its price is low and decreasing it when the price is high. This could only occur when the variations in the real price of electricity are reflected in the retail tariffs of the customers.

DR derives in different advantages and disadvantages both for individual consumers and at a system level. Some of the main advantages and disadvantages are described below.

Effects on consumers' electricity bills

According to (Joskow & Wolfram, 2011) consumers currently billed with fixed rate pricing will see significant changes in their bills when transferred to real time pricing. The bills of those whose consumption is higher during the valleys of the system´s load curve will decrease. On the other hand the bills of those whose consumption is higher during the peak intervals of the system´s load curve will increase. This means that under fixed rate pricing the second group is subsidizing the first because the costs of the power system investments are increasing due to the peak load generators which are needed at the peak load instants in order to satisfy the demand at that instant. With RTP the first group is compensated for being at the valley and the second group probably will try to shift its consumption to lower price hours in order to avoid the higher peak load prices. This is a reason why the second group might oppose this transition, because neither they would like to experience high prices nor it would like to change habits (Borenstein, 2005).

The above mentioned effect will be lower when transferring from TOU to RTP because a big portion of this transfer has already taken place during the previous transition from fixed rate to TOU.

Nevertheless, a potential rebound effect should be considered when assessing actual costs savings: as mentioned in (Batlle & Rodilla, 2009) if the consumers' bills are reduced, then probably they will increase their consumption.

Effects on market power

Usually, in electricity markets the more inelastic is the demand the harder is to shift the system load curve's spikes. This provides grounds for exercise of market power from the side of the generating companies (Kirschen & Kirschen, 2003). In liberalized electricity wholesale markets, power prices are usually determined by the marginal cost of opportunity of the marginal technology and also by the ability of the electricity producers to exercise market power. When the demand response of the consumers is increased, the market power of these agents is decreased because the elasticity of the residual demand is bigger. So they face a higher risk of being excluded from the committed units and their ability to exercise market power is reduced (Joskow & Wolfram, 2011).

Effects on electricity reserves

Another benefit of the demand response according to (Agnetis et al., 2011) is that the demand response of the households could reduce the generation reserves requirements and also help to cope with the unbalances of the renewable energy resources. As per a study done by (Partovi et al., 2011) when demand response is considered in the reserve market, less generators will be committed which would reduce the operation costs and also the equipment erosion. Specifically demand response could be an economically feasible solution for providing reserve during the peak hours when the costs of the peak generating units are the highest. These reserves could be offered/managed by a new entity (so-called aggregator), which could gather the consumers and use their flexibility in the interest of the system as well and for his interest.

Effects on required investments

One of the problems with RTP expressed in (Wolak, 2011) is that it requires the consumers´ active participation. The consumers need to be aware of the daily prices and also must be able to optimize their electricity needs in order to reduce their cost. In the "Illinois energy smart pricing plan" project the consumers' responsiveness increased when they were supplied with automatic cycling control equipment for their central air-conditioners, which was adjusting the operation of the ACs in line with the prices levels. Further increases in their responsiveness were achieved when the consumers were supplied with the "Energy PriceLight", a device that received wireless price information and transmitted it by glowing in different colors according to different price levels. (Summit Blue Consulting, 2007). So in order to explore the maximum benefit from RTP someone needs to automate his/her house with control and monitoring equipment, the cost of which might offset the benefits from the demand response. So probably investment in very sophisticated equipment is not the optimal because simpler devices or just human decisions could have similar effect.

2.2.2. Demand Response Modeling

Various authors have approached the calculation of consumers´ demand response with different methodologies.

The main difficulties faced are the lack of public data with regard to consumers' electricity consumption profiles and the decomposition of these profiles into distinct household devices which consumption could be shifted to different hours. This data is very relevant to obtain the starting point for each consumer, from which to begin to analyze demand response strategies.

The reason is that in order to record the consumption of a household, first permission is needed from the owner of the household because his/her privacy will be violated. Once this permission is granted, in order to obtain an exact measure of the consumption of different devices a voltage transformer should be connected at the main input terminals of the house and current transformers to each device in order to calculate the power consumed by each one of them. To do this calculation, the forth mentioned measuring equipment needs to be connected via analog to digital circuit boards to a computer that will receive these values and store them in its hard drive. The sampling rate also is very important. If someone would like to capture short duration current spikes then he/she needs to install measuring equipment that is able to measure voltage and current at very short time intervals. So it can be concluded that significant money, time and human resources are needed to accomplish this task for just one consumer and the resulting data cannot be available to everyone for analysis.

One of the most common methods to construct consumption profiles without using the above approach is the bottom-up load modeling. With these models a consumption load profile is constructed from elementary load components such as individual appliances[9]. These models are also applied to simulate the consumption patterns of whole areas.

In (Vallés et al., 2013) the authors used the data of seven real consumers´ load profiles, which they decomposed into individual devices attempting to match the devices´ output of each consumer with the corresponding consumer´s consumption profile.

In (Walker & Pokoski, 1985) the authors incorporated psychological considerations in order to model the variations in the use of individual devices through "availability" and "proclivity" functions, which were derived from surveys´ data. The resulting device patterns were then aggregated to form individual load profiles that afterwards were compared with real recorded profiles in order to validate their approach.

In (Capasso et al., 1994) the authors used specific areas´ socioeconomic and demographic characteristics, load profiles of individual household appliances and probability for psychological and behavioral factors in order to simulate the consumption profiles of the areas. Then they compared their predicted results with the recorded data.

[9] See for instance (Paatero & D. Lund, 2005)

As it could be concluded from the above papers, the method each author used depended on the available information and the effect that he/she would like to analyze.

As it is explained elaborately and with more detail in chapter 4, this thesis proposes an innovative approach to derive individual consumer profiles and their decomposition into distinct household devices, which combines and improves different solutions found in the literature, as follows:

- Demographics and socioeconomic data regarding the use of household devices in Spain have been gathered as in (Capasso et al., 1994).

- Typical device load curves were derived such as in (Vallés et al., 2013), based on the pre-mentioned data.

- In order to capture the availability of these devices by the individual households, Monte Carlo analysis was used, considering data on average availability ratios.

- Finally, in order to capture the time variability of the load profile of each consumer, an optimization model was developed minimizing the differences between all the consumers profiles aggregated and the average consumption load curve.

The next step after having or creating various detailed consumers´ profiles with individual devices´ schedules is to model demand response strategies that consumers could follow to save costs by shifting the consumption of their devices from expensive hours to cheaper hours. In the literature various authors have approached this effect with different modeling techniques that are described below.

In (Vallés et al., 2013) the authors distinguished the devices into "one time use", which run once or twice a day and have a fixed duty cycle, and into "extended" devices, which have a duty cycle that can be prolonged in time. The demand response of the consumers was calculated by using a cost minimization objective function, which was limited by the "own elasticity", and "elasticity of substitution" factors that they introduced based on the results of diverse demand response pilot programs (Ahmad Faraqui and Sanem Sergici, 2009). These notions are explained in (King & Chatterjee, 2003) as follows:

- The "own price elasticity" is the percentage change in consumption due to a percentage change in price in either the peak or off-peak time period.

- The "elasticity of substitution" is the percentage change in the consumption ratio between two different periods because of a percentage change in the price ratio between those periods.

The analysis in (Vallés et al., 2013) concluded "*the contrast between real time pricing (RTP) and simpler and more stable tariffs that can be known in advance is not very significant under normal and close to the average price patterns. The difference would be more relevant if frequent and large electricity price spikes are faced in the market and that depends a lot on the characteristics of the power system under consideration*".

In (Seyed et al., 2013) the authors distinguished the devices into “adjustable”, which can be shifted in time according to prices’ changes, and “non-adjustable”, which don´t have this ability. They used a multi-criteria objective function composed of the “expected electricity payment cost”, the “electricity payment exposure risk” and “total delay cost” which they tried to minimize. The “expected electricity payment cost” was the actual cost of electricity; the “electricity risk exposure” was defined as the electricity payment in the worst scenario minus the expected electricity cost and the “total delay cost” was the cost of grievances that could rise from delaying the operation period of the appliances. The two latter terms were scaled by 2 coefficients, which represented the risk-averse behavior of the consumers and the willingness to wait.

They concluded, “*Consideration of both risk and delay costs will result in higher expected electricity payment, but increases customers willingness to incorporate in real-time pricing programs*”.

In (Agnetis A. et al., 2011) the authors distinguished the devices into non manageable and manageable. The non-manageable devices such as the fridge were those that run continuously and little could be done to affect their consumption. The manageable devices such as the air conditioning were further divided into adjustable loads whose energy consumption could be altered and shift-able loads such as the washing machine whose working cycle could be shifted in time. These devices have the capability to exchange signals and information with an “electrical box”. The “electrical box” is a control device that does all the optimization calculations and communication with third parties if needed. In addition, a house, apart from consuming, could also produce electricity with photovoltaic panels or store electricity with batteries. The authors used a multi-criteria objective function composed of three different criteria: “cost minimization”, “maximization of climatic comfort” and “scheduling convenience”. The first criterion referred to the gains achieved from the difference of the retailer prices and the aggregator´s[10] proposals; the second criterion was related to the comfort offered by the adjustable devices; and the criterion represented the convenience offered by the shift-able devices. The authors examined the functionality of their proposed tool but didn’t derive any results applied to real consumers.

In (Agnetis A. et al., 2011) the authors introduced the idea of the aggregator as “*the operator who manages the aggregated consumers, to gather flexibility and generate bids for the energy market, with the aim of maximizing its revenue*”. Their objective function was composed of two terms. One term represented the profits that the aggregator could have from the market and the second term represented the cost that the aggregator had to pay to the consumers.

The authors concluded, *“Considerable daily savings exist for consumers participating in the active demand*”.

In this thesis, as it will be explained with more detail in chapter 5, demand response was modeled as follows:

[10] The notion of the aggregator is introduced in the next paragraph

- An optimization model based on the minimization of electricity costs for each individual consumer over a period of time has been designed and implemented[11].

- The decision variables were when to switch on and off each electrical device.

- Each electrical device operation cycle (in terms of power consumption profile during each operation) was modeled with great detail

- The total consumption over the period of time remained the same as in the base case without DR.

- The maximum instant power consumption was restricted for each consumer to the maximum instant power consumption of the corresponding consumer in the base case without DR.

- The devices were divided into shift-able and non shift-able devices. The shift-able devices were the only ones whose operation could be shifted in time following reductions or increases in prices.

- A second scenario was run including an additional restriction that impeded consumers to shift loads between 1am and 7am, considering probable that consumers would not be awake and so able to switch on/off some devices without a kind of smart-box. These hours are usually the ones when the prices and consumption in Spain are the lowest. Thus, this restriction introduces a form of finite elasticity.

[11] An alternative case have been also analyzed with non-rational consumers maximizing their cost of electricity, in order to analyze maximum costs' increases that could happen when changing from the previous CESUR auction methodology to an RTP scheme.

3. Background – Regulated retail prices in Spain

Regulated retail tariffs, both the old "last-resort tariffs" and the new corresponding "voluntary price for small consumers" include different cost components. One of them is the so-called cost of energy. Moreover, even the cost of energy includes different components.

In order to determine the impact of the new RTP methodology for establishing the cost of energy in electricity regulated retail tariffs on the consumers´ costs, the first step was to isolate the specific component of the cost-of energy which is affected by the new RTP scheme and find the equivalent corresponding component of the previous CESUR method.

This allows identifying the prices of the old and the new methodology with which the consumption of the consumers at every instant is multiplied in order to derive the total cost of energy for both cases.

These are the costs that are then modeled to carry out the analyses needed to answer the research questions of the thesis.

3.1. CESUR auctions: cost-of-energy

The calculation method of the cost-of-energy component of the regulated retail tariffs with the CESUR auctions method is described with detail in Orden ITC/1659/2009. According to it the energy term[12] of the last resort tariff is the sum of an access-tariff energy term and an estimated cost of energy term. This energy term is then multiplied by the energy measured by the meter of the consumer during the billing period. This is expressed by the following equation:

$$\mathrm{TEU_p} = \mathrm{TEA_p} + \mathrm{CE_p}$$

; $\mathrm{TEU_p} =$ Energy term of the last resort tariff at period p
; $\mathrm{TEA_p} =$ Energy term of the access tariff at p
; $\mathrm{CE_p} =$ Estimated cost of the energy measured by the consumer´s meter at p

The $\mathrm{TEA_p}$ is a fixed term which is determined by costs that don´t have any relation with the real time prices or else wise said with the hourly outcome of the wholesale market[13]. On the other hand, the $\mathrm{CE_p}$ term is formulated as follows:

$$\mathrm{CE_p} = \left[\left(\mathrm{CEMD_p} + \mathrm{SA_p}\right) * \left(1 + \mathrm{PR_p}\right) + \mathrm{CAP_p}\right] * \left(1 + \mathrm{PERD_p}\right)$$

; $\mathrm{CEMD_p} =$ Estimated cost of energy at the day ahead market at p
; $\mathrm{SA_p} =$ Estimated system adjustment services′ costs at p
; $\mathrm{PR_p} =$ Risk premium at p
; $\mathrm{CAP_p} =$ Capacity payment corresponding to the consumption at p

[12] The last-resort tariff is formed by a capacity term and an energy term.
[13] The regulated costs, that include costs such as network costs and the special regime support scheme among others, are paid by the consumer through this energy-dependent term and a fix term that depends on the contracted power.

; $PERD_p$ = Energy losses coefficient calcualated at p

Thus, the cost of energy is directly related to the wholesale electricity prices through the $CEMD_p$ term, which is described below. Before doing so it is important to mention that the Spanish retail electricity tariffs are divided in 3 different types for the low voltage customers with less than 10 KW of contracted power. The one examined here, called $CEMD_{P0,}$ which was the most universally used, had the same price for the two distinct tariff periods P1, P2. P1 was a 10 hours period between 12:00 to 22:00 in winter or 13:00 to 23:00 in summer and P2 was a 14 hours period defining the prices of the remaining hours. So,

$$CEMD_{p0} = \frac{(E_{p1} * CEMD_{p1} + E_{p2} * CEMD_{p2})}{(E_{p1} + E_{p2})}$$

; E_{p1} = Energy supplied at p1
; E_{p2} = Energy supplied at p2
; $CEMD_{p1}$ = Estimated cost of energy at the day ahead market for p1
; $CEMD_{p2}$ = Estimated cost of energy at the day ahead market for p2

… Where

$$CEMD_p = \frac{(a_{p,p2} * E_{p.p2} * CC_{p2} + a_{p,p1} * E_{p.p1} * CC_{p1})}{(E_{p.p1} + E_{p.p2})}$$

; $a_{p,p1}$ = Overcost factor at p1
; $a_{p,p2}$ = Overcost factor at p2
; $E_{p.p1}$ = Energy supplied at p1
; $E_{p.p2}$ = Energy supplied at p2
; $CC_{p1 \text{ or } p2}$ = The average cost weighted according to p1 or p2

The direct connection with the CESUR auctions is shown by the following formula that calculates the CC_{p1} and CC_{p2} terms.

$$CC_{tc} = \frac{(\sum_k (FP_{tc,k} * P_{tc,k}))}{\sum_k FP_{tc,k}}$$

; tc = p1 or p2
; $FP_{tc,k}$ = weighing factor of the kth auction outcome
; $P_{tc,k}$ = the CESUR kth auction outcome

3.2. Real time pricing: cost-of-energy

The calculation method of the cost-of-energy component of the regulated retail tariffs with the new RTP method is described with detail in Real Decreto 216/2014. According to it the energy hourly term for the voluntary price of the small consumers[14] is calculated by the following formula, which is similar to the one used for calculating CEp in the old method.

$$\mathrm{TCUh} = (1 + \mathrm{PERD_h}) * \mathrm{CPh}$$

; $\mathrm{PERD_p}$ = Energy losses coefficient calculated at each hour h
; CPh = Production cost of the energy at every hour

The latter term is defined by the following equation:

$$\mathrm{CPh} = (\mathrm{Pmh} + \mathrm{SAh} + \mathrm{OCh})$$

; Pmh = Average hourly electricity price
; SAh = System adjustment services costs at every hour
; OCh = Other costs at every hour

If from the equation calculating CEp in the old method, the risk premium term is subtracted, then the term Pmh could be equated with the term CEMD used in the old method. On its behalf Pmh satisfies the relationship below:

$$\mathrm{Pmh} = \frac{\mathrm{PMDh} * \mathrm{EMDh} + \sum_n (\mathrm{PMIh,n} * \mathrm{EMIh,n})}{\mathrm{EMDh} + \sum_n \mathrm{EMIh,n}}$$

; EMDh = Energy cleared in the day ahead market for hour h
; PMDh = Marginal price of the day ahead market for hour h
; EMIh, n = Energy cleared in the nth session of the intraday market for hour h
; PMIh, n = Marginal price of the nth session of theintraday market for hour h

3.3. Cost of energy: components of the old and new methods to be compared in this thesis

Being the main aim of this thesis to assess the impacts due to the change in the methodology for calculating the cost of energy of the regulated retail tariffs in Spain, and concretely those due to the application of a RTP methodology, next, the specific components of the cost of energy of both methodologies that will be compared are identified.

As explained before, the energy hourly term for the voluntary price of the small consumers is calculated using the following formula:

$$\mathrm{TCUh} = (1 + \mathrm{PERDh}) * (\mathrm{Pmh} + \mathrm{SAh} + \mathrm{OCh})$$

[14] The old last-resort tariffs have changed their name with the new method to voluntary price for the small consumers.

The corresponding term in the old method was the estimated cost of energy, which is calculated as follows:

$$CE_p = \left[\left(CEMD_p + SA_p\right) * \left(1 + PR_p\right) + CAP_p\right] * \left(1 + PERD_p\right)$$

The cost component of TCUh which is affected by RTP is Pmh, the average hourly electricity price. The corresponding cost component of CE_p would be $CEMD_p$*(1+PR_p).

With regard to the rest of the components, as it can be observed:

- SA_p*(1+PR_p) is the corresponding component of SAh
- CAPp is the corresponding component of OCh.
- (1+PERDp) is the corresponding component of (1+PERDh).

As the main interest of this thesis is on analyzing the effects of an RTP approach with respect to an approach based on ex-ante auctions, the next chapters will carry out quantitative analyses comparing the component $CEMD_p$*(1+PR_p) calculated with the old methodology and Pmh, calculated with the new RTP approach.

The values of CEMD and PR_p are shown for year 2010 at Table 48 in ANNEX 2. To simplify the calculation of Pmh it was assumed that the intraday market effect is negligible and so Pmh is equal to the day-ahead market price at any hour multiplied by the amount of energy consumed at that hour.

The rest of cost components will not be quantitatively analyzed in this thesis.

4. Potential impacts assessment on costs under a static approach

4.1. Introduction

The first objective of the thesis is to calculate the potential cost savings or extra costs of the new pricing methodology with respect to the old one, using a static approach that is, considering that consumers don't apply any DR actions when the new pricing methodology applies.

As described in detail in chapter 3, this analysis will focus on comparing the term Pmh of the new method, which is the one actually affected by the RTP scheme, with the corresponding term $CEMD_{p0}$ of the old method.

The approach proposed in this thesis to carry out this analysis is based on the following process:

- Estimation of individual consumers' load profiles and their decomposition into distinct household devices.

- Calculation of the cost of energy that would had been billed to each individual consumer with the old (just the part corresponding to the $CEMP_{p0}$ component) and the new method (just the part corresponding to the Pmh component), considering their actual consumption profile calculated in the previous step.

- Comparison and analysis of results.

This chapter is structured as follows:

- In section 4.2, the innovative methodology used to estimate individual consumers' load profiles and their decomposition into distinct household devices is described with detail. This includes also a detailed description of the model designed to generate several consumers' profiles and their decomposition using the explained methodology, as well as validating the generated profiles.

- Section 4.3 explains how the cost of energy for each individual consumer generated with the methodology and model explained above, is modeled and calculated.

- Section 4.4 presents the main results and conclusions of the analysis.

It is important to mention that the analysis carried out is based on data of 2010 because they are not more recent public data regarding several of the most relevant indicators needed to apply the methodology proposed for generating the consumers' load profiles. The data used in this regard come from the Sech Spahousec project (IDAE, 2011a).

However, this is just a restriction in terms of data availability. The same method could be applied for any year if new data is available or by making some assumptions on the development of these indicators.

In the following sections of this chapter follows the description of this process and conclusions are drawn from the analysis of the results.

4.2. Estimation of individual consumers' load profiles

In order to calculate the differences between the individual consumers´ bills (the part affected by the terms mentioned above) with the new method in comparison to the old method, it is important to have various consumers´ load curves. An example of an individual consumer´s curve is shown in Figure 2 taken from (Wood & Newborough, 2003).

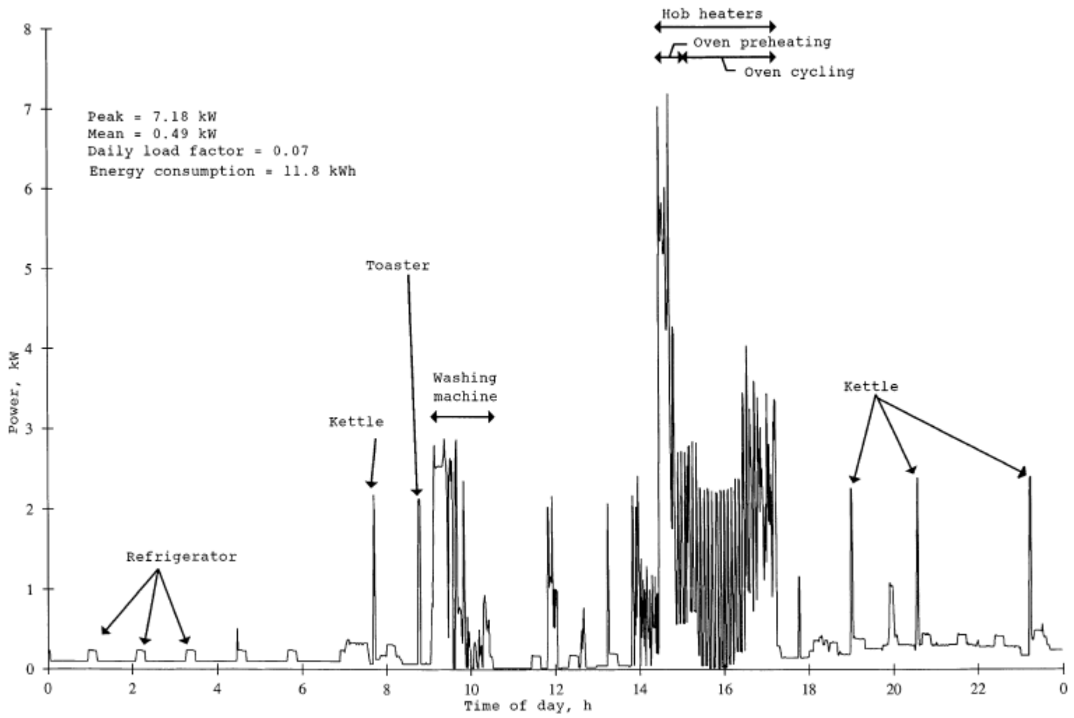

Figure 2: example of an individual consumer´s typical profile from (Wood & Newborough, 2003)

Nevertheless, it is pretty hard to get real consumers curves as it was analytically explained in section 2.2.2. For this reason in this thesis a bottom-up approach was used following a similar approach with (Paatero & D. Lund, 2005).

The different steps followed in the bottom-up process are:

- Find the main DoS in a typical Spanish household and derive the average annual energy consumed by each one of them if a consumer has this DoS.

- Derive the average typical weekly consumer load profile by multiplying a reference consumption curve with the average Spanish household consumption

- Determine the operation cycle of each DoS and together with the average annual energy consumed, estimate the number of operations during a week and a day.

- Use Monte Carlo analysis to create different combinations of DoS for 100 consumers according to the probabilities of having the specific load.

- Estimated hourly load profile for 100 consumers with optimization.

These steps are described in detail in the next sections.

4.2.1. Annual electricity consumption per Device or Service (DoS) per household

The first step of this approach was to obtain the average annual energy per electro domestic device or service, DoS, in a typical Spanish household. The different DoS considered are presented in column 1 of Table 1. The services are the first five entries, analytically the heating, the boiler, the cooker, the AC and the lighting whilst the devices are all the rest.

The "standby" device refers to the energy consumed by all the devices when they are just plugged in but not working. An example is the television when it is "OFF" but ready for operation by just pressing a button of the remote controller.

The total annual energy consumed per DoS in Spain is shown in column 2 of Table 1 and has been taken from (IDAE, 2011a)[15]. With these values, the percentage of total electricity consumed for each individual load is calculated is column 3, and the values coincide exactly with the values of (IDAE, 2011b)[16]. The average annual household consumption, column 4, was calculated by dividing the total annual energy in Spain by the number of households in 2010, which according to (IDAE, 2011a)[17] they are 17,199,630.

Table 1: Spanish average annual households´ consumption breakdown in 2010

Device or Service	Total Annual Energy in Spain (MWh)	Percentage of total electricity consumed (%)	Average Annual Household Consumption (MWh)
Heating	4,417.934	7.4	0.256
Boiler	4,479.594	7.5	0.260
Cooker	5,572.109	9.3	0.323
Air conditioning	1,400.183	2.3	0.081
Lighting	7,044,741	11.7	0.409
Electro domestic devices	**37,068,412**	**61.8**	**2.155**
Fridge	11,340,606	18.9	0.659
Freezer	2,244,898	3.7	0.130

[15] Page 57
[16] Page 2
[17] Page 16

Device or Service	Total Annual Energy in Spain (MWh)	Percentage of total electricity consumed (%)	Average Annual Household Consumption (MWh)
Washing machine	4,391,450	7.3	0.255
Dish washer	2,244,747	3.7	0.130
Tumble dryer	1,241,167	2.1	0.072
Oven	3,060,994	5.1	0.177
TV	4,516,825	7.5	0.262
Computer	2,751,108	4.6	0.159
Standby	3,969,322	6.6	0.230
Other	**1,307,296**	**2.2**	**0.076**
Vacuum cleaner			0.034
Toaster			0.042
Total	59,982,973		3.487

It is important to point out that the average consumption of a DoS per household, is calculated considering houses that have such a DoS and houses that does not have it. In order to calculate the average electricity consumed per DoS per house that has this type of DoS and not just the average house of Spain, it was important to do the following operations to derive the probabilities of having the specific DoS:

- Column 4 of Table 1, the average annual household consumption was copied in column 2 of Table 2.
- The availabilities of each DoS are taken from (IDAE, 2011b)[18]. They constitute column 3 of Table 2.
- The different energy services can be fed with electricity or with other different source. For each individual service, the average percentage of it fed by electricity in Spain is taken from (IDAE, 2011b)[19], to constitute column 4 of Table 2. For the same column, all the devices have a value of 1 because they are all fed by electricity.
- Column 5 of Table 2 is the percentage of the DoS available & electric per household and is derived by multiplying the “availability” column and the “percentage electric” column. This column will be also referred as the probability of having a DoS.

[18] Pages 11 and 12
[19] Page 14

- So, finally the average annual electricity consumption of a household with the specific DoS is calculated by dividing the average annual household consumption by the pre-mentioned probability of column 5, Table 2. The values of the annual energy for the "electro domestic devices" group coincide with (IDAE, 2011b)[20]. This validates the applied calculation process and thus it is also applied for the "services" group.

Table 2: Spanish availability and average annual consumption of a household with the specific device or service

Device or Service	Average Annual Household Consumption (MWh)	Availability (%)	Percentage electric (%)	Probability of available & electric (%)	Average Annual Consumption of a household with the (DoS) (kWh)
Heating	0.256862	90.0	46.3	41.7	616.42
Boiler	0.260447	99.8	21.5	21.5	1213.81
Cooker	0.323967	100	63.0	63.0	514.23
AC	0.081408	48.9	99.7	48.8	166.98
Lighting	0.409587	100	100	100	409.59
Fridge	0.659352	100	100	100	659.35
Freezer	0.130520	23.2	100	23.2	562.59
Washing machine	0.255322	92.9	100	92.9	274.84
Dish washer	0.130511	53.1	100	53.1	245.78
Tumble dryer	0.072162	28.3	100	28.3	254.99
Oven	0.177969	77.1	100	77.1	230.82
TV	0.262612	99.9	100	99.9	262.87
Computer	0.159952	93.0	100	0.93	171.99
Standby	0.230779	100	100	100	230.78
Vacuum cleaner	0.034000	100	100	100	34.00
Toaster	0.042000	100	100	100	42.00

4.2.2. Average typical weekly consumer load profile

In order to create various consumers' profiles, apart from the average annual consumption of DoS for a household and the probability of a household having a specific DoS, it is important to have a typical consumer reference load curve.

As it will be explained later in detail, the methodology proposed in this thesis with regard to individual consumers' load profiles aims to minimize the differences between generated consumers' load profiles and such reference load curve.

[20] Page 9

The curve used in this thesis is the final consumption profile standard curve (type A) established by the system operator for year 2010, which has been obtained from (REE, 2014). This is a load profile used for estimating the hourly average consumption of type A consumers. Type A consumers are those to which two specific access tariffs called 2.0A and 2.1A apply, and whose metering equipment is able to meter just a single period (Pa type profile) and not in an hourly basis. This profile depends on the evolution of the system demand, trying to incorporate those factors affecting consumption patterns, which are not predictable in advance, such as temperature, light, etc.

This is indeed the load profile curve, which is used to bill, under the new RTP methodology, those eligible consumers without smart meters that choose the regulated RTP tariff.

This curve for 2010 is composed of hourly values, which add to 1.0242. In order to obtain the typical consumer reference curve, this hourly values were divided by 1.0242 and after that they were multiplied with the average consumer annual consumption in Spain in 2010, which was 3,482kWh according to (IDAE, 2011b). Note that this value is very close to the value calculated of 3,487kWh at Table 1.

In order to simplify the optimization problem that will be used to derive the individual load profiles, and which is explain later, and to facilitate running different cases within the limiting time used, instead of using the entire annual hourly load profile, just one week of each month was selected. Thus, as a result of the whole process explained in the following sections, for each individual consumer, twelve different weekly load profile curves will be generated, one for each month. The initial values of the typical profile A for each chosen week are shown in ANNEX 1. The values adjusted in MWs are shown in ANNEX 2.

4.2.3. Weekly Energy per Device or Service (DoS)

After calculating the average annual consumption of every DoS for a household, the next step in the process was to allocate these energy amounts on a weekly basis. As it was explained earlier, twelve weeks were chosen, one for each month of the year. This step is imperative at this stage of the process in order to capture the different consumptions of these weeks for each month shown in Table 3 taken from the last row of Table 47 in ANNEX 2.

Table 3: Weekly energy of the average typical profile A

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
77.39	75.24	64.85	60.08	58.60	56.51	66.80	63.80	60.01	66.78	73.83	80.77

One of the most importance factors for the different DoS usage between the months of the year is the temperature variation. So the DoS were split into two groups:

- Those that regulate or depend on the temperature of a household, which are the “heating”, the “boiler”, the “air conditioning” and the “tumble dryer” (“temperature-dependent DoS”)

- All the rest (“temperature-independent DoS”).

The group of the “temperature-independent DoS” was assumed to consume the same energy amounts for each week. This is calculated by dividing column 3 of Table 4 taken from column 6 of Table 2, with the number of days in a year, which are 365, and then multiplying the result with 7, which is the number of days in a week. The result is shown in column 4 of Table 4, the “weekly energy per device or service (DoS)”.

Not all the households in Spain have the same DoS. For this reason, the “weekly energy per device or service (DoS)” is multiplied with the column 2 of Table 4, which is the “probability” of a DoS being “available” & “electric”. The result is shown in column 5 of Table 4, the “weekly energy per DoS with probability”.

Table 4: Weekly Energy per “temperature-independent DoS” with probability

DoS	Probability of available & electric (%)	Average Annual Consumption of a household with the device or service (DoS) (kWh)	Weekly Energy per Device or Service (DoS) (kWh)	Weekly Energy per Device or Service (DoS) with Probability (kWh)
Cooker	63.0	514.23	9.86	6.213
Lighting	100	409.58	7.85	7.855
Fridge	100	659.35	12.64	12.645
Freezer	23.2	562.58	10.78	2.503
Washing machine	92.9	274.83	5.27	4.896
Dish washer	53.1	245.78	4.71	2.502
Oven	77.1	230.82	4.42	3.413
TV	99.9	262.87	5.04	5.036
Computer	93.0	171.99	3.29	3.067
Standby	100	230.77	4.42	4.425
Vacuum cleaner	100	34	0.65	0.652
Toaster	100	42	0.80	0.805
Total				54.016

The total amount of weekly energy per “temperature-independent DoS” is 54.01642 kWh. By subtracting this amount from the values of Table 3, the still unallocated energy shown in Table 5 for each month is obtained. The only DoS remaining unallocated are those “temperature-dependent”, that is: the heating, the boiler, the air conditioning and the tumble dryer.

Table 5: Weekly energy in kWh to be allocated to “temperature-dependent DoS”

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
23.38	21.23	10.84	6.06	4.59	2.49	12.79	9.79	5.99	12.77	19.82	26.75

The energy of the tumble dryer was allocated between months January, February, November and December. The reason for this, as it will also be elaborately explained later in the section 4.2.4 is that the tumble dryer should be operated after the washing machine and thus it must be in accordance with the number of operations of a washing machine within the week. Also the relationship of the total energy available for this device and the amount of energy that it spends in a cycle multiplied by the total number of operations should be satisfied. Elsewise said since it is desirable to operate the tumble dryer after the washing machine and taking into account the energy needed for the tumble dryer in a cycle, then this amount is enough only for months January, February, November and December. These have a total of 120 days. So as is shown in Table 6 the "Average Annual Consumption of a household for the tumble dryer" is divided by 120 and then multiplied by the 7 days of week to get the "weekly energy of tumble dryer". This multiplied by the "probability" gives the "weekly energy of tumble dryer with probability" for January, February, November and December.

Table 6: Weekly Energy of the tumble dryer with probability for months Jan., Feb., Nov. and Dec.

DoS	Probability of being available & electric (%)	Average Annual Consumption of a household for the tumble dryer (DoS) (kWh)	Weekly Energy of tumble dryer (kWh)	Weekly Energy of tumble dryer with Probability (kWh)
Tumble dryer	28.3	254.9909	14.87	4.21

Subtracting this amount from the values of Table 5 leaves the unallocated energy shown in Table 7 for each month. The only DoS remaining unallocated now are the heating, the boiler, and the air conditioning.

Table 7: Weekly energy in kWh to be allocated to "temperature-dependent DoS", except "tumble dryer"

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
19.17	17.02	10.84	6.06	4.59	2.49	12.79	9.79	5.99	12.77	15.61	22.54

The energy of the air conditioning (AC) was allocated between 7 weeks of months July and August. As per Table 2 the AC has 166.9789 kWh of average annual consumption for a household with AC. This divided by 7, the number of weeks assumed that this device is "ON", and then multiplied by 2, the 2 weeks of August and July that will be used in the analysis, 1 for each, gives the total amount of energy allocated for both weeks, 47.71 kWh. In order to calculate how much energy to allocate in each week the "excel solver" was used. The next paragraphs describe the logic of this optimization problem.

The total consumption of months July and August, Consumpt.(*), shown in Table 3, minus the consumption for all the DoS, Constant_basis(*), shown in Table 4, (the heating and boiler have 0 KWh consumption as explained earlier) minus the unknown AC consumption, Variable_AC(*), times the "probability" of having AC, result to 2 values, one for August, Diff(Aug.) and one for July, Diff(July).

$$\text{Consumpt.(Jul.)} - \text{Variable}_{\text{AC(Jul.)}} * \text{Prob(AC)} - \text{Constant\_basis(Jul.)} = \text{Diff.(Jul.)}$$

$$\text{Consumpt. (Aug.)} - \text{Variable}_{\text{AC(Aug.)}} * \text{Prob(AC)} - \text{Constant\_basis(Aug.)} = \text{Diff. (Aug.)}$$

The sum of the absolute values of the outcomes is minimized in the objective function in order to be as close as possible to the Consumpt.(*), shown in Table 3.

$$\text{Objective function: Minimize (absolute(Differ. (Jul.))} + \text{absolute(Differ. (Aug.)))}$$

The unknown energy amounts should be positive and the total energy should equal 47.71 kWh.

$$\text{Variable\_AC(Jul.)} \geq 0$$
$$\text{Variable\_AC(Aug.)} \geq 0$$
$$\text{Variable\_AC(Jul.)} + \text{Variable\_AC(Aug.)} = 47.71 \text{ kWh.}$$

To ensure that both the Diff.(*), of July and August are similar and to avoid that one of them is zero and the other month takes all the weight, the below constraint was added.

$$\text{absolute(Differ. (Jul.))} \geq 0.37$$
$$\text{absolute(Differ. (Aug.))} \geq 0.37$$

This value, 0.37, is the result of a continuous adjustment of values (starting from 2 and ending up to 0.37) so that there exists a feasible solution and also the Differ.(Jul.) and Differ.(Aug.) are approximately the same and minimum. The results of the AC energy for months July and August are shown in Table 8.

Table 8: Weekly energy of the AC with probability for the AC for Jul.and Aug.

Month	Prob. (%)	Weekly Energy of the AC (kWh)	Weekly Energy of the AC with Probability (kWh)
July	48.8	26.92	13.14
August	48.8	20.79	10.14

Subtracting these amounts from the values of Table 7 leaves the unallocated energy shown in Table 9 for each month. The only DoS remaining unallocated now are the heating and the boiler.

Table 9: Weekly energy in kWh remaining per week of each month after the AC subtraction

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
19.17	17.02	10.84	6.06	4.59	2.49	-0.35	-0.35	5.99	12.77	15.61	22.54

The energy amounts of the heating and the boiler were allocated similarly. According to Table 2 the heating has 616.4199 kWh of average annual consumption for a household with this service and the boiler has 1,213.809 kWh for a household with service. Since the months of the year are 12 and we have chosen to do the analysis with 12 weeks then the energy for these services is 12/52 times the above value, which is 142.25 kWh and 280.11 kWh respectively. These amounts have to be distributed monthly. Months July and August were excluded because it was considered that the heater and the boiler are not used in these months. In order to calculate how much energy to allocate in the remaining weeks the "excel solver" was used. The next paragraphs describe the logic of this optimization problem.

The total consumption of any month (except July and August) shown in Table 3, minus the consumption for all the DoS, Constant_basis(*), shown in Table 4, (the AC has 0 kWh consumption in all months except July and August, as explained earlier), minus the unknown heater consumption, Variable_H(*), times the "probability" of having a heater, minus the unknown boiler consumption, Variable_B(*), times the "probability" of having a boiler, result to 20 values, 2 for each of the pre mentioned months, 1 for the boiler and 1 for the heater.

$$\text{Consumpt.}(\text{m}) - \text{Variable}_{\text{H}}(\text{m}) * \text{Prob}(\text{heating}) - \text{Variable}_{\text{B}}(\text{m}) * \text{Prob}(\text{boiler}) - \text{Constant\_basis}(\text{m}) = \text{Diff.}(\text{m})$$

;m refers to the 10 months, Jan., Feb., Mar., Apr., May, Jun., Sep., Oct., Nov. and Dec.

The sum of the absolute values of the outcomes is minimized in the objective function in order to be as close as possible to the Consumpt.(*), shown in Table 3.

$$\text{Objective function: Minimize} \sum_{\text{m=Jan.}}^{\text{Dec.}} \text{absolute}(\text{Differ.}(\text{m}))$$

The unknown energy amounts should be positive and the total energy should equal to 142.25 KWh for the heating and 280.11 kWh for the boiler.

$$\text{Variable\_H}(\text{m}) \geq 0$$

$$\text{Variable\_B}(\text{m}) \geq 0$$

$$\sum_{\text{m=Jan.}}^{\text{Dec.}} \text{Variable\_H}(\text{m}) = 142.25 \text{ kWh}$$

$$\sum_{\text{m=Jan.}}^{\text{Dec.}} \text{Variable\_B}(\text{m}) = 280.11 \text{ kWh}$$

To ensure that the Diff.(m), of all the months are similar and to avoid that one of them is zero and the another month takes all the weight the below constraint was added.

$$\text{absolute}(\text{Differ.}(\text{m})) \geq 0.25$$

This value, 0.25, is the result of a continuous adjustment of values (starting from 2 and ending up to 0.25) so that there exists a feasible solution and also the Differ.(m) for all months are approximately the same and minimum. Finally in order to ensure consistency between the months, for example that the energy for heating or boiler cannot be higher in April than in December, the following relationships were established. These relationships depend solely on the relationship between energies for each month, shown in Table 3.

$$\begin{aligned}\text{Variable\_B(Dec.)} &\geq \text{Variable\_B(Jan.)} \geq \text{Variable\_B(Feb.)} \geq \text{Variable\_B(Nov.)} \\ &\geq \text{Variable\_B(Jul.)} \geq \text{Variable\_B(Oct.)} \geq \text{Variable\_B(Mar.)} \\ &\geq \text{Variable\_B(Apr.)} \geq \text{Variable\_B(May)} \geq \text{Variable\_B(Jun.)}\end{aligned}$$

$$\begin{aligned}\text{Variable\_H(Dec.)} &\geq \text{Variable\_H(Jan.)} \geq \text{Variable\_H(Feb.)} \geq \text{Variable\_H(Nov.)} \\ &\geq \text{Variable\_H(Jul.)} \geq \text{Variable\_H(Oct.)} \geq \text{Variable\_H(Mar.)} \\ &\geq \text{Variable\_H(Apr.)} \geq \text{Variable\_H(May)} \geq \text{Variable\_H(Jun.)}\end{aligned}$$

The results of the heating and boiler energy for all months are shown in Table 10. By applying the probabilities shown in Table 2 for the heating and boiler, 0.417 and 0.215 respectively, the final allocated amounts are shown in Table 11.

Table 10: Weekly energy in kWh per month for heating (H) and boiler (B) in kWh

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
H.	30.29	25.14	11.62	0.11	0	0	0	0	0	14.94	21.76	38.39
B.	31.56	31.56	29.03	29.03	22.5	12.75	0	0	29.03	31.56	31.56	31.56

Table 11: Weekly energy in kWh per month for heating and boiler with probabilities in kWh

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
H.	12.63	10.48	4.84	0.05	0.00	0.00	0.00	0.00	0.00	6.23	9.07	16.01
B.	6.78	6.78	6.24	6.24	4.84	2.74	0.00	0.00	6.24	6.78	6.78	6.78

In this chapter it was described how it was allocated the energy for the individual weeks of each month that are going to be used in the analysis:

- First the DoS were split into those that operate with the same way throughout the year and those whose operation depends on the temperature.

- Second, the energy for the first group was split equally between the weeks.

- Third, beginning with the "temperature-dependent" DoS, the tumble dryer energy was appointed to months January, February, November and December. Further explanations will follow for the tumble dryer in the section 4.2.4.

- Fourth the air conditioning energy was split between months July and August with an optimization problem.

- Last the heating and the boiler amounts of energy were also split between months, January, February, March, April, May, June, September, October, November and December with an optimization problem.

The resulting weekly energy for each DoS and for each month with and without probabilities are shown in Table 12 and in Table 13 respectively. The first, Table 12, shows the energy distribution of any DoS for the average household and the second, Table 13, shows the energy distribution of the DoS, not for the average household, but for the one that has this type of DoS.

Table 12: Summary of the distribution of any DoS for the average household in KWh

DoS	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Heating	12.63	10.48	4.84	0.05	0.00	0.00	0.00	0.00	0.00	6.23	9.07	16.01
Boiler	6.78	6.78	6.24	6.24	4.84	2.74	0.00	0.00	6.24	6.78	6.78	6.78
Cooker	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21
AC	0.00	0.00	0.00	0.00	0.00	0.00	13.14	10.14	0.00	0.00	0.00	0.00
Lighting	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86
Fridge	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65
Freezer	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Wash machine	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90
Dish washer	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Tumble dryer	4.21	4.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.21	4.21
Oven	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41	3.41
TV	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04
Computer	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
Standby	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43
Vacuum cleaner	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Toaster	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Total	77.64	75.49	65.1	60.30	58.85	56.76	67.15	64.16	60.26	67.03	74.08	81.02
Difference	-0.25	-0.25	-0.25	-0.23	-0.25	-0.25	-0.35	-0.35	-0.25	-0.25	-0.25	-0.25
Reference	77.39	75.24	64.85	60.08	58.60	56.51	66.80	63.80	60.01	66.78	73.83	80.77

Table 13: Summary of the energy distribution of the DoS, for the households that has this type of DoS in kWh

DoS	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Heating	30.29	25.14	11.62	0.11	0.00	0.00	0.00	0.00	0.00	14.94	21.76	38.39
Boiler	31.56	31.56	29.03	29.03	22.50	12.75	0.00	0.00	29.03	31.56	31.56	31.56
Cooker	9.86	9.86	9.86	9.86	9.86	9.86	9.86	9.86	9.86	9.86	9.86	9.86
AC	0.00	0.00	0.00	0.00	0.00	0.00	26.92	20.79	0.00	0.00	0.00	0.00
Lighting	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86
Fridge	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65
Freezer	10.79	10.79	10.79	10.79	10.79	10.79	10.79	10.79	10.79	10.79	10.79	10.79
Wash machine	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27	5.27
Dish washer	4.71	4.71	4.71	4.71	4.71	4.71	4.71	4.71	4.71	4.71	4.71	4.71
Tumble dryer	14.87	14.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.87	14.87
Oven	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43

DoS	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
TV	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04	5.04
Computer	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
Standby	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43
Vacuum cleaner	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Toaster	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81

4.2.4. Weekly and daily device or service (DoS) operation

After calculating the weekly energy per DoS, the next step was to determine how the individual DoSs actually operate with regards to their power rating, the amount of energy they consume per cycle, the cycles per week and the cycles per day. The process followed for each DoS is described below.

Heating

A typical oil heater has a power rating of 1kW. As per Table 13, its energy consumption varies between the various weeks. If it is assumed that heating is "ON" for cycles of 1 hour then, within this period it would consume 1 kWh. So their weekly energy consumption divided by the power rating of the heating results in the number of cycles per week shown in row 4 of Table 14. Row 5 of Table 14 shows the maximum number of cycles per day within the specific week. For example in January, if the maximum daily cycles were 4 then the maximum cycles per week would be twenty-eight, 2 less than the desired value of 30. For this reason the maximum number of daily cycles should be one more, 5. The same logic follows for all the other weeks. The duration shows how many quarters of an hour is one cycle of operation. So, 4 is 1 hour of operation as mentioned above.

Table 14: Heating: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Heating	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Energy	30.29	25.14	11.62	0.11	0	0	0	0	0	14.94	21.76	38.39
Power	1	1	1	1	1	1	1	1	1	1	1	1
Weekly Cycles	30	25	12	0	0	0	0	0	0	15	22	38
Daily Cycles	5	4	2	0	0	0	0	0	0	3	4	6
Duration	4	4	4	4	4	4	4	4	4	4	4	4

Boiler

A typical boiler has a power rating of 1.3kW. As per Table 13, its energy consumption varies between the various weeks. If is assumed that the boiler is "ON" for cycles of 0.5 hour then, within this period it would consume 0.65 kWh. So the energy consumption for each week divided by the power rating of the boiler, results in the number of cycles per week shown in row 4 of Table 15. Row 5 of Table 15 shows the maximum number of cycles per day within the specific week. The procedure is the same as the example described in the paragraph for the heating. The duration shows how many quarters of an hour is one cycle. So, 2 are 0.5 hours.

Table 15: Boiler: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Boiler	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Energy	31.56	31.56	29.03	29.03	22.50	12.75	0	0	29.03	31.56	31.56	31.56
Power	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Weekly Cycles	48	48	45	45	34	20	0	0	45	49	49	49
Daily Cycles	7	7	7	7	5	3	0	0	7	7	7	7
Duration	2	2	2	2	2	2	2	2	2	2	2	2

Cooker

A typical cooker has a power rating of 0.47kW. As per Table 13, its energy consumption is 9,86 kWh for all the weeks. If is assumed that the cooker is "ON" for cycles of 1hour then, within this period it would consume 0.47 kWh. This divided by the power rating of the heating results in 21 cycles per week and thus 3 cycles per day, as shown in Table 16. The duration shows how many quarters of an hour is one cycle. So, 4 are 1hour.

Table 16: Cooker: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy(kWh)	Power(kW)	Weekly(Cycles)	Daily(Cycles)	Duration (1/4s hour)
9,86	0.47	21	3	4

Air conditioning

The energy consumption of an air conditioning unit as per Table 13 is equal to 26.92 kWh for month July and 20.79 kWh for month August. A typical air conditioning load cycle was proposed by (Stamminger R. , 2008), shown in Table 17. The total energy consumed within a cycle is 2.5875 kWh. So the number of cycles within a week for July would be 26.92 kWh divided by 5.875 kWh, 10 and for August 20.79 divided by 5.875 kWh, 8, shown in Table 18. The daily number of cycles should not exceed 2. The load cycle used in thesis for the air conditioning is identical with (Stamminger R. , 2008) and is shown in Table 19.

Table 17: (Stamminger R. , 2008) DoS load cycle

Cycle Step (1/4s of an hour)	Air conditioning Power (kW)	Washing machine Power (kW)	Dish washer Power (kW)	Tumble dryer Power (kW)
1	1.7	0.1	0.08	2
2	1.7	2	2	2
3	1.7	0.9	0.08	2
4	0.05	0.1	0.08	1.6
5	0.05	0.1	0.08	1.3
6	1.7	0.3	2	0.94
7	1.7	0.05	0.3	
8	1.7		0.15	
9	0.05			
Energy	2.5875(kWh)	0.8875(kWh)	1.1925(kWh)	2.46(kWh)

Table 18: Air conditioning

Month	**Energy (kWh)**	**Weekly (Cycles)**	**Daily (Cycles)**	**Duration**
July	26.92	10	2	Table 19
August	20.79	8	2	Table 19

Table 19: DoS power cycle consider in this thesis

Cycle Step (1/4s of an hour)	**Air conditioning Power (kW)**	**Washing machine Power (kW)**	**Dish washer Power (kW)**	**Tumble dryer Power (kW)**	**Oven Power (kW)**
1	1.7	0.098983	0.079055	2.015511	0.922259
2	1.7	1.979651	1.976381	2.015511	0.553356
3	1.7	0.890843	0.079055	2.015511	0.922259
4	0.05	0.098983	0.079055	1.612409	0.553356
5	0.05	0.098983	0.079055	1.310082	
6	1.7	0.296948	1.976381	0.947290	
7	1.7	0.049491	0.296457		
8	1.7		0.148229		
9	0.05				
Energy	2.5875 kWh	0.8784 kWh	1.1784 kWh	2.479 kWh	0.7378 kWh

Lighting

As per Table 13 the energy consumption of lighting is 7.86 per week. This divided by the number of days in a week of 7 gives 1.122 kWh per day. 3-6 lamps of different type with 0.187 kW of total consumption for 6hours per day with cycle duration of 1hour would consume this energy, Table 20. This means that the cycles per week are 42, the cycles per day are 6 and the duration of a cycle is 4 quarters of an hour, which is 1hour.

Table 20: Lighting: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	Power (kW)	Weekly (Cycles)	Daily (Cycles)	Duration (1/4s hour)
7.86	0.187	42	6	4

Fridge

As per Table 13 the energy consumption of a fridge is 12.65 kWh per week. This divided by the number of days in a week of 7 and also by the number of hours within a day gives 0.07529 kWh per hour. A fridge of 0.07529 kW power rating would operate like this. This is shown in Table 21. If we assume that 1 cycle is a quarter of an hour then the total cycles per week are 24 times 7 times 4, which is 672, the cycles per day are 24 times 4, which is 96 and the duration of a cycle is a quarter of an hour.

Table 21: Fridge: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	Power (KW)	Weekly (Cycles)	Daily (Cycles)	Duration (1/4s hour)
12.65	0.07529	672	96	1

Freezer

As per Table 13 the energy consumption of a freezer is 10,79 kWh per week. This divided by the number of days in a week of 7 and also by the number of hours within a day gives 0.06422 kWh per hour. A freezer of 0.06422 kW power rating would operate like this. This is shown in Table 22. If we assume that 1 cycle is a quarter of an hour then the total cycles per week are 24 times 7 times 4, which is 672, the cycles per day are 24 times 4, which is 96 and the duration of a cycle is a quarter of an hour.

Table 22: Freezer: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	Power (kW)	Weekly (Cycles)	Daily (Cycles)	Duration (1/4s of hour)
10.79	0.06422	672	96	1

Washing machine

The energy consumption of a washing machine as per Table 13 is equal to 5.27 kWh for every week. A typical washing machine load cycle was proposed by (Stamminger R. , 2008), shown in Table 17. In this report the total energy consumed within a cycle is 0.8875 kWh. According to the values of Spain of Table 13 if the washing machine were used 6 times per week then it would consume 5.27 kWh divided by 6, equals 0.8784 kWh. In order to derive the values used for the operation steps of this device, the (Stamminger R. , 2008) values were multiplied by 0.8784 and divided by 0.8875. The result is the cycle used in this thesis, shown in Table 19. So the number of cycles within a week is 6 and the maximum number of cycles within a day is 1, as shown in Table 23.

Table 23: Washing machine: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	**Energy in a cycle (kW)**	**Weekly (Cycles)**	**Daily (Cycles)**	**Duration**
5.27	0.8784	6	1	Table 19

Dishwasher

The energy consumption of a dishwasher as per Table 13 is equal to 4.71 kWh for every week. A typical dishwasher load cycle was proposed by (Stamminger R. , 2008), shown in Table 17. In this report the total energy consumed within a cycle is 1.1925 kWh. According to the values of Spain if the dishwasher were used 4 times per week then it would consume 4.71 kWh divided by 4, equals 1.178417 kWh. In order to derive the values used for the operation steps of this device, the (Stamminger R. , 2008) values were multiplied by 1.178417 and divided by 1.1925. The result is the cycle used in this thesis, shown in Table 19. So the number of cycles within a week is 4 and the maximum number of cycles within a day is 1, as shown in Table 24.

Table 24: Dishwasher, Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	**Energy in a cycle (kW)**	**Weekly (Cycles)**	**Daily (Cycles)**	**Duration**
4.71	1.1784	4	1	Table 19

Tumble dryer

The energy consumption of a tumble dryer as per Table 13 is equal to 14.87 kWh for all weeks of January, February, November and December. A typical tumble dryer load cycle was proposed by (Stamminger R. , 2008), shown in Table 17. In this report the total energy consumed within a cycle is 2.46 kWh. According to the values of Spain if the tumble dryer were used 6 times per week then it would consume 14.87 kWh divided by 6, equals 2.479 kWh. In order to derive the values used for the operation steps of this device, the (Stamminger R. , 2008) values were multiplied by 2.479 and divided by 2.46. The result is the cycle used in this thesis, shown in Table 19. So the number of cycles within a week is 6 and the maximum number of cycles within a day is 1, shown in Table 25. Notice that the number of times that the tumble dryer is "ON" during the week for the specific months is equal to the number of times that the washing machine is "ON" during those weeks. So it was assumed that the tumble dryer would operate after the washing machine to dry the cloths and since the energy is enough for only 4 months then January, February, November and December were chosen, as they are the coldest within the year.

Table 25: Tumble dryer: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	**Energy in a cycle (kW)**	**Weekly (Cycles)**	**Daily (Cycles)**	**Duration**
14.87	2.479	6	1	Table 19

Oven

The energy consumption of an oven as per Table 13 is equal to 4.43 kWh for every week. A typical oven load cycle was proposed by (Stamminger R. , 2008). This cycle though cannot be used because there exist many steps with small durations such as 1 or 2 minutes. Nevertheless the load cycle was approximated as shown in Table 19 by considering also typical power ratings of ovens. As per Table 19 the total energy used for a cycle is equal to 0.7378 kWh. By dividing 4.43 kWh with 0.7378 kWh, the number of cycles within a week is derived, equal to 6. This means also that the oven shouldn't be operated more than 1 time per day as shown in Table 26.

Table 26: Oven: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy (kWh)	**Energy in a cycle (kW)**	**Weekly (Cycles)**	**Daily (Cycles)**	**Duration**
4.43	0.7378	6	1	Table 19

Television

The energy consumption of a television as per Table 13 is equal to 5.04 kWh for every week. This number divided by 7 gives the daily consumption; equal to 0.72 kWh. Spanish households have more than 2 devices at home as per (IDAE, 2011b). If each one of them is operated for 3hours then 0.72 kWh divided by 6 (2 times 3,) equals 0.12 kW. 0.12kW is a typical power rating for a TV. So in order to simplify the above it was assumed that there exists just one television with a power rating of 0.12kW, which is operated 3 times per day for 8 quarters or 2 hours every time and 21 times per week. This is shown also in Table 27.

Table 27: Television

Energy	Energy per cycle	Weekly	Daily	Duration
5.04 kWh	0.72 kWh	21 Cycles	3 Cycles	8 (1/4s of hour)

Computer

The energy consumption of a computer as per Table 13 is equal to 3.3 kWh for every week. This number divided by 7 gives the daily consumption, equal to 0.472 kWh. If the computer is operated for 7hours then 0.472 kWh divided by 7, equals. 0.067 kW is a typical power rating for a computer. So the daily scheduling of the computer was assumed to be as follows. 1 computer with a power rating of 0.067 kW, which is operated 2 times per day for 14 quarters or 3.5 hours every time and 14 times per week. This is shown also in Table 28.

Table 28: Computer: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy	Energy per cycle	Weekly	Daily	Duration
3.3 kWh	0.236 kWh	14 Cycles	2 Cycles	14 (1/4s of hour)

Standby

As per Table 13 the energy consumption of "Standby" is 4.43 kWh per week. This divided by the number of days in a week of 7 and also by the number of hours within a day gives 0.026345 KWh per hour. So this energy is lost as if it were a device with power rating of 0.026345KW operating for 96 quarter intervals within a day and consequently 672 quarter intervals in a week as shown in Table 29.

Table 29: Standby: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy	Cycle Energy	Weekly	Daily	Duration
4.43 kWh	0.02663 kWh	672 Cycles	96 Cycles	1(1/4s of hour)

Vacuum cleaner

The energy consumption of a vacuum cleaner as per Table 13 is equal to 0.65 kWh per week. A typical vacuum cleaner has a power rating of 1.3 kW. So with this amount of energy it could just be operated for 2 quarters of an hour during a week. Thus the amount of operations of the vacuum cleaner during a week would be 1 and during the day no more than one. This is shown in Table 30.

Table 30: Vacuum cleaner: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy	Cycle Energy	Weekly	Daily	Duration
0.65 kWh	0.065 kWh	1 Cycles	1 Cycles	2 (1/4s of hour)

Toaster

As per Table 13 the energy consumption of toaster is 0.81 kWh per week. A typical toaster has a power rating around 0.81 kW. So with this amount of energy it could just be operated for 4 times of 1 quarter of an hour each, during a week. Thus the amount of operations of the toaster during a week would be 4, during the day no more than 1 and the duration of each cycle, 1 quarter of an hour. This is shown also in Table 31.

Table 31: Toaster: Weekly energy, power rating, number of working cycles per week and day, and duration of each cycle (Units: energy in kWh, power in kW, weekly cycles in number of cycles, daily cycles in number of cycles, duration in quarters of an hour)

Energy	Cycle Energy	Weekly	Daily	Duration
0.81 kWh	0.2025 kWh	4 Cycles	1 Cycles	1 (1/4s of hour)

In this section, the detailed operation of each DoS per week and day was calculated. Each device was assigned a constant power rating or a load cycle pattern, a number of cycles per week, a number of cycles per day and duration of the operation cycle.

These data are used as inputs to generate various consumers' profiles. The following section describes the approach proposed in this thesis to generate multiple consumers' profiles, which is based on a combination of an optimization model and a Monte Carlo analysis.

4.2.5. Generation of multiple consumers' load hourly profiles: combination of an optimization model and Monte Carlo analysis

The previous sections have explained the calculation method for the parameters that are needed as inputs for generating multiple consumers' load profiles (hourly profile for each of the weeks considered). In this section, the approach followed to generate such load profiles is described.

The approach is based on a combination of an optimization model and a Monte Carlo analysis:

- The Monte Carlo analysis is used to generate a base of multiple (100) consumers (households). Through random sampling, the analysis establishes if a consumer has or not has each individual DoS based on availability probabilities (Table 2, column 5)[21].

- Once the consumers have been created, an optimization model is used to generate each consumer's load profile iteratively. The process is as follows:

  – For the first consumer, the optimization model generates a load profile for each of the weeks considered by minimizing the difference between the generated load profile and the standard consumption hourly-profile (type A) published by the system operator, subject to several restrictions as those which have to do with the number of weekly and daily cycles of each DoS, the duration of each of these cycles or the power rating of each DoS, among others.

  – For the next consumer, the optimization model generates a load profile by minimizing the difference between:

    - A load profile constructed by summing the load profile of this consumer with the load profile of all the previous;

    - And the standard consumption hourly-profile (type A) published by the system operator, multiplied by two.

  – The process is repeated for the next consumers until consumer number 100. For each of these consumers then, the optimization model generates a load profile by minimizing the difference between:

    - A load profile constructed by summing the load profile of this consumer with the load profile of all the previous consumers;

    - And the standard consumption hourly-profile (type A) published by the system operator, multiplied by a number equal to the order of the consumer whose profile is being calculated.

Next, the optimization model used to generate each consumer load profile is described in detail.

[21] Annex 3 shows the 100 consumers generated for the analysis carried out in this thesis.

4.2.6. Optimization model used to generate individual load profiles

4.2.6.1. Timing

The time horizon of the problem is 1 week or 7 days. Because of the size of the problem, the time step of the optimization was set to 1 quarter of an hour. Thus all the variables had to be calculated 1 week times 7 days times 24 hours times 4 quarters which equals 672 quarters or times. This is why all the DoS consumption patterns change output level, if they do, every 1-quarter of an hour.

4.2.6.2. Sets, parameters, scalars, tables and variables

<u>Sets</u>

;p	Time periods or quarters of an hour
;d	The individual DoS
;dl(d)	Subset of all the devices without those used for modeling the variations in power
;dm(d)	Subset defining inflexible devices
;dk(d)	Subset defining flexible devices
;k	Set of 8 quarters used to model the tumble dryer starting in this period.
;subs"Day"	Subset of the periods of each day when DR cannot occur. Where "Day" is equal to Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday.
;sc	consumer

<u>Parameters</u>

;AV(d)	This parameter is used in order to change the DoS of each consumer according to the Monte Carlo analysis at every simulation in the loop
;PR(d)	Power rating of the DoS
;s(d)	Continuous quarter intervals per DoS
;v(d)	Times per week a DoS can be switched on
;vd(d)	Times per day a DoS can be switched on
;t(k)	Parameter for the tumble dryer delay
;td	Total demand within a week

<u>Dynamic parameters</u>

;Vs	The total number of consumers up to the current simulation
;L(p)	The energy sum of all the previous simulations for each period p
;R(p,d)	Energy consumed at period p from device d
;LS(p)	The sum of the energy of each consumer for each period p
;fuse	Fuse level

<u>Scalars</u>

;th	Scales the prices to correspond to KW per quarter of an hour

<u>Table</u>

;dp(p,'pre')	Real time price at p, the values are shown at ANNEX 2
;dem(p,'preold')	CESUR price at p

;dem(p,'dem')	Demand at p, the values for each week of the months are shown at ANNEX 2

Variables

;u(p, d)	The "ON" status of a "d" during "p"
;y(p, d)	The start command of a "d" during "p"
;z(p, d)	The stop command of a "d" during "p"
;energy	Energy consumed within a week
;PNS(p)	Gap between load curve and dispatched devices at p
;KNS(p)	Absolute Gap between load curve and dispatched devices at p
;startups"MON"(dl)	Specifies the number of startups for each day. Where "Day" is equal to Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday

4.2.6.3. Modeling of DoS with variable load cycles

The washing machine, air conditioning, dishwasher, tumble dryer and oven have operation cycles with varying power levels between adjacent quarters. In order to depict this difference, they were split into as many devices with the same name as is the number of quarters needed to complete 1 operation cycle. For example in the case of the washing machine as per Table 19 it has a load cycle of 7 quarters with different power levels. So, 7 devices were created with the names washing_machine1, washing_machine2 …washing machine7 and each one was assigned one of the seven power levels. In order to ensure that each of them will operate in a sequence so as to simulate the operation of 1 washing machine, the following relationships were formulated.

$$y(p, '\text{Washing\_machine1}') = u(p+1, '\text{Washing\_machine2}')$$
$$u(p, '\text{Washing\_machine2}') = u(p+1, '\text{Washing\_machine3}')$$
$$u(p, '\text{Washing\_machine3}') = u(p+1, '\text{Washing\_machine4}')$$
$$u(p, '\text{Washing\_machine4}') = u(p+1, '\text{Washing\_machine5}')$$
$$u(p, '\text{Washing\_machine5}') = u(p+1, '\text{Washing\_machine6}')$$
$$u(p, '\text{Washing\_machine6}') = u(p+1, '\text{Washing\_machine7}')$$

The turn on command of washing_machine1 at time p should equal the "ON" status of washing_machine2 at time p+1. The "ON" status of washing_machine2 at time p should equal the "ON" status of washing_machine3 at time p+1 and so on for the rest of the washing machine components up to washing_machine7. The same logic was applied to the air conditioning, the dishwasher, the tumble dryer and the oven. The resulting load patterns are shown in Figure 3, Figure 4, Figure 5, Figure 6, and Figure 7.

4.2.6.4. Modeling of daily and weekly startups

As it was elaborately explained in the section 4.2.4, every DoS apart from a power level is also characterized by a number of weekly and a number of maximum daily operations. These numbers change in the case of the seasonal devices according to the month of the week and remain constant for the rest of the DoS. Different consumers have different DoS combinations from the Monte Carlo simulation, so a mechanism was added to reflect this. The above were modeled with the following two equations.

$$\sum_{sub"Day"} y(sub"Day", dl) \leq vd(dl) \;\; \forall \; dl$$

$$\sum_{p=p1}^{p=673} [AV(d) * y(p, d)] = v(d) * AV(d) \;\; \forall \; d$$

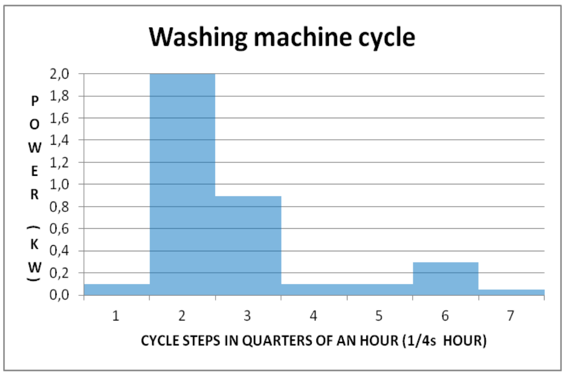

Figure 3: load pattern

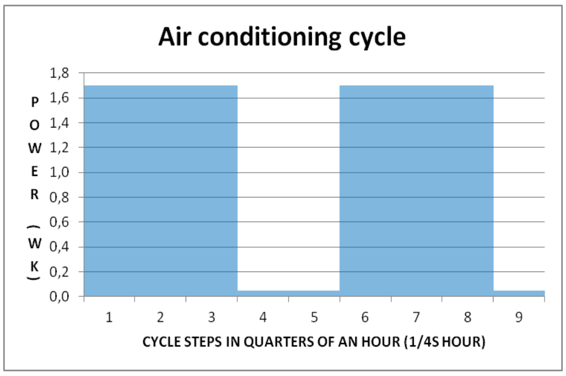

Figure 4: load pattern

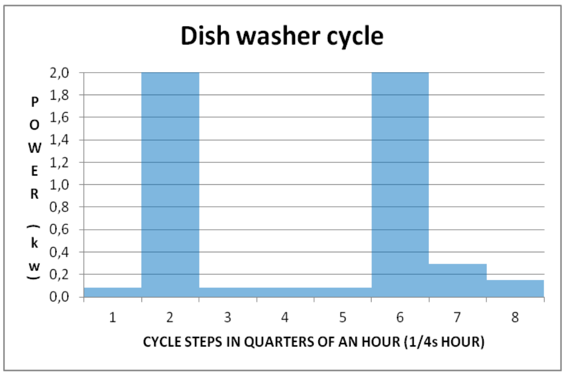

Figure 5: load pattern

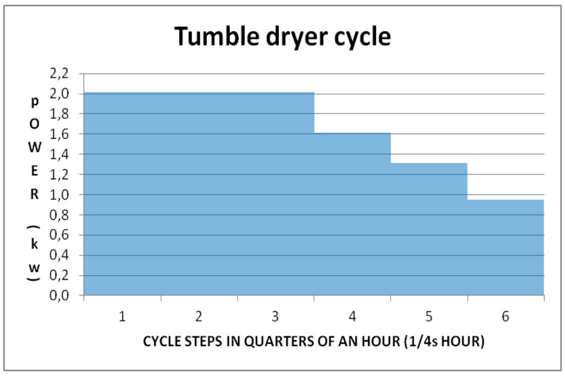

Figure 6: load pattern

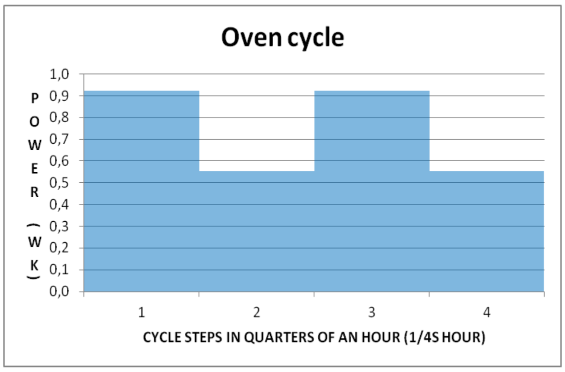

Figure 7: load pattern

4.2.6.5. Modeling of turn on and turn off logic

The turn on command, the “ON” status and the turn off command had to be interrelated so that when a DoS is “ON”, it cannot be turned on again but it can be turned off and conversely when a DoS that is “OFF”, it cannot be turned off but it can be turned on. Of course, as explained in section 4.2.4, a mechanism was added to model the different consumers. All the above are depicted by with the equation below.

$$\mathrm{u(p,d) = u(p-1,d)\big[\text{ if }[ORD(p) > 1]\big] + AV(d) * y(p,d) - z(p,d)} \ \ \forall\, \mathrm{p, d}$$

Once a DoS is “ON” it should be turned off after a predefined duration shown in the section 4.2.4. This is done by the following equation.

$$\mathrm{AV(d) * y(p,d) = z[p + s(d), d]} \ \ \forall\, \mathrm{p, d}$$

4.2.6.6. Modeling devices’ interrelations

Several DoS interrelations could have been modeled. However, in this thesis, in order to keep the model as simple as possible to facilitate results’ interpretation, avoiding entering in discussions on the objectivity of modeled interrelations, just one constraint, which has general acceptance and high importance, was modeled.

The modeled interrelation assumes that all consumers who have a washing machine and a tumble dryer would follow the same behavioral pattern in the operation of these two devices. The tumble dryer is only allowed to turn on within a period of 8 quarters or else said within 2 hours after the washing machine is turned off. This is shown by the below equation.

$$\mathrm{AV('Tumble\_dryer1') * z(p,'Washing\_machine7') - AV('Washing\_machine7') *} \sum_{\mathrm{k=sec\_delay1}}^{\mathrm{sec\_delay8}} \mathrm{y(p + t(k), 'Tumble\_dryer1')} \leq 0$$

4.2.6.7. Modeling the objective function

The objective function is based on the demand equation. It was formulated in such a way to created consumer profiles that when added and averaged they would coincide with the system’s average typical profile A type curve described in section 4.2.2. At any time period p within a specific week, the sum of the DoS that are “ON” of the consumers for whom this simulation is running, plus all the power that is consumed of all the previous consumers at p, plus a variable term, should equal the product of the demand in p of the profile type A curve with the number of all the simulations that have been completed plus the current. This is shown below.

$$\sum_{\mathrm{d=Washing\_machine1}}^{\mathrm{Toaster}} \mathrm{[u(p,d) * PR(d)] + PNS(p) + L(p) = Vs * dp(p,'dem')} \ \ \forall\, \mathrm{p}$$

This variable term is PNS(p). This is the extra power to add or to remove in order to match exactly the profile type A curve. So if it is above the curve or below, it doesn't matter. What matters is that it is the smallest possible. This is done by the combination of the following three equations. The first two are simply the mathematical expression of the absolute number. The "abs" function couldn't be used because then the problem couldn't be solved with mixed integer programming. The third one is the objective function itself, which is minimized to achieve what was described.

$$\mathrm{KNS(p)} \geq \mathrm{PNS(p)}\ \forall\ \mathrm{p}$$
$$\mathrm{KNS(p)} \geq -\mathrm{PNS(p)}\ \forall\ \mathrm{p}$$

$$\text{Objective function} = \mathrm{Min}(\sum_{\mathrm{p=p1}}^{\mathrm{p672}} \mathrm{KNS(p)})$$

4.2.6.8. Measuring the power that is consumed of all the previous consumers

The total power of all previous consumers is used in the demand equation by the current simulation run in order to evaluate the DoS profile of the current consumer. So at the end of every simulation an aggregate consumers' load curve is created which is used in the next simulation. Thus the values calculated for each period are imported in the next simulation as parameters. These values are calculated with the following method.

$$\mathrm{R.l(p,d)} = \mathrm{u.l(p,d)} * \mathrm{PR(d)}\ \forall\ \mathrm{p,d}$$
$$\mathrm{LS.l(p)} = \sum_{\mathrm{d}} \mathrm{R.l(p,d)}\ \forall\ \mathrm{p}$$
$$\mathrm{L(p)} = \mathrm{LS.l(p)} + \mathrm{L(p)if[ord(sc)} > 1]$$

4.2.6.9. Counting the startups of DoS for each day

Every consumer at the end of its simulation is assigned a number of startups for each DoS for each day. This number is saved within a specific variable. This is done by the following equation.

$$\sum_{\mathrm{subs"Day"}} (\mathrm{subs"Day",dl}) = \mathrm{startups"Day"(dl)}\ \forall\ \mathrm{dl}$$

As it will be explained in the next chapter this variable will be fixed in the demand response model and it will function as a parameter.

4.2.6.10. Maximum power level

At the end of each simulation run the maximum power level between all the periods is saved to use in the demand response model.

$$\mathrm{fuse} = \mathrm{Maximum} \sum_{\mathrm{d}} \mathrm{R.l(p,d)}\ \text{between all periods p}$$

4.2.6.11. Optimization model validation

The model ran for all the 12 weeks of year 2010 for all one hundred consumers in a loop. It is impossible to check that each time it results in a feasible optimal solution from the output .lst file. For this reason the attributes “modelstat” and “solvestat” were employed. It was checked that they resulted in an optimal or integer solution in the case of the “modelstat” and in normal completion in the case of ”solvestat”.

It was verified that the interrelation between the washing machine and the tumble dryer works properly. The tumble dryer was put in operation within the 2hours limit. The fridge, the freezer and the “standby” work continuously at the power level defined as well as all the other devices. The times of operations within a week, the times of operation within a day and the duration of operation are as defined. The daily and weekly profile of the first consumer is shown in Figure 8 and Figure 9 respectively.

For illustrative purposes, the 100 consumers aggregated load profiles for the week of January is shown in Figure 10. For more detail, ANNEX 5 shows the same figure for every week. As it can be observed, they are very similar to the standard consumption hourly-profile (type A) published by the system operator. This means that the objective function is working as desired.

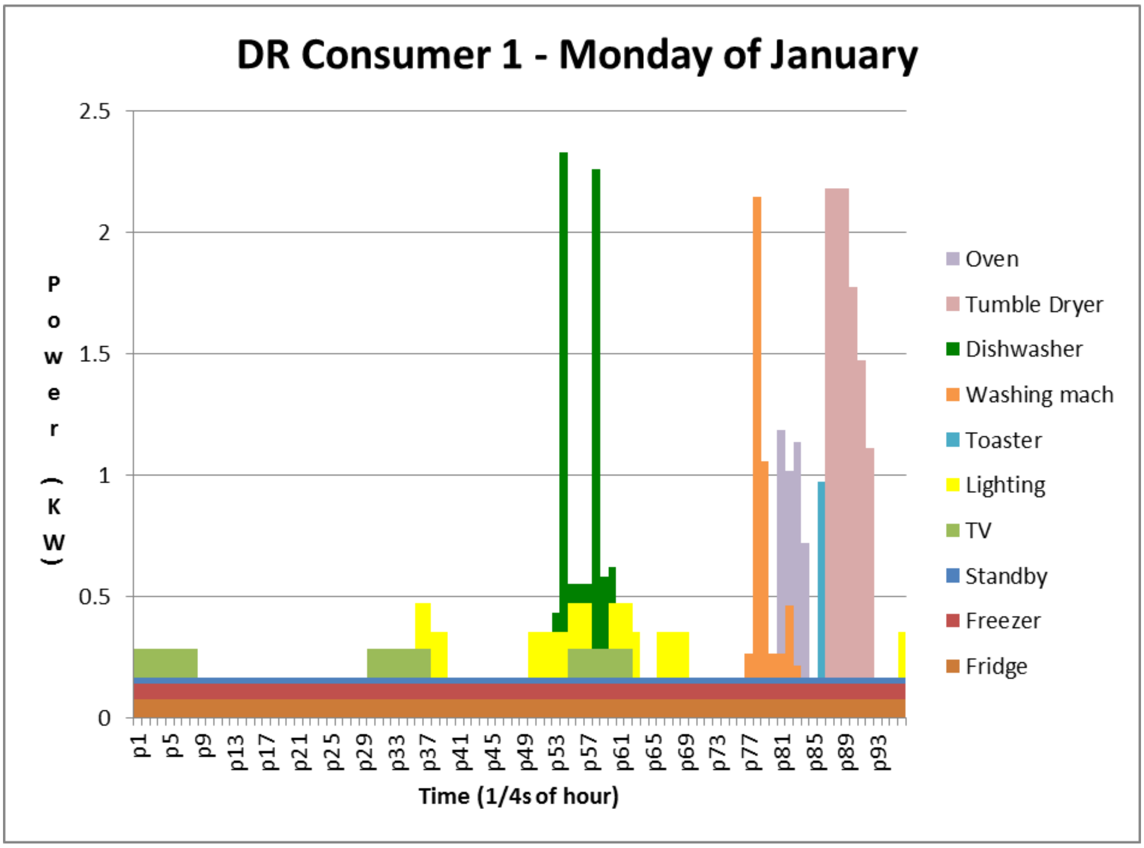

Figure 8: Consumer 1 - Monday of January

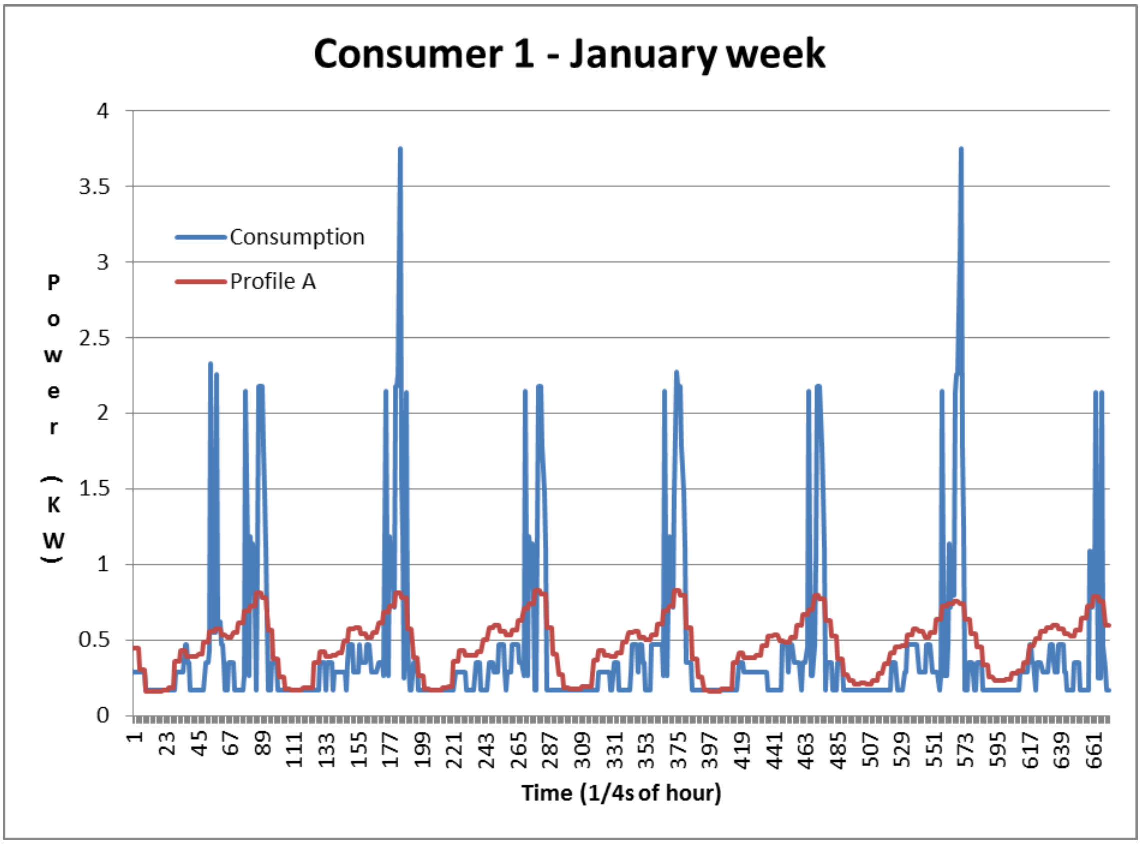

Figure 9: Consumer 1 - Week of January

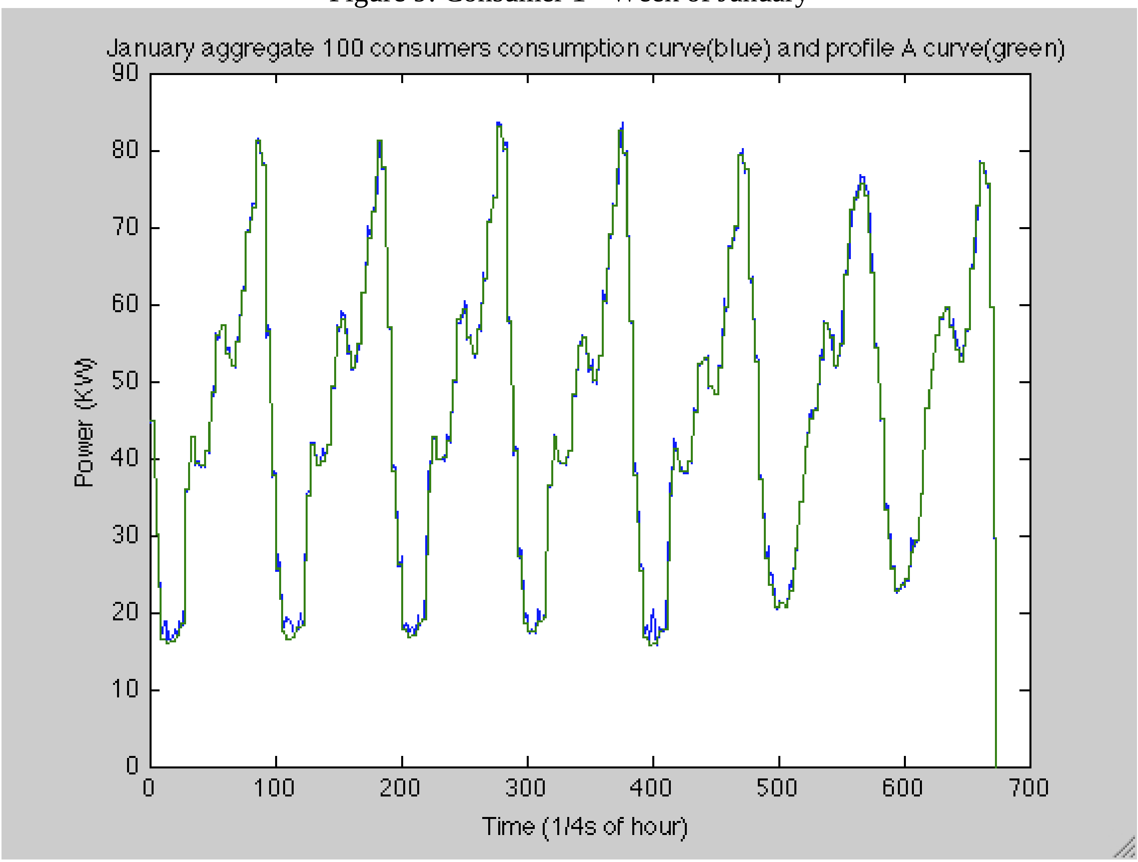

Figure 10: January aggregate consumption curve and profile A curve

4.3. Calculation of the cost of energy for each consumer

Once the individual consumers' load profiles have been generated, it is possible to calculate the cost of energy for each consumer, both using the old method based on CESUR auctions and the new method based on RTP. Three types of costs are calculated for each consumer. First, the cost of energy for each consumer considering the old method based on CESUR auctions. This is shown below. The dp(p,'preold') term is shown in ANNEX 2.

$$\text{Cesur cost} = \sum_{p=p1}^{p672}\left[\sum_{d=\text{Washing\_machine1}}^{\text{Toaster}}\left[u(p,d) * PR(d) * \frac{dp(p,'preold')}{th}\right]\right]$$

Second, the cost of energy, using the new RTP method, for those consumers who have smart meters and thus are charged according to their actual hourly profile. The dp(p. 'pre') term is shown in ANNEX 2.

$$\text{Cost} = \sum_{p=p1}^{p672}\left[\sum_{d=\text{Washing\_machine1}}^{\text{Toaster}}\left[u(p,d) * PR(d) * \frac{dp(p,'pre')}{th}\right]\right]$$

Third, the cost of energy, using the new RTP method, for those consumers who don't have smart meters and thus are charged according to the standard consumption hourly-profile (type A) published by the system operator.

$$\text{Energy} = \sum_{p=p1}^{p672}\left[\sum_{d=\text{Washing\_machine1}}^{\text{Toaster}}\left[u(p,d) * \frac{PR(d)}{th}\right]\right]$$

$$\text{Cost at p without smart meter} = \text{Energy} * dp(p,'dem') * dp(p,'pre')/td$$

$$\text{Total cost for all p} = \sum_{p=p1}^{p672} \text{Cost at p without smart meter}$$

The CESUR auction prices used to calculate the first cost are presented in ANNEX 2. These are the actual prices that were obtained in these auctions in 2010.

The hourly prices considered for calculating the second and third costs are shown in ANNEX 2. These are the actual hourly prices of the day ahead market in 2010.

4.3.1. Results and conclusions

This section presents a summary of the most important results of the analysis carried out. These are the costs savings (cost of energy component) obtained by consumers when the new RTP method is applied instead of the old CESUR auction method. In ANNEX 6, more detailed results can be found.

4.3.1.1. Cesur VS RTP for consumers with smart meters

In this section the comparison of the costs between the old and new method for those consumers who own a smart meter is presented. The average savings as well as their standard deviations are shown in Table 32. In order to get a better insight into the average savings per bill in Table 33, the same variables are shown on a monthly basis.

Table 32: Average savings per bill and standard deviation for RTP with smart meter

	Fist bill	Second bill	Third bill	Fourth bill	Fifth bill	Sixth bill	Annual
Average	39.76%	29.96%	4.48%	-6.50%	8.16%	1.61%	12.78%
St. Dev.	2.34%	1.33%	0.65%	1.07%	1.57%	1.26%	1.59%

Table 33: Average savings per month and standard deviation

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av.	25.79%	53.95%	44.47%	14.80%	1.52%	7.56%	-4.85%	-8.20%	-12.87%	24.21%	4.52%	-1.16%
Sd.	2.34%	2.96%	1.99%	0.98%	0.63%	1.10%	0.99%	1.58%	2.19%	1.53%	1.68%	1.36%

In Table 34, the average hourly day-ahead prices per month and their standard deviations are shown.

Table 34: Monthly average prices and standard deviation

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av(€)	27.85	15.70	21.84	36.61	42.92	39.68	43.94	44.89	46.57	37.69	46.37	49.12
Sd(€)	13.19	15.69	13.04	5.02	4.16	6.14	5.36	6.65	8.52	15.28	9.41	10.37

If the average savings per month (Table 33), are drawn against the standard deviation of the monthly electricity prices (Table 34), it can be seen that they are positively correlated. This is shown in Figure 11.

In the correlation between the average savings per month and the monthly average electricity price is shown. As it can be observed, this is negative.

The explanation of these correlations could be the following:

- On the one hand, for those months with high volatility on prices, agents in CESUR auctions anticipating such volatility could be internalizing a higher risk premium than for other months with lower volatility. This makes that, in those months with high volatility, when the method to calculate the cost of energy is modified from the old method (CESUR auctions) to the new (RTP), consumers obtain higher savings.

- On the other hand, those months with lower average prices are usually months with high wind and hydro production levels. It was difficult to anticipate when CESUR auctions were carried out, if there were going to be high levels of wind and hydro output. Agents used to be conservative, which means that differences between CESUR prices and day-ahead market prices for the corresponding months, used to be higher when day-ahead prices were lower. Thus, in such months is when consumers obtain more savings by a change in the calculation method of the cost of energy.

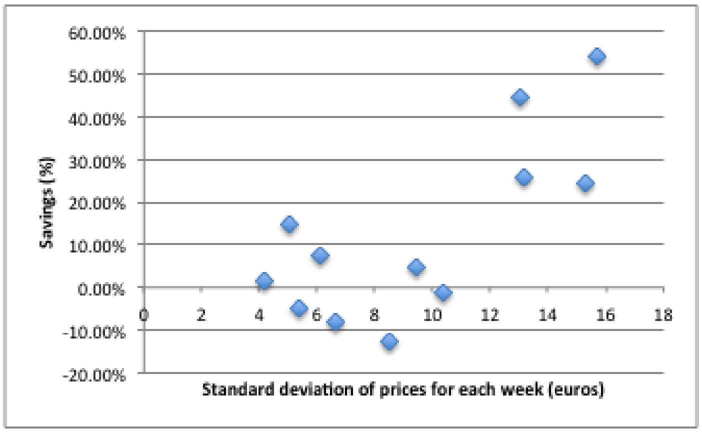

Figure 11: Savings & standard deviation correlation

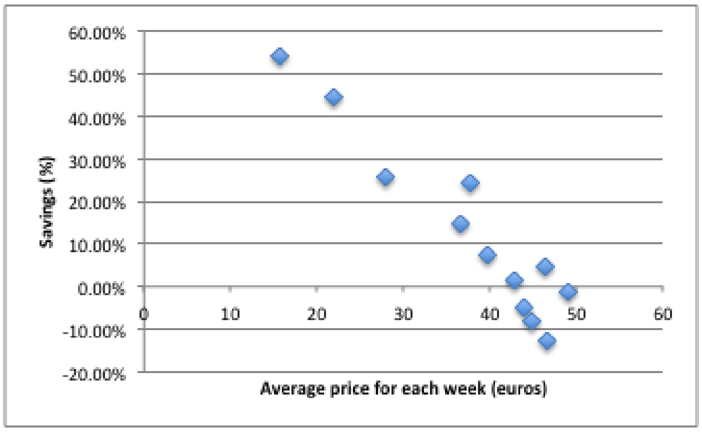

Figure 12: Savings & average monthly price

4.3.1.2. Cesur VS RTP for consumers without smart meters

In this section, the comparison of the costs between the old and new method for those consumers who don´t own a smart meter is presented. The average savings per bill as well as the standard deviation is shown in Table 35. In order to get a better insight into the average savings per bill, in Table 36 the same variables are shown on a monthly basis.

The average savings per bill, as well as their standard deviation, are shown in Table 35. Similar results are shown in Table 36 in a monthly basis.

Table 35: Average savings per bill and standard deviation for RTP without smart meter

	Fist bill	Second bill	Third bill	Fourth bill	Fifth bill	Sixth bill	Annual
Average	39.73%	29.56%	4.32%	-6.60%	7.78%	1.52%	12.55%
St. Dev.	0.18%	0.65%	0.09%	0.03%	0.96%	0.11%	1.02%

Table 36: Average savings per month and standard deviation for RTP without smart meter

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av.	25.76%	53.92%	43.97%	14.48%	1.38%	7.37%	-4.95%	-8.31%	-13.39%	23.93%	4.28%	-1.08%
Sd	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

If the average savings per month (Table 33), are drawn against the standard deviation of the monthly electricity prices (Table 34), it can be seen that they are positively correlated. This is shown in Figure 13.

In Figure 14 the correlation between the average savings per month and the monthly average electricity price is shown. As it can be observed, this is negative.

The explanations for these correlations are similar with those provided in the previous case.

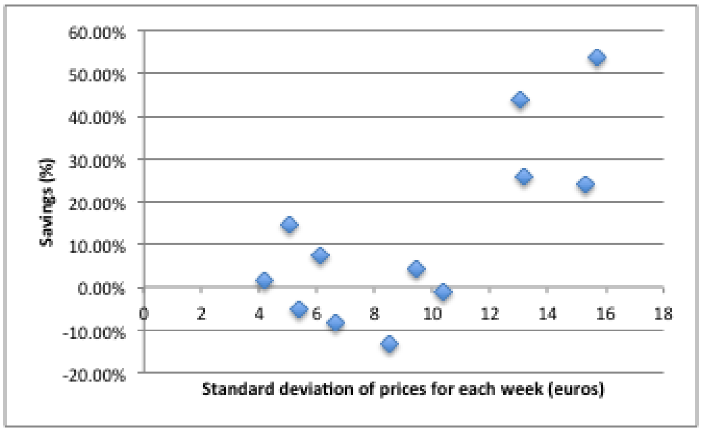

Figure 13: Savings & standard deviation correlation for RTP and NSM

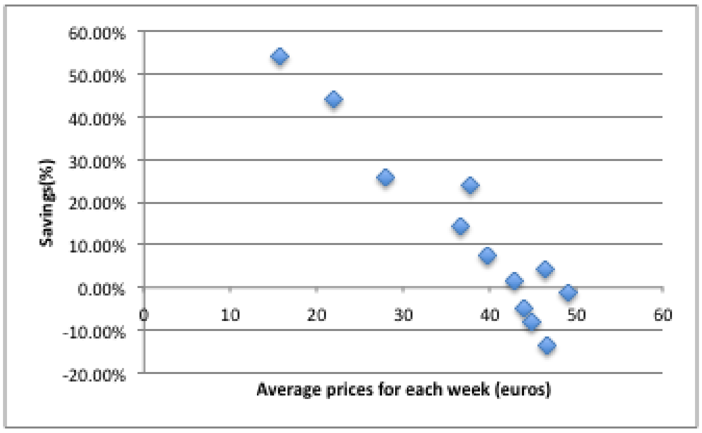

Figure 14: Savings & average monthly Price for RTP and NSM

5. Impacts assessment on costs under different demand response approaches

The second objective of the thesis is to calculate the maximum savings that perfectly rational consumers with smart meters may obtain if they optimize their consumption profile by responding to real time prices minimizing the cost of energy Moreover, an additional case was analyzed in which non-rational consumers follow the worst possible load hourly profile, that is, the one which maximizes the cost of energy.

The starting point of the analysis is the one hundred consumers and their corresponding load hourly profiles generated in the chapter 4.2.

Then, an optimization model has been developed in order to simulate demand response strategies of individual consumers. The modeled strategies consist in minimizing (or maximizing for non-rational consumers) the cost of energy by shifting the moments in which the different DoS modeled in the previous section 4.2 are turned on and off within each week or day, subject to different restrictions.

In the next chapter 5.1 the optimization model developed is described. Later, in chapter 5.3 the main results and conclusions are shown.

5.1. Optimization model simulating demand response strategies

In this chapter, the optimization model developed to simulate demand response strategies of individual consumers is described.

5.1.1. Modeling the fuse

One of the most important issues in modeling the demand response is the value of the power that could be consumed instantaneously. If this is too high then the model allocates the operation of all the flexible DoS in the hours with the lowest prices and if this is too low then the flexible DoS cannot be shifted. This limit could be considered as the central fuse value of a household. The following equation represents the above.

$$\sum_{p=p1}^{p672}\left[\sum_{d=\text{Washing\_machine1}}^{\text{Toaster}}[AV(d)*u(p,d)*PR(d)]\right]\leq \text{fuse}$$

In order to approach reality as much as possible this limit was set for each consumer equal to the maximum hourly power consumption of its base load hourly profile. For example as shown in Table 37 the first consumer has a maximum power level consumption within the week of August. Since his household´s electrical installation is constant for all the year, this value is taken to be his fuse limit for all months. The values for all the 100 consumers are shown in ANNEX 4.

Table 37: Fuse limit of the first consumer

In MW	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max
sc1	3.75	2.73	2.33	2.95	3.07	3.06	3.84	4.77	3.07	3.07	3.1	4.16	**4.77**

5.1.2. Modeling the objective function

The objective function in the model of the demand response is the minimization or maximization of the cost of energy.

In the first case, where the maximum possible cost savings from demand response want to be estimated, the below equation was minimized.

$$\text{DR Cost} = \sum_{p=p1}^{p672} \left[\sum_{d=\text{Washing\_machine1}}^{\text{Toaster}} \left[u(p,d) * PR(d) * \frac{dp(p,'pre')}{th} \right] \right]$$

In the second case, where the maximum possible cost increases that could be suffered by non-rational consumers want to be estimated, the below equation was maximized

$$\text{Worst DR cost} = \sum_{p=p1}^{p672} \left[\sum_{d=\text{Washing\_machine1}}^{\text{Toaster}} \left[u(p,d) * PR(d) * \frac{dp(p,'pre')}{th} \right] \right]$$

The only devices allowed to be shift are the washing machine, the dishwasher, the tumble dryer and the vacuum cleaner. This was done be fixing the allocation of all the other DoS.

$$y.fx(p,dm) = y.l(p,dm)$$

It was assumed that the heating, boiler, cooker, AC, lighting, fridge, freezer, oven, TV, computer, standby and toaster are totally inelastic because it was considered that the dissatisfaction that the delay of their operation would cause to the user is higher than the potential cost saving.

5.1.3. Modeling scenarios

Two scenarios are considered:

- One in which the shift-able DoS can be shifted to any hour.
- One in which the consumers are not allowed to shift their consumption behavior during 1 am and 7 am. It was assumed that they are sleeping at these hours and thus they are unable to operate the DoS. The below mechanism was used to fix the operation of the flexible devices during 1am and 7 am. By doing so the solver cannot allocate more devices at these hours than those that were initially allocated.

$$y.fx(p"Day", dk) = y.l(p"Day", dk)$$

5.2. Validation

The models for minimizing and maximizing the cost of the consumer by shifting DoS were ran for all the 12 weeks of year 2010, for both scenarios, for all one hundred consumers in a loop. It is impossible to check that each time it results in a feasible optimal solution from the output .lst file. For this reason the attributes "modelstat" and "solvestat" were employed. It was checked that it resulted in an optimal or integer solution in the case of the "modelstat" and in normal completion in the case of "solvestat".

For the 2 models which optimize the demand response in order to achieve the best savings or the worst losses without restricting the hours in which the consumers can shift their demand, it was found that consumers' sc27, sc72 and sc82 result in an integer infeasible solution during the month August. This is the same for consumers, sc62, sc82 and sc94 during the month July. So all the calculations for months August and July were done without incorporating the corresponding consumers.

For the 2 models, which optimize the demand response in order to achieve the best savings or the worst losses with the scenario of prohibiting the shifting of flexible DoS within the hours 1am to 7am, the following consumers' simulations were found that resulted in integer unfeasible solutions. These are consumer sc35 for April, consumer sc47 for May, sc24 for June, sc94, sc82 and sc62 for July, sc27, sc38, sc72 and sc82 for month August and sc78 and sc56 for month October. This means that consumer sc35 was excluded from the second bill, sc47 and sc24 from the third, sc27, sc38, c62, sc72, sc82 and sc94 from the fourth bill, sc78 and sc56 from the fifth bill and of course all the these consumers were excluded from the calculations of their corresponding months too. Finally there were also not considered in the annual calculations.

It was verified that the interrelation between the washing machine and the tumble dryer works properly. The tumble dryer was put in operation within the 2hours limit. The fridge, the freezer and the "standby" work continuously at the power level defined as well as all the other devices. The times of operations within a week, the times of operation within a day and the duration of operation are as defined.

For illustrative purposes, a daily profile of the first consumer is shown in Figure 15 for the best demand response without restrictions on the hours when demand can be shifted, in Figure 18 for the worst demand response without restrictions on the hours when demand can be shifted, in Figure 21 for the best demand response restricting the hours when demand can be shifted (excluding from 1am to 7am) and in Figure 24 for the scenario worst demand response restricting the hours when demand can be shifted (excluding from 1am to 7am).

As seen by comparing these figures with the prices shown in ANNEX 2, the consumption was moved to the hours with the lowest or highest prices depending on the case. Also in the figures of the scenario is depicted that no load shift is allowed between 1am to 7am.

Correspondingly, weekly profiles of the first consumer for the same four cases are shown in Figure 16, Figure 19, Figure 22 and Figure 25. Similarly the total consumers' aggregated consumption curves for the first week of January are shown in Figure 17, in

Figure 20, in Figure 23 and in Figure 26 for all the cases. Each individual month is shown in ANNEX 7.

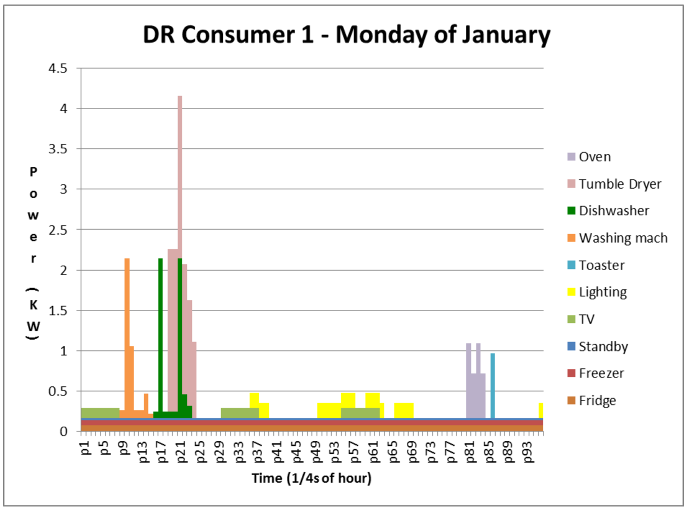

Figure 15: Demand response, Monday of January

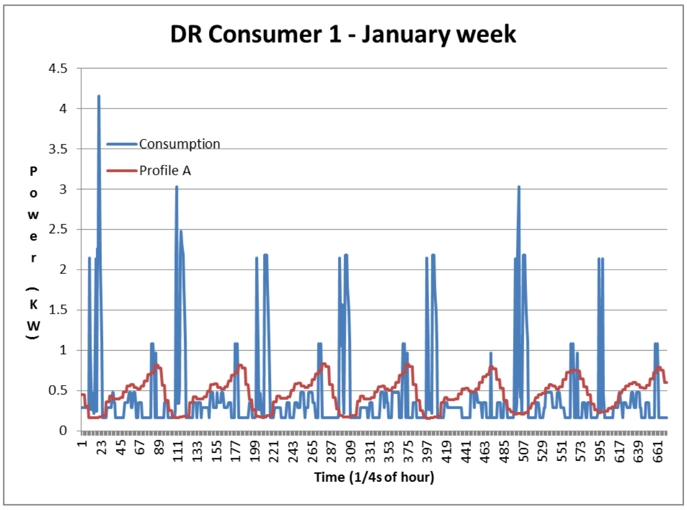

Figure 16: Demand response, week of January

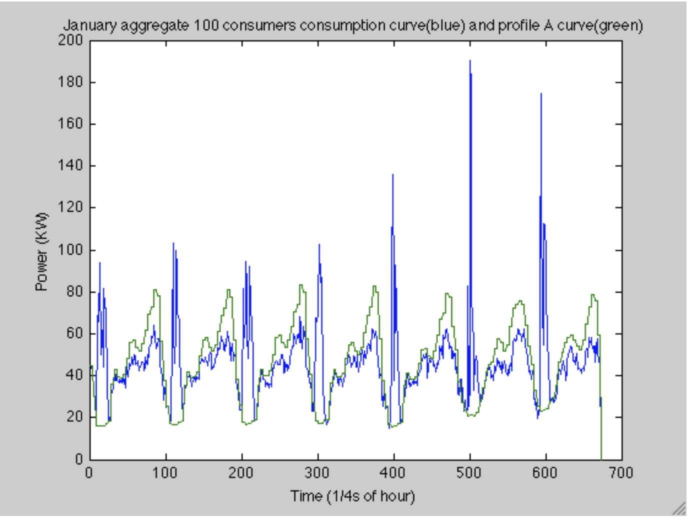

Figure 17: Demand response, January aggregate consumption curve and profile A curve

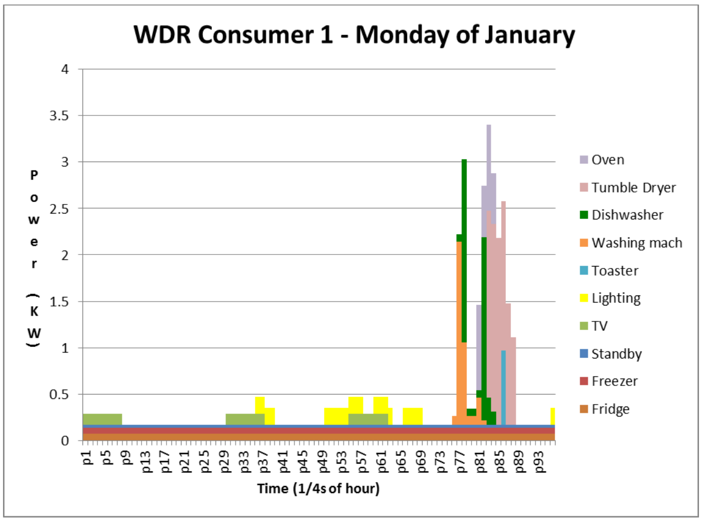

Figure 18: Worst demand response, Monday of January

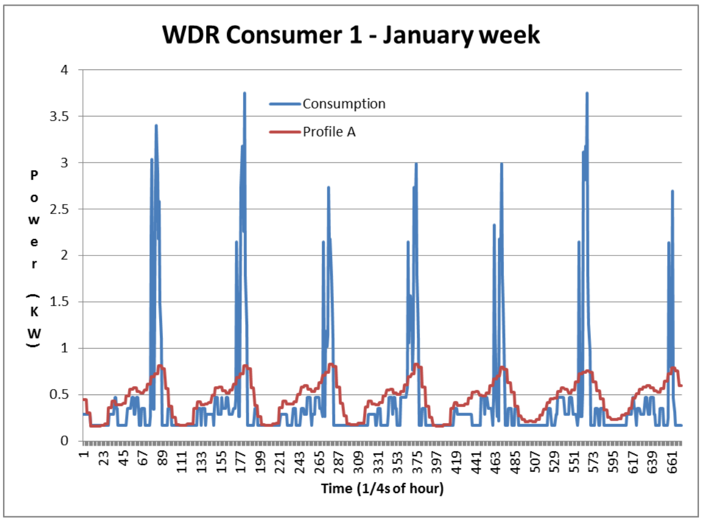

Figure 19: Worst demand response, week of January

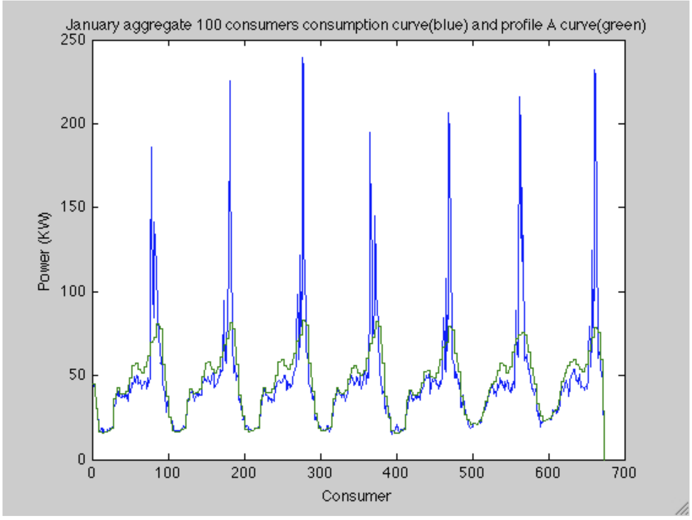

Figure 20: Worst demand response, January aggregate consumption curve and profile A curve

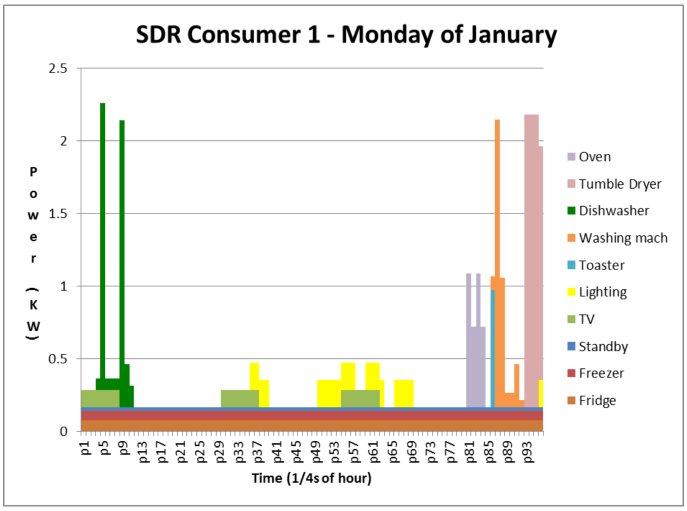

Figure 21: Scenario demand response, Monday of January

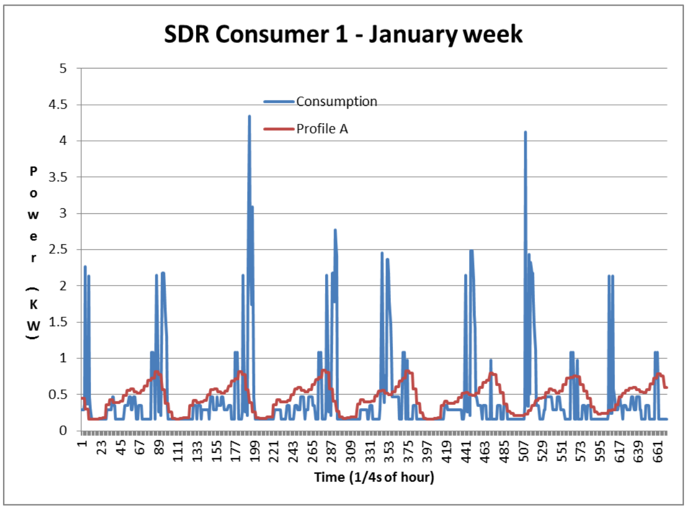

Figure 22: Scenario demand response, week of January

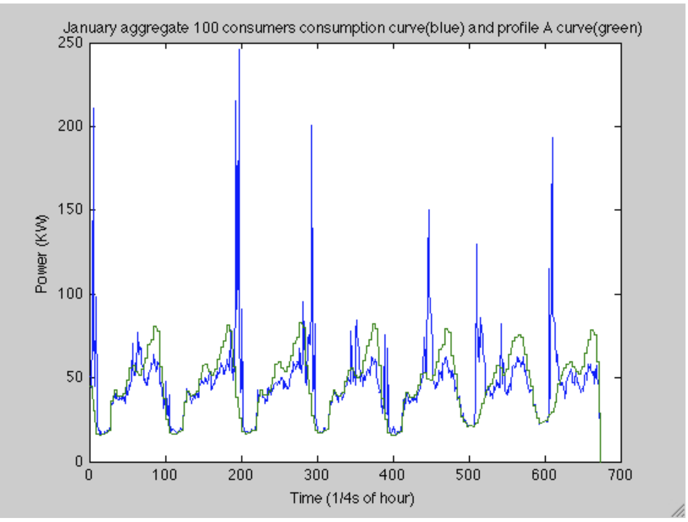

Figure 23: Scenario demand response, January aggregate 100 consumers consumption curve and profile A curve

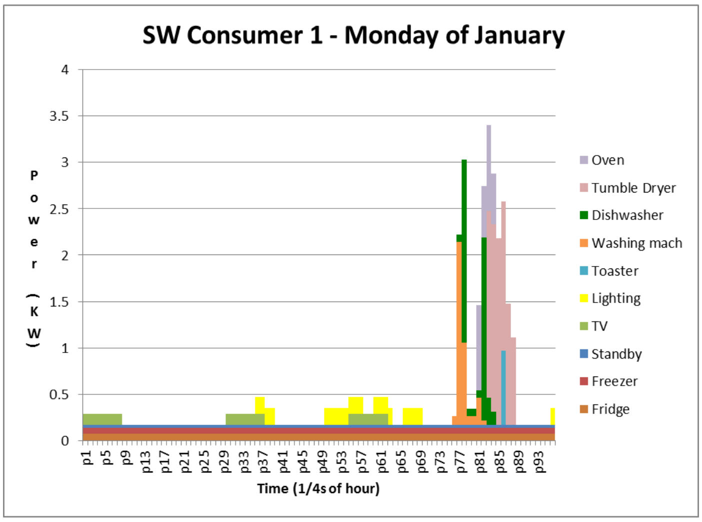

Figure 24: Scenario worst demand response, Monday of January

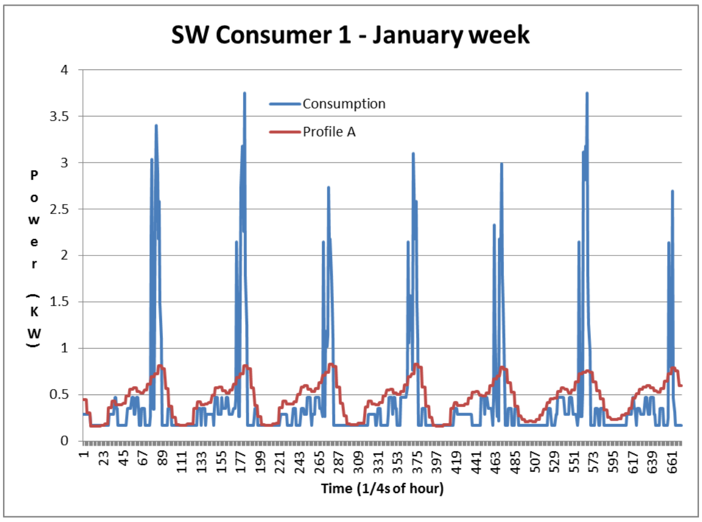

Figure 25: Scenario worst demand response, week of January

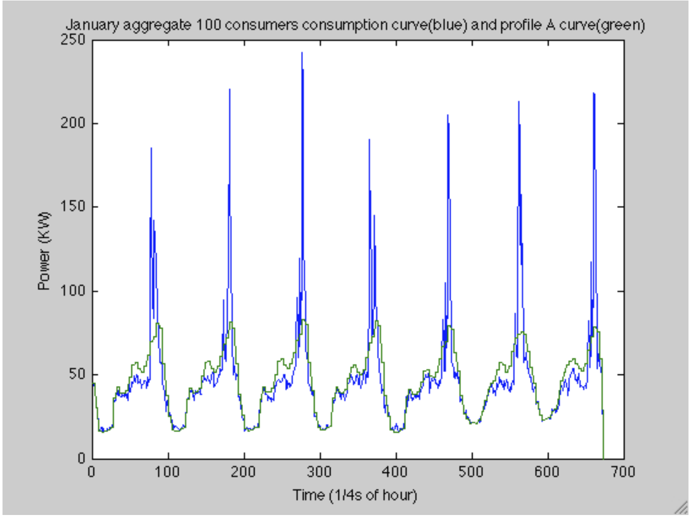

Figure 26: Scenario worst demand response January aggregate 100 consumers consumption curve and profile A curve

5.3. Results and conclusions

5.3.1. Base case: without restrictions on the hours when demand can be shifted

The average savings per bill, as well as their standard deviations, of the consumers that have smart meters when they are optimizing their consumption to reduce costs are shown in Table 38. In order to get a better insight into the average savings per bill, in Table 39 the same variables are shown on a monthly basis.

The annual savings are shown in Figure 29. The average annual savings among all the consumers, when they are responding to the price in the best way possible is 6.33%, the median is 6.16% and the standard deviation is 2.9%. Figure 37 shows these figures in absolute values: average 8.78 euros, median 9.09 euros and standard deviation 3.76 euros.

Table 38: Average savings/bill and standard deviation for RTP with DR compared to without DR

	Fist bill	Second bill	Third bill	Fourth bill	Fifth bill	Sixth bill	Annual
Average	16.85%	6.04%	3.24%	3.77%	4.91%	6.39%	6.33%
St. Dev.	9.99%	2.62%	1.20%	1.50%	2.06%	3.89%	2.9%

Table 39: Average savings per month and standard deviation

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av.	15.01%	19.78%	8.93%	4.08%	2.22%	4.37%	3.00%	4.44%	4.31%	5.62%	6.50%	6.29%
Sd.	8.85%	12.04%	4.04%	1.81%	0.91%	1.60%	1.22%	1.86%	1.90%	2.49%	3.74%	4.14%

If the average savings per month, Table 38, are drawn against the standard deviation of the monthly electricity prices, Table 34, we see that they are positively correlated. This is shown in Figure 27.

In Figure 28 is shown the correlation between the average savings per month and the monthly electricity price. This is negative.

The explanation of these correlations could be the following:

- On the one hand, during those months with high volatility of day-ahead prices, the consumers are taking advantage of higher differences on prices between cheap and expensive hours.

- On the other hand, these months presenting higher volatility in prices, are usually those months with lower average prices as well. This is mainly due to the fact that these are usually months with high variable wind energy penetration level, what introduces higher volatility in the day-ahead market.

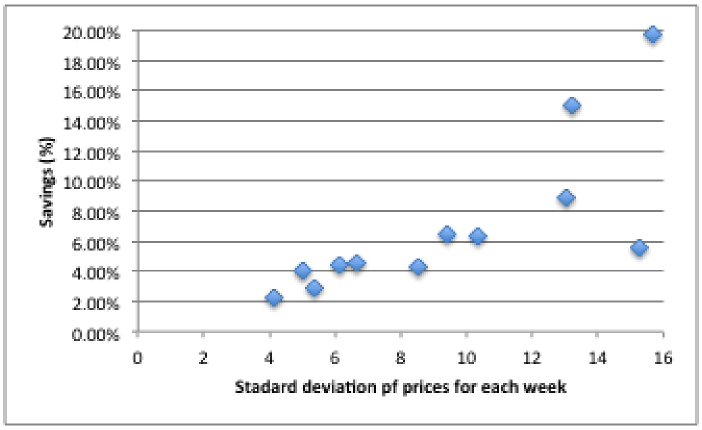

Figure 27: Savings of DR & standard deviation of prices correlation

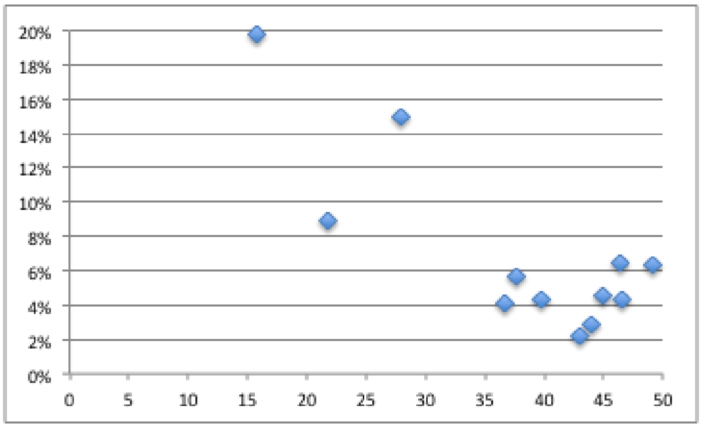

Figure 28: Savings of DR & average monthly price

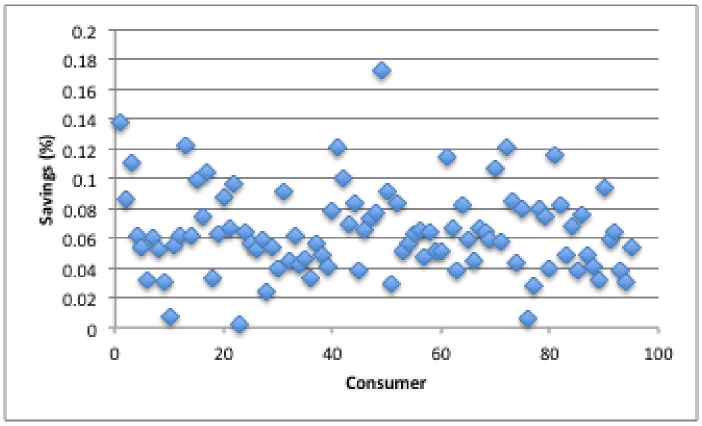

Figure 29: Annual savings with RTP

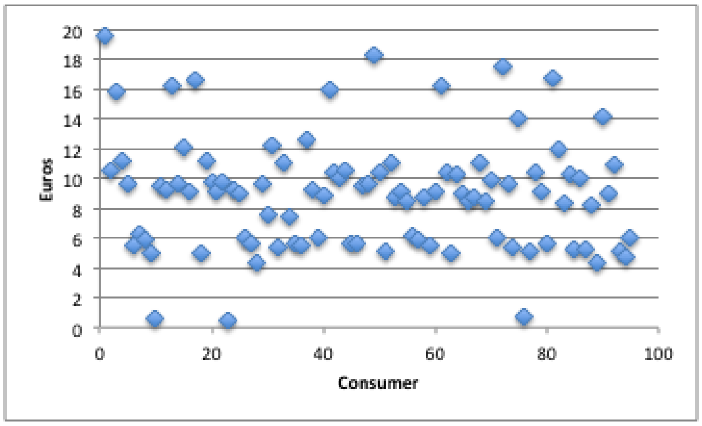

Figure 30: Annual savings in euros with RTP

The average losses per bill as well as the standard deviations of the consumers with smart meters when they are careless and they consume the most during the high prices hours are shown in Table 40. In order to get a better insight into the average maximum losses per bill in Table 41 are shown the same variables but for each month.

The annual losses are shown in Figure 33. The average annual losses among all the consumers, when they are responding to prices in the worst way possible is 3.21%, the median is 3.31% and the standard deviation is 1.15%.

Table 40: Average losses per bill and standard deviation for RTP with DR compared to without DR

	Fist bill	Second bill	Third bill	Fourth bill	Fifth bill	Sixth bill	Annual
Average	-9.53%	-3.40%	-1.49%	-1.48%	-2.65%	-2.74%	-3.21%

St. Dev.	4.24%	1.43%	0.59%	0.58%	1.24%	1.29%	1.15%

Table 41: Average losses per month and standard deviation

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av.	-6.30%	-14.88%	-6.32%	-1.43%	-1.30%	-1.71%	-1.83%	-1.12%	-2.10%	-3.31%	-3.19%	-2.33%
Sd.	3.25%	6.89%	2.97%	0.69%	0.62%	0.68%	0.77%	0.57%	1.11%	1.93%	1.73%	1.14%

If the average losses per month, Table 41, are drawn against the standard deviation of the monthly electricity prices, Table 34, we see that they are negatively correlated. This is shown in Figure 31.

In Figure 32 the correlation between the average losses per month and the monthly average electricity price is shown. This is positive.

The explanation for these correlations is just the opposite of the one exposed with regard to correlations with savings instead of losses.

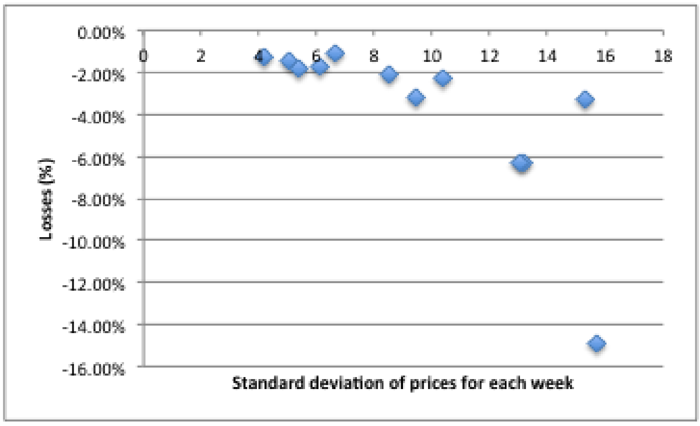

Figure 31: Losses of DR & standard deviation of prices correlation

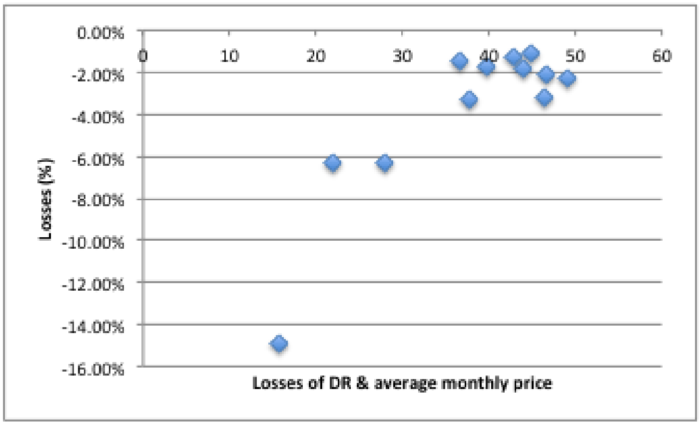

Figure 32: Losses of DR & average monthly price

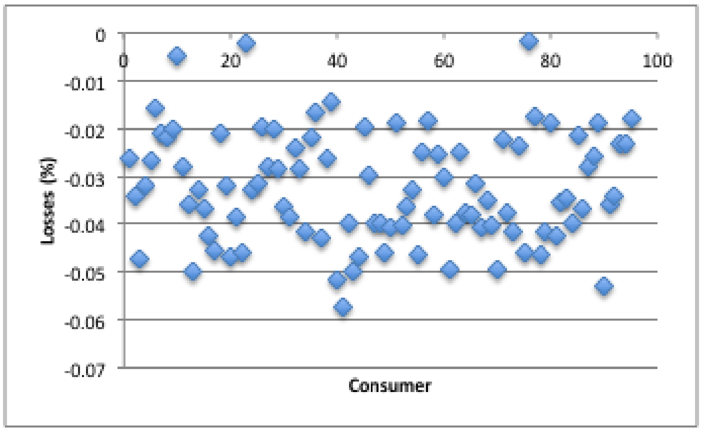

Figure 33: Annual losses with worst DR

5.3.2.Scenario case: with restrictions on the hours when demand can be shifted

As it was mentioned before, apart from the base case model to calculate the maximum savings and the maximum losses that the consumers could have by responding to prices, a scenario case was also simulated. The only difference in this case is that the consumers' consumption remains constant during the hours of 1am to

7am, that is, they cannot shift their demand to or from those hours. This was assumed on the basis that most of the people sleep at these hours and if they don't have a fully automated house with a smart electrical box to control the operation of the flexible devices they are not able to change their consumption pattern during the night.

The average savings per bill as well as the standard deviation of the consumers with smart meters when they are optimizing their consumption to reduce the cost are shown in Table 42. In order to get a better insight into the average maximum savings per bill, in Table 43 are shown the same variables but for each month.

Table 42: Average losses per bill and standard deviation for RTP with DR compared to without DR

	Fist bill	Second bill	Third bill	Fourth bill	Fifth bill	Sixth bill	Annual
Average	11.43%	4.03%	2.19%	2.40%	3.69%	4.26%	4.35%
St. Dev.	6.26%	1.94%	0.86%	1.01%	1.69%	2.45%	1.96%

Table 43: Average losses per month and standard deviation

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av.	8.03%	16.90%	6.62%	2.27%	1.68%	2.76%	1.97%	2.77%	3.43%	4.03%	4.62%	3.95%
Sd.	4.66%	9.18%	3.39%	1.15%	0.74%	1.09%	0.85%	1.24%	1.65%	2.01%	2.58%	2.46%

If the average savings per month, Table 42, are drawn against the standard deviation of the monthly electricity prices, Table 34, we see that they are positively correlated. This is shown in Figure 34. In Figure 35 the correlation between the average savings per month and the monthly electricity price is shown. This is negative. The explanation of these correlations is the same to the one presented in the base case.

The annual savings are shown in Figure 36. The average savings among the consumers, when they are responding to the cheap price signals is 4.35%, with median 4.01% and standard deviation 1.96%. Figure 37 shows these numbers but in absolute values: average 5.96 euros, median 6.24 euros and standard deviation 2.38 euros. As it can be observed, there exists a difference on maximum average annual savings of 2.82 euros in comparison to the base case.

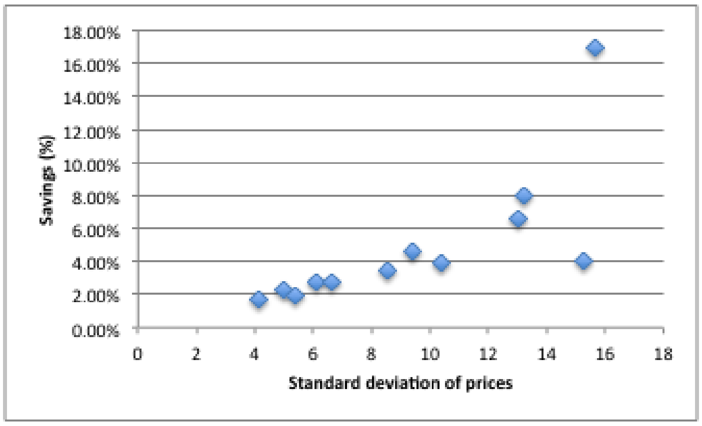

Figure 34: Savings of DR & standard deviation of prices correlation – scenario

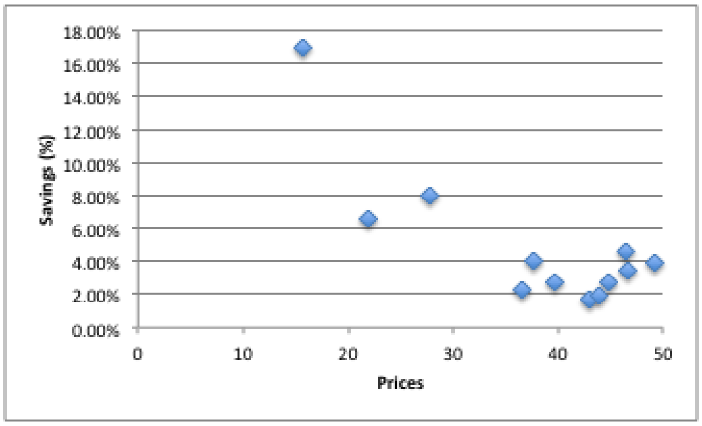

Figure 35: Savings of DR & prices correlation - scenario

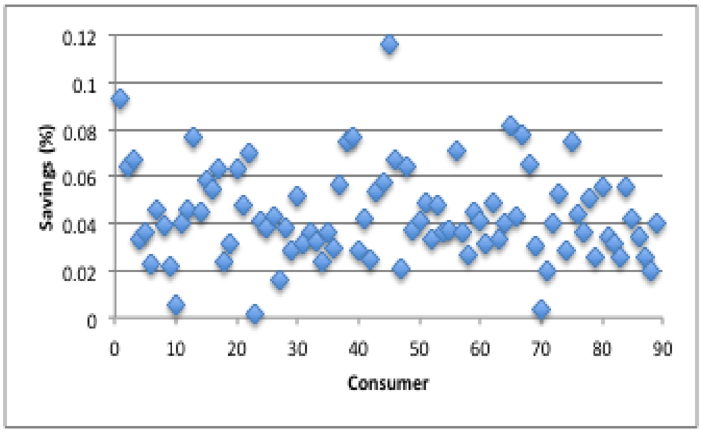

Figure 36: Annual savings with DR - scenario

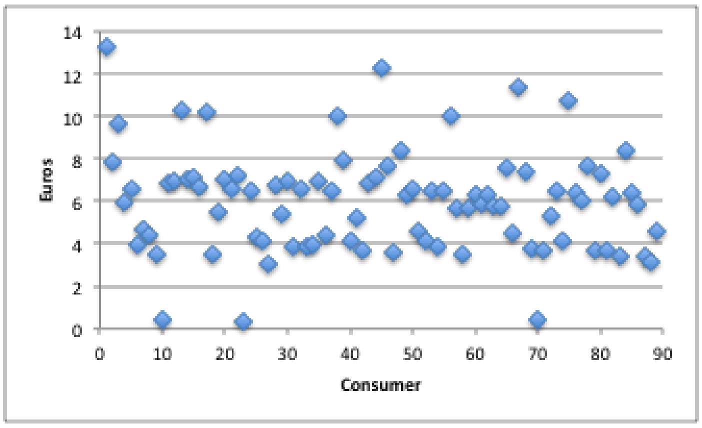

Figure 37: Annual savings in euros

The average losses per bill as well as the standard deviation of the consumers with smart meters in the scenario case when they are careless and they consume the most during the high prices hours are shown in Table 44. In order to get a better insight into the average maximum losses per bill in Table 45 the same variables are shown on a monthly basis.

Table 44: Average losses per bill and standard deviation for RTP with DR compared to without DR

	Fist bill	Second bill	Third bill	Fourth bill	Fifth bill	Sixth bill	Annual
Average	-8.87%	-3.14%	-1.30%	-1.28%	-2.28%	-2.54%	-2.92%
St. Dev.	3.91%	1.31%	0.51%	0.52%	1.08%	1.22%	1.06%

Table 45: Average losses per month and standard deviation

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Av.	-5.86%	-13.85%	-6.03%	-1.20%	-1.13%	-1.49%	-1.61%	-0.94%	-1.73%	-2.95%	-2.95%	-2.19%
Sd.	2.93%	6.39%	2.66%	0.61%	0.54%	0.59%	0.68%	0.47%	0.93%	1.68%	1.65%	1.04%

If the average losses per month, Table 45, are drawn against the standard deviation of the monthly electricity prices, Table 34, we see that they are positively correlated. This is shown in Figure 38. In Figure 39 is shown the correlation between the average savings per month and the monthly electricity price. This is negative. The explanation of these correlations is the same to the one presented in the base case.

The annual average losses are shown in Figure 40. The average losses among the consumers, when they are responding to the prices in the worst way possible are 2.92%, with median 2.86% and standard deviation 1.06%. There exists a losses difference of 0.29% euros in comparison to the base case. This means that the worst-case scenario of the consumers doesn't change a lot if they don't use the hours between 1am to 7am.

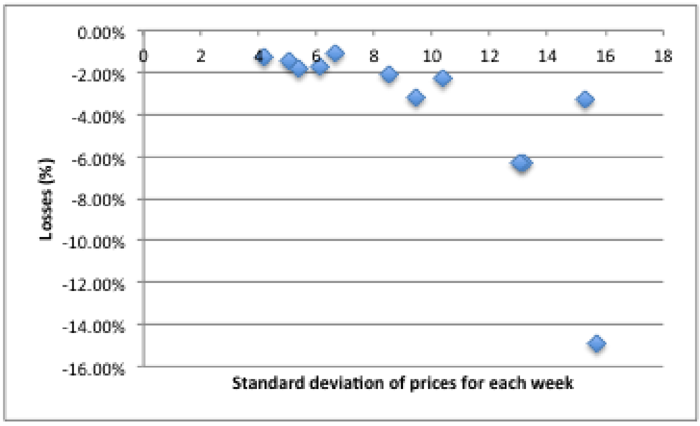

Figure 38: Losses of DR & standard deviation of prices correlation

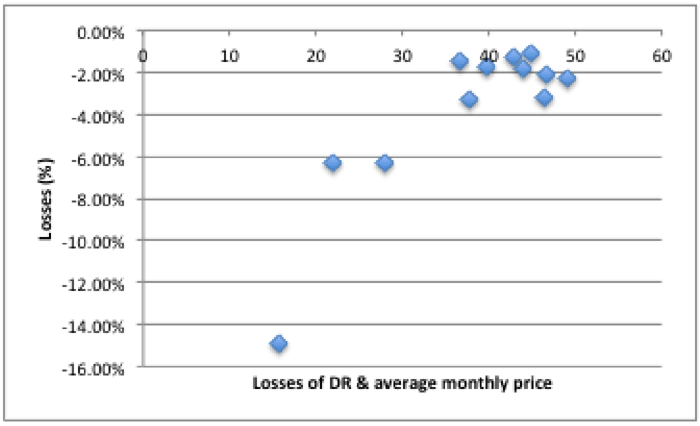

Figure 39: Losses of DR & average monthly price

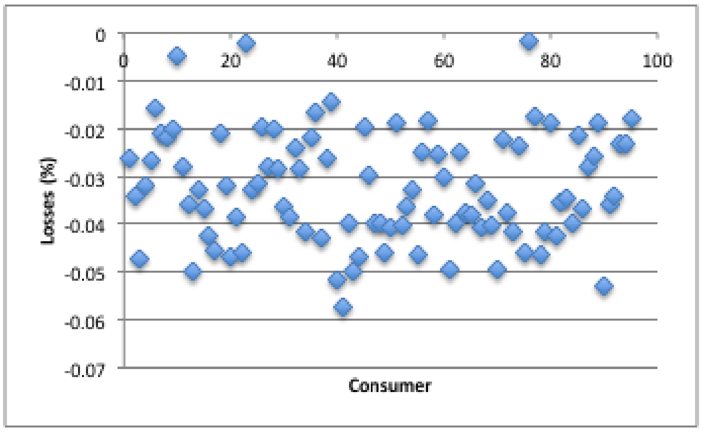

Figure 40: Annual losses with worst DR

6. Conclusions and future recommendations

6.1. Conclusions

This thesis attempted to assess some of the most relevant potential implications of a recently approved new methodology for establishing the cost of energy of the Spanish regulated electricity tariffs for low-voltage consumers. This substituted a much different previous methodology.

The previous methodology used to set the cost of energy to be included in the regulated retail tariffs was based on quarterly auctions and the new methodology is based on the real-time pricing (RTP) approach. Throughout this thesis the below objectives were answered.

- Will the consumers pay more or less than what they used to pay with the previous methodology? How much?

- What will be the maximum savings that the consumers with a smart meter may obtain if they optimize their consumption profile?

- What will be the consequences if, instead, they follow the worst possible profile?

To answer the above, this thesis has proposed and implemented an innovative approach, which goes beyond current state of the art, providing the following original contributions:

- A sophisticated bottom-up model for generating realistic consumers' load-profiles, based on:
  - A detailed representation of the technical characteristics of electric domestic devices or services (DoS);
  - A realistic characterization of the use of these DoS in Spain based on statistics on socio-demographic data.

- An original detailed optimization model to simulate optimal demand-response strategies of individual consumers that minimize their electricity costs by shifting their demand to hours with lower prices subject to restrictions based on both technical and behavioral considerations.

In this thesis, this approach was applied to a realistic case study based on data of 2010 for Spain.

The main conclusions of the comparison between the old and the new method, when no demand response is considered, are:

- The consumers with smart meters would have saved an annual average of 12.78% of the energy cost in their electricity bills from this change. This result is based on 100 consumer profiles with standard deviation 1.59%.

- The corresponding savings of those who don't have a smart meter were calculated to equal 12.55% with a standard deviation of 1.02%.

- At a monthly level, the higher savings were obtained those months with lower average and higher standard deviation on hourly prices. Main reason for this is that for those months with lower hourly prices, the cost of energy established ex-ante through the CESUR auctions was significantly higher than actual hourly prices. So just by changing the methodology to an ex-post establishment of the cost of energy based on actual electricity hourly prices, significant savings would have been obtained. This differences could had been occurred due to the fact that price offers in the corresponding CESUR auctions were not expecting such low hourly prices, which are usually due to changes in climatic conditions (i.e.: more wind and more rains, leading to increases in wind and hydro power generation).

The main conclusions regarding the impact on the consumers´ bills when they optimize their consumption by responding to real time prices are:

- Additional average annual savings among the consumers of 6.33% or 8.78 euros. In reality this case could only be true with the installation of a smart box that could manage the operation of each DoS without restrictions on in which hours could they shift their demand. People without this capability would save less.

- In the case at which the consumers don't own a smart box, it was assumed that they couldn't shift their consumption during the night in the hours between 1am and 7am. In this case, their average annual savings when they are responding to prices dropped to 4.35% or 5.96 euros.

- In both cases, the highest savings were obtained in those months presenting a higher volatility on day-ahead hourly prices. During these months, the consumers are taking advantage of higher differences on prices between cheap and expensive hours.

- These months presenting higher volatility in prices, are also usually those months with lower average prices as well. This is mainly due to the fact that these are usually months with high variable wind energy, what introduces higher volatility in the day-ahead markets.

The main conclusions regarding the impact on non-rational consumers' bills that follow the worst possible consumption profile are:

- Average annual losses among the non-rational consumers of 3.21%. This is when the consumers are choosing to operate the devices at the highest price hours even during the night.

- In the case when the consumers cannot shift their consumption during the night in the hours between 1am and 7am, the average annual losses among them could reach a maximum of 2.92%.

In any case, the observed savings are probably a low incentive for consumers to change their consuming behavior (although higher market electricity prices could increase this incentive). Thus, this thesis suggests that in a context of electricity market prices similar to those in 2010, it seems that, if regulatory authorities still aim to modify consumers' demand profile, provided that they consider this important enough to reduce other system costs (i.e.: system operation costs; required additional investments on new generation and network capacities to cope with peak demand; etc.), they will have to think on additional measures beyond a mere real time pricing of electricity to provide incentives attractive enough for consumers to modify their behavior.

6.2. Future recommendations

This thesis shed light on the debate on the impacts of RTP approaches to establish regulated retail tariffs by following an innovative approach the models in detail hourly load profiles of individual consumers and their decomposition into individual electric DoS. However, this is just a partial contribution to a much wider debate that opens the door to additional future lines of research.

One line of future research could be based on broadening the analysis to additional effects such as:

- Analysis of the effects on additional years (2011-2013) in order to capture the impact of prices variation during these years and the also the variations of the CESUR auction outcomes.

- Analysis of additional effects on individual consumers, such as those which have to do with the consumers' perceived volatility.

- Study of effects at a system scale, aggregating potential demand response strategies by different consumers and analyzing the changes in the system's aggregated load curve and subsequent impacts (i.e.: changes in marginal generation technologies, etc.)

Another line of future research could be more focused on modeling issues such as:

- Detailed validation of the modeling of consumers' profiles and demand response strategies by comparing the obtained results with costumers' real load profiles (when available) and/or surveys regarding their behavior and other real demand response pilot programs.

- Modeling of more complex and realistic restrictions.

- Modeling of a more complex and realistic objective function based on multi-criteria decision.

Finally, as shown in the conclusions of this thesis, the results suggest that if regulatory authorities aim to modify consumers' demand profile, provided that they consider this important enough to reduce other system costs (i.e.: system operation costs; required additional investments on new generation and network capacities to cope with peak demand; etc.), they will have to think on additional measures beyond a mere real time pricing of electricity to provide incentives attractive enough for consumers to modify their behavior. Thus, the approach and model developed in this thesis could be complemented in order to analyze potential impacts of new policies and regulations in this regard.

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8. ANNEXES

ANNEX 1

Typical profile A

In this section the table of the typical profile A, referenced in section 4.2.2 is shown. This is taken from (REE, 2014)

Table 46: Typical profile A

Hour	25-ene	22-feb	22-mar	19-abr	24-may	21-jun	19-jul	23-ago	20-sep	25-oct	22-nov	13-dic
	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio
p1	1,323E-04	1,441E-04	1,206E-04	7,941E-05	7,352E-05	7,352E-05	1,088E-04	9,411E-05	7,647E-05	8,529E-05	1,235E-04	1,294E-04
p2	8,823E-05	9,705E-05	8,235E-05	5,588E-05	5,882E-05	5,294E-05	7,647E-05	7,058E-05	5,588E-05	6,176E-05	8,529E-05	8,823E-05
p3	4,706E-05	5,000E-05	4,706E-05	4,706E-05	4,706E-05	4,117E-05	6,470E-05	5,882E-05	5,000E-05	5,294E-05	4,411E-05	5,000E-05
p4	4,706E-05	5,000E-05	4,411E-05	4,411E-05	4,706E-05	4,117E-05	6,176E-05	5,588E-05	5,000E-05	5,000E-05	4,411E-05	4,706E-05
p5	4,706E-05	5,000E-05	4,411E-05	4,706E-05	4,706E-05	4,117E-05	6,470E-05	5,588E-05	5,000E-05	5,294E-05	4,411E-05	4,706E-05
p6	5,000E-05	5,294E-05	4,411E-05	6,764E-05	5,882E-05	5,882E-05	7,352E-05	6,470E-05	6,764E-05	7,058E-05	4,706E-05	5,000E-05
p7	5,294E-05	5,588E-05	5,000E-05	9,999E-05	8,235E-05	8,235E-05	9,999E-05	8,823E-05	9,705E-05	1,059E-04	5,000E-05	5,588E-05
p8	1,059E-04	1,059E-04	8,823E-05	1,294E-04	1,147E-04	1,147E-04	1,206E-04	1,029E-04	1,235E-04	1,412E-04	9,705E-05	1,118E-04
p9	1,265E-04	1,265E-04	1,088E-04	1,176E-04	1,059E-04	1,029E-04	1,176E-04	1,029E-04	1,147E-04	1,206E-04	1,147E-04	1,323E-04
p10	1,147E-04	1,206E-04	1,029E-04	1,118E-04	1,029E-04	9,705E-05	1,235E-04	1,029E-04	1,088E-04	1,147E-04	1,059E-04	1,206E-04
p11	1,147E-04	1,206E-04	1,029E-04	1,118E-04	1,059E-04	9,999E-05	1,265E-04	1,088E-04	1,118E-04	1,176E-04	1,059E-04	1,206E-04
p12	1,206E-04	1,265E-04	1,059E-04	1,147E-04	1,118E-04	1,029E-04	1,382E-04	1,176E-04	1,147E-04	1,206E-04	1,118E-04	1,235E-04
p13	1,412E-04	1,500E-04	1,235E-04	1,235E-04	1,176E-04	1,088E-04	1,500E-04	1,294E-04	1,206E-04	1,265E-04	1,323E-04	1,441E-04
p14	1,647E-04	1,676E-04	1,382E-04	1,323E-04	1,235E-04	1,147E-04	1,559E-04	1,353E-04	1,294E-04	1,353E-04	1,500E-04	1,647E-04
p15	1,676E-04	1,735E-04	1,412E-04	1,353E-04	1,265E-04	1,176E-04	1,588E-04	1,353E-04	1,323E-04	1,412E-04	1,529E-04	1,676E-04
p16	1,588E-04	1,618E-04	1,323E-04	1,206E-04	1,206E-04	1,118E-04	1,559E-04	1,323E-04	1,265E-04	1,323E-04	1,441E-04	1,588E-04
p17	1,529E-04	1,588E-04	1,265E-04	1,147E-04	1,176E-04	1,088E-04	1,500E-04	1,294E-04	1,265E-04	1,323E-04	1,382E-04	1,559E-04
p18	1,618E-04	1,676E-04	1,323E-04	1,088E-04	1,118E-04	1,059E-04	1,412E-04	1,235E-04	1,206E-04	1,294E-04	1,470E-04	1,647E-04
p19	1,823E-04	1,853E-04	1,470E-04	1,147E-04	1,118E-04	1,088E-04	1,382E-04	1,206E-04	1,235E-04	1,412E-04	1,676E-04	1,853E-04
p20	2,029E-04	2,029E-04	1,618E-04	1,382E-04	1,235E-04	1,176E-04	1,382E-04	1,265E-04	1,500E-04	1,588E-04	1,853E-04	2,059E-04
p21	2,147E-04	2,147E-04	1,735E-04	1,823E-04	1,559E-04	1,382E-04	1,618E-04	1,588E-04	1,647E-04	1,706E-04	1,970E-04	2,147E-04
p22	2,382E-04	2,412E-04	1,970E-04	1,647E-04	1,529E-04	1,529E-04	1,765E-04	1,500E-04	1,500E-04	1,706E-04	2,176E-04	2,412E-04
p23	2,294E-04	2,353E-04	1,912E-04	1,353E-04	1,206E-04	1,147E-04	1,500E-04	1,294E-04	1,235E-04	1,441E-04	2,088E-04	2,294E-04
p24	1,647E-04	1,706E-04	1,441E-04	9,999E-05	8,235E-05	7,941E-05	1,235E-04	1,088E-04	8,823E-05	9,999E-05	1,529E-04	1,618E-04
p25	1,118E-04	1,118E-04	9,411E-05	6,470E-05	6,176E-05	5,882E-05	9,117E-05	7,941E-05	6,470E-05	7,352E-05	1,059E-04	1,088E-04
p26	7,647E-05	7,647E-05	6,470E-05	5,588E-05	5,294E-05	5,294E-05	7,352E-05	6,764E-05	5,588E-05	6,176E-05	7,058E-05	7,352E-05
p27	5,000E-05	5,000E-05	4,411E-05	5,000E-05	4,706E-05	4,706E-05	6,470E-05	6,176E-05	5,000E-05	5,588E-05	4,706E-05	5,000E-05
p28	4,706E-05	4,706E-05	4,117E-05	4,411E-05	4,706E-05	4,117E-05	6,176E-05	5,882E-05	4,706E-05	5,294E-05	4,411E-05	5,000E-05
p29	5,000E-05	5,000E-05	4,117E-05	4,411E-05	4,706E-05	4,117E-05	6,470E-05	5,882E-05	4,706E-05	5,294E-05	4,411E-05	5,000E-05
p30	5,294E-05	5,294E-05	4,411E-05	6,176E-05	5,588E-05	5,588E-05	7,352E-05	6,764E-05	6,176E-05	6,764E-05	5,000E-05	5,294E-05
p31	5,294E-05	5,294E-05	4,411E-05	9,411E-05	8,235E-05	8,235E-05	9,117E-05	8,235E-05	9,411E-05	1,059E-04	5,000E-05	5,588E-05
p32	1,029E-04	9,999E-05	7,941E-05	1,206E-04	1,118E-04	1,088E-04	1,147E-04	1,029E-04	1,176E-04	1,382E-04	9,411E-05	1,029E-04
p33	1,235E-04	1,206E-04	9,999E-05	1,147E-04	1,029E-04	1,029E-04	1,147E-04	1,029E-04	1,088E-04	1,206E-04	1,118E-04	1,235E-04
p34	1,147E-04	1,118E-04	9,411E-05	1,088E-04	9,999E-05	9,705E-05	1,176E-04	1,059E-04	1,059E-04	1,176E-04	1,059E-04	1,147E-04
p35	1,176E-04	1,147E-04	9,705E-05	1,118E-04	1,029E-04	9,999E-05	1,235E-04	1,118E-04	1,059E-04	1,176E-04	1,088E-04	1,118E-04
p36	1,235E-04	1,176E-04	1,029E-04	1,147E-04	1,118E-04	1,059E-04	1,323E-04	1,206E-04	1,118E-04	1,235E-04	1,147E-04	1,176E-04
p37	1,441E-04	1,412E-04	1,206E-04	1,206E-04	1,176E-04	1,147E-04	1,441E-04	1,323E-04	1,176E-04	1,294E-04	1,353E-04	1,382E-04
p38	1,676E-04	1,618E-04	1,353E-04	1,265E-04	1,235E-04	1,206E-04	1,500E-04	1,353E-04	1,294E-04	1,382E-04	1,529E-04	1,559E-04
p39	1,706E-04	1,647E-04	1,412E-04	1,323E-04	1,294E-04	1,235E-04	1,529E-04	1,382E-04	1,323E-04	1,412E-04	1,559E-04	1,588E-04
p40	1,588E-04	1,559E-04	1,323E-04	1,176E-04	1,235E-04	1,206E-04	1,500E-04	1,323E-04	1,265E-04	1,323E-04	1,470E-04	1,500E-04
p41	1,529E-04	1,500E-04	1,265E-04	1,118E-04	1,176E-04	1,176E-04	1,441E-04	1,294E-04	1,265E-04	1,323E-04	1,412E-04	1,470E-04
p42	1,618E-04	1,588E-04	1,353E-04	1,059E-04	1,118E-04	1,118E-04	1,353E-04	1,235E-04	1,206E-04	1,294E-04	1,529E-04	1,588E-04
p43	1,794E-04	1,765E-04	1,529E-04	1,118E-04	1,118E-04	1,118E-04	1,323E-04	1,206E-04	1,206E-04	1,412E-04	1,735E-04	1,794E-04
p44	2,029E-04	1,941E-04	1,647E-04	1,353E-04	1,235E-04	1,176E-04	1,353E-04	1,294E-04	1,470E-04	1,588E-04	1,912E-04	2,000E-04
p45	2,118E-04	2,059E-04	1,765E-04	1,735E-04	1,529E-04	1,382E-04	1,588E-04	1,588E-04	1,647E-04	1,706E-04	2,029E-04	2,118E-04
p46	2,382E-04	2,323E-04	1,941E-04	1,559E-04	1,529E-04	1,529E-04	1,765E-04	1,559E-04	1,500E-04	1,706E-04	2,265E-04	2,412E-04
p47	2,294E-04	2,235E-04	1,882E-04	1,294E-04	1,206E-04	1,176E-04	1,470E-04	1,323E-04	1,235E-04	1,412E-04	2,176E-04	2,265E-04
p48	1,676E-04	1,618E-04	1,382E-04	9,411E-05	8,235E-05	8,235E-05	1,206E-04	1,147E-04	8,823E-05	9,999E-05	1,559E-04	1,618E-04
p49	1,118E-04	1,118E-04	9,411E-05	6,176E-05	6,176E-05	6,176E-05	9,117E-05	8,235E-05	6,470E-05	7,352E-05	1,088E-04	1,118E-04
p50	7,647E-05	7,647E-05	6,470E-05	5,294E-05	5,294E-05	5,294E-05	7,352E-05	7,058E-05	5,588E-05	6,470E-05	7,352E-05	7,941E-05
p51	5,294E-05	5,294E-05	4,411E-05	5,000E-05	5,000E-05	4,706E-05	6,470E-05	6,470E-05	5,294E-05	5,882E-05	5,000E-05	5,294E-05
p52	5,000E-05	5,000E-05	4,117E-05	4,411E-05	4,706E-05	4,117E-05	6,470E-05	6,176E-05	4,706E-05	5,294E-05	4,706E-05	5,000E-05
p53	5,000E-05	5,000E-05	4,117E-05	4,411E-05	5,000E-05	4,411E-05	6,470E-05	6,176E-05	5,000E-05	5,588E-05	4,706E-05	5,000E-05
p54	5,588E-05	5,294E-05	4,411E-05	6,176E-05	5,882E-05	5,588E-05	7,352E-05	7,058E-05	6,176E-05	7,058E-05	5,000E-05	5,588E-05
p55	5,588E-05	5,294E-05	4,706E-05	9,117E-05	8,529E-05	8,235E-05	9,411E-05	8,529E-05	9,411E-05	1,088E-04	5,000E-05	5,588E-05
p56	1,059E-04	9,999E-05	8,235E-05	1,176E-04	1,147E-04	1,088E-04	1,147E-04	1,029E-04	1,206E-04	1,412E-04	9,411E-05	1,059E-04
p57	1,265E-04	1,176E-04	1,029E-04	1,088E-04	1,059E-04	9,999E-05	1,118E-04	1,029E-04	1,118E-04	1,235E-04	1,147E-04	1,294E-04

Hour	25-ene	22-feb	22-mar	19-abr	24-may	21-jun	19-jul	23-ago	20-sep	25-oct	22-nov	13-dic
	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio
p58	1,176E-04	1,088E-04	9,705E-05	1,029E-04	9,999E-05	9,705E-05	1,176E-04	1,059E-04	1,059E-04	1,176E-04	1,059E-04	1,176E-04
p59	1,176E-04	1,088E-04	9,999E-05	1,059E-04	1,059E-04	1,029E-04	1,206E-04	1,147E-04	1,088E-04	1,206E-04	1,088E-04	1,147E-04
p60	1,235E-04	1,147E-04	1,029E-04	1,118E-04	1,147E-04	1,088E-04	1,294E-04	1,235E-04	1,147E-04	1,235E-04	1,147E-04	1,176E-04
p61	1,470E-04	1,353E-04	1,235E-04	1,206E-04	1,176E-04	1,176E-04	1,382E-04	1,353E-04	1,206E-04	1,265E-04	1,353E-04	1,382E-04
p62	1,706E-04	1,588E-04	1,382E-04	1,294E-04	1,265E-04	1,206E-04	1,441E-04	1,412E-04	1,294E-04	1,382E-04	1,529E-04	1,588E-04
p63	1,735E-04	1,618E-04	1,412E-04	1,323E-04	1,323E-04	1,235E-04	1,470E-04	1,441E-04	1,353E-04	1,412E-04	1,559E-04	1,618E-04
p64	1,647E-04	1,529E-04	1,323E-04	1,176E-04	1,235E-04	1,206E-04	1,441E-04	1,412E-04	1,323E-04	1,323E-04	1,470E-04	1,529E-04
p65	1,588E-04	1,470E-04	1,265E-04	1,147E-04	1,206E-04	1,147E-04	1,382E-04	1,353E-04	1,294E-04	1,323E-04	1,412E-04	1,500E-04
p66	1,676E-04	1,559E-04	1,353E-04	1,118E-04	1,118E-04	1,088E-04	1,294E-04	1,294E-04	1,235E-04	1,294E-04	1,500E-04	1,647E-04
p67	1,853E-04	1,765E-04	1,559E-04	1,176E-04	1,118E-04	1,088E-04	1,294E-04	1,294E-04	1,235E-04	1,412E-04	1,706E-04	1,882E-04
p68	2,088E-04	1,941E-04	1,676E-04	1,412E-04	1,265E-04	1,176E-04	1,323E-04	1,353E-04	1,500E-04	1,588E-04	1,882E-04	2,088E-04
p69	2,176E-04	2,029E-04	1,765E-04	1,765E-04	1,559E-04	1,353E-04	1,559E-04	1,647E-04	1,647E-04	1,735E-04	2,000E-04	2,235E-04
p70	2,441E-04	2,294E-04	1,970E-04	1,588E-04	1,559E-04	1,470E-04	1,706E-04	1,618E-04	1,500E-04	1,706E-04	2,235E-04	2,500E-04
p71	2,353E-04	2,235E-04	1,912E-04	1,323E-04	1,206E-04	1,147E-04	1,441E-04	1,382E-04	1,235E-04	1,441E-04	2,147E-04	2,412E-04
p72	1,706E-04	1,618E-04	1,412E-04	9,999E-05	8,529E-05	8,235E-05	1,206E-04	1,176E-04	8,823E-05	9,999E-05	1,559E-04	1,735E-04
p73	1,206E-04	1,118E-04	9,705E-05	6,470E-05	6,470E-05	6,176E-05	8,823E-05	8,529E-05	6,470E-05	7,647E-05	1,059E-04	1,206E-04
p74	7,941E-05	7,352E-05	6,470E-05	5,588E-05	5,588E-05	5,294E-05	7,352E-05	7,058E-05	5,588E-05	6,470E-05	7,352E-05	8,235E-05
p75	5,588E-05	5,000E-05	4,411E-05	5,000E-05	5,000E-05	4,706E-05	6,470E-05	6,470E-05	5,294E-05	5,882E-05	5,000E-05	5,588E-05
p76	5,000E-05	4,706E-05	4,117E-05	4,411E-05	5,000E-05	4,117E-05	6,176E-05	6,176E-05	4,706E-05	5,294E-05	4,706E-05	5,294E-05
p77	5,294E-05	4,706E-05	4,117E-05	4,706E-05	5,000E-05	4,117E-05	6,470E-05	6,176E-05	5,000E-05	5,588E-05	4,706E-05	5,294E-05
p78	5,588E-05	5,294E-05	4,411E-05	6,470E-05	5,882E-05	5,294E-05	7,352E-05	7,058E-05	6,176E-05	7,058E-05	5,000E-05	5,882E-05
p79	5,588E-05	5,294E-05	4,706E-05	9,411E-05	8,529E-05	7,647E-05	9,117E-05	8,529E-05	9,411E-05	1,088E-04	5,000E-05	5,882E-05
p80	1,059E-04	9,705E-05	8,235E-05	1,235E-04	1,147E-04	9,705E-05	1,147E-04	1,059E-04	1,206E-04	1,412E-04	9,411E-05	1,118E-04
p81	1,265E-04	1,147E-04	1,029E-04	1,147E-04	1,059E-04	9,411E-05	1,088E-04	1,059E-04	1,118E-04	1,265E-04	1,147E-04	1,353E-04
p82	1,176E-04	1,088E-04	9,705E-05	1,088E-04	9,999E-05	9,117E-05	1,147E-04	1,088E-04	1,088E-04	1,206E-04	1,059E-04	1,235E-04
p83	1,147E-04	1,118E-04	9,999E-05	1,118E-04	1,059E-04	9,411E-05	1,176E-04	1,147E-04	1,118E-04	1,235E-04	1,088E-04	1,206E-04
p84	1,206E-04	1,176E-04	1,059E-04	1,147E-04	1,147E-04	1,029E-04	1,265E-04	1,265E-04	1,147E-04	1,235E-04	1,118E-04	1,235E-04
p85	1,412E-04	1,382E-04	1,235E-04	1,235E-04	1,206E-04	1,118E-04	1,353E-04	1,382E-04	1,206E-04	1,294E-04	1,323E-04	1,470E-04
p86	1,618E-04	1,588E-04	1,412E-04	1,294E-04	1,265E-04	1,176E-04	1,412E-04	1,441E-04	1,294E-04	1,382E-04	1,500E-04	1,676E-04
p87	1,647E-04	1,647E-04	1,441E-04	1,353E-04	1,323E-04	1,206E-04	1,441E-04	1,470E-04	1,323E-04	1,441E-04	1,559E-04	1,706E-04
p88	1,529E-04	1,529E-04	1,323E-04	1,206E-04	1,265E-04	1,176E-04	1,412E-04	1,441E-04	1,265E-04	1,382E-04	1,470E-04	1,618E-04
p89	1,470E-04	1,470E-04	1,294E-04	1,176E-04	1,235E-04	1,147E-04	1,353E-04	1,412E-04	1,265E-04	1,353E-04	1,441E-04	1,588E-04
p90	1,559E-04	1,559E-04	1,382E-04	1,118E-04	1,147E-04	1,088E-04	1,265E-04	1,323E-04	1,206E-04	1,323E-04	1,529E-04	1,706E-04
p91	1,765E-04	1,765E-04	1,559E-04	1,147E-04	1,147E-04	1,088E-04	1,265E-04	1,294E-04	1,206E-04	1,412E-04	1,735E-04	1,941E-04
p92	2,029E-04	1,941E-04	1,706E-04	1,382E-04	1,294E-04	1,147E-04	1,294E-04	1,382E-04	1,470E-04	1,588E-04	1,912E-04	2,176E-04
p93	2,147E-04	2,000E-04	1,765E-04	1,735E-04	1,559E-04	1,353E-04	1,529E-04	1,706E-04	1,588E-04	1,706E-04	2,000E-04	2,294E-04
p94	2,441E-04	2,265E-04	1,970E-04	1,588E-04	1,529E-04	1,500E-04	1,706E-04	1,647E-04	1,470E-04	1,676E-04	2,265E-04	2,588E-04
p95	2,353E-04	2,176E-04	1,912E-04	1,294E-04	1,206E-04	1,176E-04	1,441E-04	1,382E-04	1,206E-04	1,412E-04	2,176E-04	2,500E-04
p96	1,706E-04	1,588E-04	1,382E-04	9,411E-05	8,529E-05	8,529E-05	1,206E-04	1,206E-04	8,823E-05	9,999E-05	1,588E-04	1,765E-04
p97	1,118E-04	1,059E-04	8,823E-05	6,176E-05	6,176E-05	6,176E-05	8,823E-05	8,823E-05	6,176E-05	6,764E-05	1,029E-04	1,176E-04
p98	7,352E-05	7,058E-05	6,176E-05	5,294E-05	5,588E-05	5,294E-05	6,764E-05	7,058E-05	5,294E-05	5,882E-05	6,764E-05	7,941E-05
p99	5,000E-05	4,706E-05	4,117E-05	4,706E-05	5,294E-05	4,411E-05	6,176E-05	6,176E-05	4,411E-05	5,000E-05	4,706E-05	5,294E-05
p100	4,706E-05	4,411E-05	3,823E-05	4,117E-05	4,706E-05	3,823E-05	5,882E-05	5,882E-05	4,411E-05	4,706E-05	4,411E-05	5,000E-05
p101	4,706E-05	4,411E-05	3,823E-05	4,117E-05	5,000E-05	4,117E-05	5,882E-05	6,176E-05	4,411E-05	5,000E-05	4,411E-05	5,000E-05
p102	5,000E-05	5,000E-05	4,117E-05	5,882E-05	5,588E-05	5,588E-05	7,058E-05	6,764E-05	5,588E-05	6,176E-05	4,706E-05	5,294E-05
p103	5,294E-05	5,000E-05	4,411E-05	8,823E-05	8,235E-05	7,941E-05	9,117E-05	8,823E-05	9,117E-05	1,029E-04	4,706E-05	5,588E-05
p104	1,029E-04	9,705E-05	8,235E-05	1,147E-04	1,118E-04	1,088E-04	1,118E-04	1,088E-04	1,118E-04	1,353E-04	9,411E-05	1,088E-04
p105	1,206E-04	1,147E-04	9,999E-05	1,088E-04	1,029E-04	1,029E-04	1,088E-04	1,088E-04	1,059E-04	1,206E-04	1,176E-04	1,294E-04
p106	1,118E-04	1,088E-04	9,411E-05	1,059E-04	9,999E-05	9,999E-05	1,118E-04	1,118E-04	1,029E-04	1,147E-04	1,088E-04	1,206E-04
p107	1,118E-04	1,088E-04	9,705E-05	1,088E-04	1,059E-04	1,029E-04	1,147E-04	1,206E-04	1,029E-04	1,176E-04	1,118E-04	1,235E-04
p108	1,176E-04	1,147E-04	1,029E-04	1,118E-04	1,118E-04	1,088E-04	1,235E-04	1,294E-04	1,059E-04	1,206E-04	1,176E-04	1,294E-04
p109	1,353E-04	1,353E-04	1,206E-04	1,206E-04	1,206E-04	1,176E-04	1,323E-04	1,412E-04	1,118E-04	1,265E-04	1,382E-04	1,529E-04
p110	1,529E-04	1,559E-04	1,382E-04	1,265E-04	1,235E-04	1,206E-04	1,353E-04	1,470E-04	1,206E-04	1,353E-04	1,559E-04	1,735E-04
p111	1,559E-04	1,588E-04	1,382E-04	1,265E-04	1,265E-04	1,235E-04	1,382E-04	1,500E-04	1,235E-04	1,382E-04	1,618E-04	1,765E-04
p112	1,441E-04	1,500E-04	1,265E-04	1,147E-04	1,235E-04	1,206E-04	1,353E-04	1,470E-04	1,206E-04	1,323E-04	1,529E-04	1,647E-04
p113	1,412E-04	1,441E-04	1,206E-04	1,088E-04	1,176E-04	1,176E-04	1,323E-04	1,441E-04	1,176E-04	1,323E-04	1,470E-04	1,618E-04
p114	1,529E-04	1,529E-04	1,294E-04	1,029E-04	1,118E-04	1,118E-04	1,265E-04	1,353E-04	1,118E-04	1,323E-04	1,588E-04	1,735E-04
p115	1,765E-04	1,706E-04	1,500E-04	1,088E-04	1,118E-04	1,147E-04	1,265E-04	1,323E-04	1,147E-04	1,382E-04	1,794E-04	1,941E-04
p116	1,970E-04	1,882E-04	1,647E-04	1,294E-04	1,235E-04	1,206E-04	1,294E-04	1,412E-04	1,412E-04	1,529E-04	1,970E-04	2,176E-04
p117	2,059E-04	2,000E-04	1,735E-04	1,676E-04	1,529E-04	1,382E-04	1,500E-04	1,676E-04	1,559E-04	1,647E-04	2,059E-04	2,265E-04
p118	2,323E-04	2,235E-04	1,941E-04	1,559E-04	1,559E-04	1,559E-04	1,706E-04	1,647E-04	1,470E-04	1,647E-04	2,294E-04	2,529E-04
p119	2,265E-04	2,147E-04	1,882E-04	1,441E-04	1,323E-04	1,323E-04	1,470E-04	1,470E-04	1,353E-04	1,559E-04	2,235E-04	2,412E-04
p120	1,853E-04	1,765E-04	1,529E-04	1,118E-04	1,059E-04	1,059E-04	1,323E-04	1,323E-04	1,118E-04	1,265E-04	1,853E-04	2,000E-04
p121	1,559E-04	1,500E-04	1,294E-04	9,411E-05	9,411E-05	9,117E-05	1,059E-04	1,088E-04	9,705E-05	1,088E-04	1,500E-04	1,647E-04
p122	1,088E-04	1,059E-04	9,705E-05	7,647E-05	7,647E-05	7,647E-05	8,823E-05	8,823E-05	7,941E-05	8,823E-05	1,059E-04	1,147E-04
p123	7,941E-05	7,941E-05	6,764E-05	5,882E-05	5,882E-05	5,882E-05	7,941E-05	7,941E-05	6,176E-05	6,764E-05	7,647E-05	8,529E-05
p124	7,058E-05	6,764E-05	6,176E-05	5,588E-05	5,588E-05	5,882E-05	7,647E-05	7,647E-05	5,882E-05	6,470E-05	6,764E-05	7,352E-05
p125	6,176E-05	5,882E-05	5,294E-05	5,294E-05	5,588E-05	5,588E-05	7,352E-05	7,058E-05	5,882E-05	6,470E-05	5,882E-05	6,470E-05
p126	6,176E-05	6,176E-05	5,294E-05	5,588E-05	5,882E-05	5,882E-05	7,352E-05	7,058E-05	6,176E-05	6,764E-05	6,176E-05	6,470E-05
p127	6,176E-05	5,882E-05	5,294E-05	6,470E-05	6,176E-05	6,176E-05	7,647E-05	7,352E-05	6,764E-05	7,647E-05	5,882E-05	6,470E-05

Hour	25-ene	22-feb	22-mar	19-abr	24-may	21-jun	19-jul	23-ago	20-sep	25-oct	22-nov	13-dic
	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio	ratio
p128	6,764E-05	6,470E-05	5,588E-05	7,352E-05	7,058E-05	7,352E-05	8,529E-05	7,941E-05	7,058E-05	8,235E-05	6,470E-05	7,058E-05
p129	8,235E-05	7,941E-05	6,764E-05	9,117E-05	8,529E-05	8,823E-05	9,705E-05	9,411E-05	8,823E-05	9,999E-05	7,941E-05	8,823E-05
p130	9,999E-05	9,999E-05	8,235E-05	1,029E-04	9,999E-05	1,029E-04	1,147E-04	1,059E-04	1,029E-04	1,176E-04	9,999E-05	1,088E-04
p131	1,235E-04	1,206E-04	1,029E-04	1,059E-04	1,029E-04	1,088E-04	1,206E-04	1,118E-04	1,059E-04	1,235E-04	1,235E-04	1,353E-04
p132	1,323E-04	1,323E-04	1,147E-04	1,147E-04	1,088E-04	1,147E-04	1,265E-04	1,176E-04	1,118E-04	1,294E-04	1,382E-04	1,529E-04
p133	1,353E-04	1,412E-04	1,206E-04	1,265E-04	1,265E-04	1,235E-04	1,323E-04	1,265E-04	1,235E-04	1,412E-04	1,441E-04	1,588E-04
p134	1,559E-04	1,647E-04	1,353E-04	1,323E-04	1,323E-04	1,323E-04	1,382E-04	1,353E-04	1,265E-04	1,470E-04	1,676E-04	1,823E-04
p135	1,706E-04	1,765E-04	1,470E-04	1,235E-04	1,294E-04	1,323E-04	1,441E-04	1,412E-04	1,235E-04	1,470E-04	1,823E-04	2,000E-04
p136	1,647E-04	1,706E-04	1,382E-04	1,176E-04	1,206E-04	1,235E-04	1,412E-04	1,382E-04	1,176E-04	1,441E-04	1,765E-04	1,912E-04
p137	1,529E-04	1,588E-04	1,323E-04	1,088E-04	1,176E-04	1,206E-04	1,382E-04	1,323E-04	1,147E-04	1,382E-04	1,676E-04	1,823E-04
p138	1,618E-04	1,647E-04	1,353E-04	1,059E-04	1,059E-04	1,088E-04	1,206E-04	1,147E-04	1,059E-04	1,294E-04	1,735E-04	1,853E-04
p139	1,882E-04	1,882E-04	1,559E-04	1,088E-04	1,088E-04	1,118E-04	1,206E-04	1,147E-04	1,118E-04	1,382E-04	1,941E-04	2,088E-04
p140	2,118E-04	2,029E-04	1,588E-04	1,382E-04	1,353E-04	1,353E-04	1,265E-04	1,235E-04	1,559E-04	1,647E-04	2,118E-04	2,294E-04
p141	2,176E-04	2,059E-04	1,706E-04	1,794E-04	1,647E-04	1,559E-04	1,441E-04	1,441E-04	1,735E-04	1,853E-04	2,147E-04	2,323E-04
p142	2,235E-04	2,088E-04	1,823E-04	1,618E-04	1,647E-04	1,735E-04	1,647E-04	1,412E-04	1,529E-04	1,765E-04	2,206E-04	2,382E-04
p143	2,176E-04	2,029E-04	1,794E-04	1,382E-04	1,382E-04	1,412E-04	1,412E-04	1,265E-04	1,353E-04	1,588E-04	2,147E-04	2,294E-04
p144	1,882E-04	1,735E-04	1,529E-04	1,235E-04	1,206E-04	1,206E-04	1,265E-04	1,176E-04	1,206E-04	1,441E-04	1,853E-04	1,970E-04
p145	1,588E-04	1,500E-04	1,353E-04	9,411E-05	9,411E-05	9,411E-05	1,029E-04	9,705E-05	9,411E-05	1,118E-04	1,559E-04	1,676E-04
p146	1,323E-04	1,206E-04	1,118E-04	7,352E-05	7,352E-05	7,352E-05	8,529E-05	7,941E-05	7,647E-05	8,529E-05	1,265E-04	1,353E-04
p147	9,705E-05	9,117E-05	6,470E-05	7,058E-05	7,058E-05	7,058E-05	7,941E-05	7,352E-05	7,058E-05	8,529E-05	9,411E-05	1,029E-04
p148	7,647E-05	7,058E-05	5,588E-05	7,058E-05	7,058E-05	7,058E-05	6,764E-05	6,470E-05	7,058E-05	8,235E-05	7,058E-05	7,941E-05
p149	6,764E-05	6,176E-05	5,882E-05	7,058E-05	7,058E-05	6,764E-05	7,058E-05	6,470E-05	6,764E-05	7,941E-05	6,470E-05	7,058E-05
p150	6,764E-05	6,470E-05	5,882E-05	6,176E-05	5,882E-05	5,882E-05	7,058E-05	6,764E-05	6,176E-05	7,941E-05	6,470E-05	7,352E-05
p151	7,058E-05	6,764E-05	6,764E-05	5,882E-05	5,588E-05	5,588E-05	6,764E-05	6,470E-05	5,882E-05	6,764E-05	6,470E-05	7,352E-05
p152	8,235E-05	7,647E-05	7,352E-05	7,058E-05	6,764E-05	6,470E-05	7,647E-05	7,058E-05	6,470E-05	6,764E-05	7,647E-05	8,529E-05
p153	8,529E-05	7,941E-05	9,705E-05	9,117E-05	8,529E-05	8,235E-05	8,823E-05	8,235E-05	8,235E-05	7,647E-05	7,941E-05	9,117E-05
p154	1,029E-04	9,705E-05	1,294E-04	1,176E-04	1,118E-04	1,059E-04	9,705E-05	9,117E-05	1,088E-04	9,705E-05	9,705E-05	1,118E-04
p155	1,382E-04	1,294E-04	1,382E-04	1,235E-04	1,176E-04	1,147E-04	1,147E-04	1,059E-04	1,176E-04	1,206E-04	1,294E-04	1,500E-04
p156	1,500E-04	1,441E-04	1,441E-04	1,206E-04	1,235E-04	1,176E-04	1,265E-04	1,206E-04	1,176E-04	1,265E-04	1,441E-04	1,676E-04
p157	1,647E-04	1,618E-04	1,441E-04	1,235E-04	1,265E-04	1,235E-04	1,353E-04	1,294E-04	1,206E-04	1,323E-04	1,559E-04	1,853E-04
p158	1,706E-04	1,647E-04	1,470E-04	1,294E-04	1,353E-04	1,323E-04	1,441E-04	1,353E-04	1,265E-04	1,382E-04	1,618E-04	1,853E-04
p159	1,765E-04	1,676E-04	1,353E-04	1,147E-04	1,235E-04	1,206E-04	1,382E-04	1,323E-04	1,118E-04	1,470E-04	1,647E-04	1,882E-04
p160	1,676E-04	1,618E-04	1,265E-04	1,029E-04	1,118E-04	1,088E-04	1,294E-04	1,235E-04	1,029E-04	1,382E-04	1,618E-04	1,794E-04
p161	1,588E-04	1,500E-04	1,206E-04	9,999E-05	1,088E-04	1,059E-04	1,235E-04	1,176E-04	9,999E-05	1,235E-04	1,559E-04	1,706E-04
p162	1,529E-04	1,470E-04	1,353E-04	9,705E-05	1,088E-04	1,059E-04	1,235E-04	1,206E-04	9,999E-05	1,235E-04	1,559E-04	1,647E-04
p163	1,676E-04	1,618E-04	1,529E-04	1,059E-04	1,147E-04	1,088E-04	1,294E-04	1,265E-04	1,088E-04	1,265E-04	1,735E-04	1,794E-04
p164	1,912E-04	1,765E-04	1,765E-04	1,441E-04	1,500E-04	1,412E-04	1,353E-04	1,353E-04	1,618E-04	1,265E-04	1,882E-04	1,970E-04
p165	2,147E-04	2,000E-04	1,970E-04	1,882E-04	1,853E-04	1,765E-04	1,559E-04	1,588E-04	1,794E-04	1,500E-04	2,118E-04	2,235E-04
p166	2,294E-04	2,147E-04	1,735E-04	1,735E-04	1,882E-04	1,882E-04	1,912E-04	1,676E-04	1,647E-04	1,765E-04	2,265E-04	2,412E-04
p167	2,235E-04	2,088E-04	1,441E-04	1,353E-04	1,412E-04	1,353E-04	1,500E-04	1,382E-04	1,353E-04	1,882E-04	2,206E-04	2,323E-04
p168	1,765E-04	1,706E-04	1,088E-04	1,059E-04	9,999E-05	1,029E-04	1,382E-04	1,265E-04	9,999E-05	1,647E-04	1,765E-04	1,853E-04

ANNEX 2

Prices and quantities of year 2010

In this section in Table 47 is shown the typical profile A taken from (REE, 2014) multiplied by the average Spanish household consumption for each hour of the week, referenced in section 4.2. Also at the same table the corresponding day-ahead market prices are presented. In table Table 48 are presented the CEMD and PR components of the old methodology, referenced in 3.3 and ANNEX 6.

Table 47: Prices and quantities of year 2010

Hour	25th of Jan.		22nd of Feb.		22nd of Mar.		19th of Apr.		24th of May		21st of Jun.		19th of Jul.		23rd of Aug.		20th of Sep.		25th of Oct.		22nd of Nov.		13th of Dec.	
	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€
p1	0.45	29.85	0.49	12.00	0.41	30.16	0.27	39.60	0.25	41.10	0.25	35.56	0.37	46.10	0.32	47.10	0.26	46.80	0.29	37.27	0.42	44.25	0.44	55.00
p2	0.30	21.63	0.33	0.01	0.28	27.00	0.19	36.70	0.20	36.40	0.18	28.76	0.26	43.70	0.24	40.11	0.19	38.43	0.21	32.69	0.29	38.69	0.30	43.01
p3	0.16	0.00	0.17	0.00	0.16	23.30	0.16	28.79	0.16	32.81	0.14	22.07	0.22	36.85	0.20	34.69	0.17	35.98	0.18	20.13	0.15	22.22	0.17	38.95
p4	0.16	0.00	0.17	0.00	0.15	20.01	0.15	26.00	0.16	31.68	0.14	12.08	0.21	36.85	0.19	31.84	0.17	36.40	0.17	22.13	0.15	20.13	0.16	38.02
p5	0.16	0.00	0.17	0.00	0.15	20.00	0.16	25.43	0.16	31.49	0.14	15.52	0.22	36.85	0.19	29.87	0.17	35.98	0.18	20.13	0.15	19.13	0.16	37.77
p6	0.17	0.00	0.18	0.00	0.15	24.13	0.23	28.01	0.20	32.20	0.20	17.07	0.25	37.01	0.22	32.37	0.23	35.98	0.24	24.50	0.16	22.22	0.17	38.10
p7	0.18	10.00	0.19	0.00	0.17	27.13	0.34	38.25	0.28	38.00	0.28	34.50	0.34	42.86	0.30	40.72	0.33	46.20	0.36	38.02	0.17	35.00	0.19	41.68
p8	0.36	34.00	0.36	20.52	0.30	43.00	0.44	40.00	0.39	41.89	0.39	36.42	0.41	46.01	0.35	47.89	0.42	53.90	0.48	47.73	0.33	42.80	0.38	60.26
p9	0.43	35.10	0.43	28.00	0.37	43.10	0.40	40.20	0.36	44.01	0.35	42.00	0.40	46.58	0.35	49.50	0.39	56.68	0.41	49.17	0.39	41.96	0.45	61.56
p10	0.39	36.07	0.41	30.20	0.35	40.07	0.38	40.80	0.35	42.88	0.33	42.01	0.42	47.41	0.35	48.10	0.37	55.33	0.39	47.88	0.36	43.56	0.41	61.01
p11	0.39	35.00	0.41	28.27	0.35	41.43	0.38	41.17	0.36	44.01	0.34	44.01	0.43	52.02	0.37	49.76	0.38	57.32	0.40	48.60	0.36	42.43	0.41	60.26
p12	0.41	34.81	0.43	29.58	0.36	42.60	0.39	40.53	0.38	43.01	0.35	43.80	0.47	52.01	0.40	49.01	0.39	56.98	0.41	47.49	0.38	42.43	0.42	60.26
p13	0.48	38.25	0.51	31.26	0.42	45.00	0.42	40.53	0.40	42.10	0.37	44.50	0.51	59.65	0.44	49.91	0.41	56.01	0.43	47.79	0.45	44.25	0.49	67.01
p14	0.56	34.82	0.57	29.80	0.47	39.24	0.45	40.53	0.42	41.68	0.39	43.57	0.53	52.13	0.46	49.54	0.44	51.30	0.46	46.02	0.51	42.30	0.56	61.02
p15	0.57	34.07	0.59	26.93	0.48	34.26	0.46	39.60	0.43	40.01	0.40	40.42	0.54	49.50	0.46	47.35	0.45	50.09	0.48	45.49	0.52	41.01	0.57	61.01
p16	0.54	32.55	0.55	25.46	0.45	33.03	0.41	40.20	0.41	41.10	0.38	42.03	0.53	50.69	0.45	47.01	0.43	51.09	0.45	47.55	0.49	40.03	0.54	59.70
p17	0.52	32.55	0.54	25.46	0.43	30.16	0.39	40.02	0.40	41.01	0.37	42.54	0.51	50.66	0.44	47.51	0.43	54.01	0.45	47.73	0.47	41.39	0.53	59.22
p18	0.55	34.81	0.57	29.00	0.45	34.26	0.37	39.90	0.38	40.78	0.36	43.57	0.48	50.37	0.42	48.16	0.41	56.40	0.44	48.01	0.50	44.31	0.56	59.65
p19	0.62	43.11	0.63	35.10	0.50	36.04	0.39	39.50	0.38	39.71	0.37	42.02	0.47	48.21	0.41	48.50	0.42	54.53	0.48	47.86	0.57	49.10	0.63	63.99
p20	0.69	50.90	0.69	62.51	0.55	40.13	0.47	39.60	0.42	39.05	0.40	42.48	0.47	46.88	0.43	48.53	0.51	55.95	0.54	49.54	0.63	57.75	0.70	67.01
p21	0.73	50.90	0.73	51.49	0.59	48.79	0.62	40.53	0.53	41.05	0.47	42.10	0.55	46.18	0.54	49.89	0.56	58.30	0.58	52.60	0.67	60.00	0.73	59.65
p22	0.81	50.08	0.82	51.86	0.67	46.30	0.56	41.28	0.52	45.00	0.52	42.54	0.60	46.18	0.51	52.60	0.51	59.25	0.58	51.60	0.74	60.13	0.82	58.06
p23	0.78	39.27	0.80	32.10	0.65	35.00	0.46	39.00	0.41	42.69	0.39	43.01	0.51	45.42	0.44	49.89	0.42	52.09	0.49	49.36	0.71	55.76	0.78	54.00
p24	0.56	29.85	0.58	14.07	0.49	30.30	0.34	39.00	0.28	40.00	0.27	38.00	0.42	42.54	0.37	48.07	0.30	48.00	0.34	45.80	0.52	46.05	0.55	44.34
p25	0.38	34.00	0.38	5.00	0.32	35.98	0.22	38.02	0.21	41.07	0.20	38.50	0.31	43.22	0.27	44.20	0.22	37.80	0.25	32.24	0.36	40.97	0.37	52.00

Hour	25th of Jan.		22nd of Feb.		22nd of Mar.		19th of Apr.		24th of May		21st of Jun.		19th of Jul.		23rd of Aug.		20th of Sep.		25th of Oct.		22nd of Nov.		13th of Dec.	
	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€
p26	0.26	29.19	0.26	1.00	0.22	29.90	0.19	34.01	0.18	37.52	0.18	32.80	0.25	40.59	0.23	40.00	0.19	34.32	0.21	26.07	0.24	38.25	0.25	42.00
p27	0.17	13.22	0.17	0.00	0.15	25.39	0.17	29.92	0.16	34.61	0.16	30.28	0.22	37.01	0.21	35.81	0.17	32.47	0.19	25.00	0.16	35.67	0.17	40.05
p28	0.16	0.00	0.16	0.00	0.14	25.00	0.15	28.01	0.16	34.26	0.14	26.66	0.21	36.34	0.20	37.01	0.16	34.29	0.18	25.00	0.15	34.62	0.17	38.92
p29	0.17	0.00	0.17	0.00	0.14	23.92	0.15	26.81	0.16	33.68	0.14	23.57	0.22	36.05	0.20	35.31	0.16	31.50	0.18	22.13	0.15	33.90	0.17	38.02
p30	0.18	0.00	0.18	0.00	0.15	24.99	0.21	28.01	0.19	34.26	0.19	27.68	0.25	38.01	0.23	37.26	0.21	34.32	0.23	25.00	0.17	35.92	0.18	38.11
p31	0.18	5.00	0.18	0.00	0.15	27.87	0.32	37.50	0.28	41.03	0.28	37.70	0.31	43.00	0.28	42.35	0.32	43.21	0.36	35.05	0.17	39.25	0.19	40.68
p32	0.35	29.36	0.34	19.00	0.27	38.63	0.41	39.60	0.38	43.90	0.37	39.22	0.39	45.00	0.35	46.20	0.40	53.01	0.47	44.82	0.32	44.31	0.35	56.17
p33	0.42	28.45	0.41	24.80	0.34	38.13	0.39	40.03	0.35	48.00	0.35	42.03	0.39	47.00	0.35	48.51	0.37	53.13	0.41	45.03	0.38	44.40	0.42	59.01
p34	0.39	30.83	0.38	27.99	0.32	40.07	0.37	40.03	0.34	43.10	0.33	44.00	0.40	48.00	0.36	49.10	0.36	54.18	0.40	45.10	0.36	46.25	0.39	57.75
p35	0.40	30.46	0.39	27.99	0.33	42.89	0.38	40.13	0.35	44.01	0.34	44.18	0.42	53.02	0.38	52.60	0.36	56.71	0.40	47.00	0.37	44.82	0.38	54.03
p36	0.42	30.46	0.40	27.00	0.35	35.45	0.39	40.00	0.38	42.55	0.36	44.50	0.45	51.25	0.41	53.01	0.38	56.51	0.42	47.08	0.39	44.81	0.40	52.70
p37	0.49	33.00	0.48	29.01	0.41	37.02	0.41	39.64	0.40	43.90	0.39	46.02	0.49	53.56	0.45	55.01	0.40	57.78	0.44	48.78	0.46	47.03	0.47	58.50
p38	0.57	30.46	0.55	26.00	0.46	30.23	0.43	39.50	0.42	41.61	0.41	44.03	0.51	52.02	0.46	55.02	0.44	55.32	0.47	48.39	0.52	45.14	0.53	56.14
p39	0.58	29.00	0.56	23.27	0.48	28.00	0.45	38.50	0.44	39.36	0.42	42.48	0.52	48.06	0.47	50.84	0.45	53.00	0.48	47.90	0.53	44.56	0.54	51.25
p40	0.54	25.58	0.53	20.13	0.45	28.13	0.40	39.60	0.42	40.55	0.41	44.02	0.51	48.51	0.45	51.87	0.43	55.51	0.45	50.51	0.50	44.56	0.51	48.13
p41	0.52	28.28	0.51	20.13	0.43	28.00	0.38	38.70	0.40	40.52	0.40	45.01	0.49	48.00	0.44	51.87	0.43	56.08	0.45	50.70	0.48	44.82	0.50	49.70
p42	0.55	31.00	0.54	25.50	0.46	28.18	0.36	38.50	0.38	41.20	0.38	45.35	0.46	47.59	0.42	52.33	0.41	56.95	0.44	51.10	0.52	44.90	0.54	51.25
p43	0.61	37.44	0.60	32.03	0.52	31.50	0.38	38.10	0.38	40.00	0.38	44.01	0.45	46.00	0.41	51.87	0.41	56.01	0.48	49.22	0.59	52.45	0.61	52.00
p44	0.69	45.00	0.66	42.00	0.56	35.00	0.46	38.43	0.42	38.47	0.40	44.00	0.46	45.01	0.44	50.03	0.50	56.94	0.54	49.49	0.65	65.13	0.68	54.50
p45	0.72	42.51	0.70	42.40	0.60	44.27	0.59	39.00	0.52	40.43	0.47	44.00	0.54	44.90	0.54	50.52	0.56	58.02	0.58	52.01	0.69	58.75	0.72	51.25
p46	0.81	47.13	0.79	43.31	0.66	42.89	0.53	39.75	0.52	43.02	0.52	43.02	0.60	45.45	0.53	53.50	0.51	58.15	0.58	50.13	0.77	58.75	0.82	54.25
p47	0.78	34.81	0.76	27.99	0.64	30.23	0.44	35.01	0.41	42.97	0.40	42.03	0.50	45.66	0.45	51.23	0.42	54.50	0.48	49.01	0.74	52.10	0.77	47.14
p48	0.57	28.28	0.55	14.07	0.47	26.40	0.32	36.00	0.28	41.20	0.28	37.53	0.41	42.50	0.39	48.07	0.30	48.95	0.34	44.82	0.53	43.10	0.55	38.38
p49	0.38	18.07	0.38	0.01	0.32	20.01	0.21	36.00	0.21	41.02	0.21	40.00	0.31	44.14	0.28	45.57	0.22	44.48	0.25	39.21	0.37	42.00	0.38	41.34
p50	0.26	12.13	0.26	0.00	0.22	21.58	0.18	29.11	0.18	39.50	0.18	35.96	0.25	41.57	0.24	40.00	0.19	39.96	0.22	37.03	0.25	38.55	0.27	37.47
p51	0.18	0.00	0.18	0.00	0.15	10.00	0.17	26.77	0.17	37.90	0.16	33.03	0.22	37.90	0.22	37.67	0.18	38.49	0.20	35.00	0.17	36.99	0.18	22.22
p52	0.17	0.00	0.17	0.00	0.14	8.03	0.15	25.00	0.16	38.27	0.14	30.98	0.22	36.01	0.21	37.82	0.16	37.12	0.18	36.00	0.16	37.19	0.17	20.13
p53	0.17	0.00	0.17	0.00	0.14	7.07	0.15	23.85	0.17	37.90	0.15	30.48	0.22	35.65	0.21	35.68	0.17	34.32	0.19	33.96	0.16	36.50	0.17	20.13
p54	0.19	0.00	0.18	0.00	0.15	10.00	0.21	25.00	0.20	39.47	0.19	31.36	0.25	37.90	0.24	37.54	0.21	37.11	0.24	34.72	0.17	37.60	0.19	22.22
p55	0.19	6.00	0.18	0.00	0.16	15.13	0.31	31.50	0.29	42.15	0.28	39.50	0.32	42.02	0.29	40.55	0.32	48.20	0.37	40.61	0.17	40.00	0.19	30.03
p56	0.36	28.19	0.34	12.00	0.28	25.48	0.40	38.25	0.39	43.10	0.37	44.09	0.39	45.10	0.35	46.33	0.41	53.51	0.48	48.00	0.32	46.75	0.36	49.07
p57	0.43	30.57	0.40	20.02	0.35	24.69	0.37	39.60	0.36	44.15	0.34	47.80	0.38	47.00	0.35	48.88	0.38	55.00	0.42	48.70	0.39	44.82	0.44	52.55
p58	0.40	33.00	0.37	26.00	0.33	26.95	0.35	39.90	0.34	44.20	0.33	46.02	0.40	48.42	0.36	49.35	0.36	54.68	0.40	46.89	0.36	46.50	0.40	52.50
p59	0.40	31.46	0.37	24.07	0.34	26.95	0.36	41.03	0.36	47.25	0.35	51.00	0.41	52.75	0.39	51.20	0.37	55.00	0.41	48.10	0.37	48.20	0.39	47.14

Hour	25th of Jan.		22nd of Feb.		22nd of Mar.		19th of Apr.		24th of May		21st of Jun.		19th of Jul.		23rd of Aug.		20th of Sep.		25th of Oct.		22nd of Nov.		13th of Dec.	
	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€
p60	0.42	30.32	0.39	23.41	0.35	26.30	0.38	40.80	0.39	47.25	0.37	48.55	0.44	53.13	0.42	50.02	0.39	55.00	0.42	46.42	0.39	47.98	0.40	46.72
p61	0.50	34.30	0.46	25.00	0.42	28.00	0.41	41.03	0.40	48.71	0.40	50.69	0.47	59.65	0.46	50.03	0.41	55.00	0.43	47.72	0.46	53.95	0.47	56.78
p62	0.58	31.65	0.54	21.05	0.47	27.44	0.44	40.80	0.43	47.13	0.41	47.50	0.49	55.02	0.48	49.60	0.44	53.51	0.47	46.62	0.52	49.57	0.54	50.00
p63	0.59	30.90	0.55	19.12	0.48	25.65	0.45	39.25	0.45	45.50	0.42	40.00	0.50	50.02	0.49	47.00	0.46	50.21	0.48	47.04	0.53	47.98	0.55	46.72
p64	0.56	30.00	0.52	15.00	0.45	24.00	0.40	39.60	0.42	45.53	0.41	43.01	0.49	50.03	0.48	47.87	0.45	53.13	0.45	50.14	0.50	46.85	0.52	46.28
p65	0.54	30.00	0.50	15.01	0.43	23.01	0.39	39.00	0.41	45.50	0.39	43.57	0.47	50.37	0.46	48.50	0.44	54.01	0.45	49.36	0.48	46.85	0.51	50.00
p66	0.57	32.98	0.53	21.80	0.46	26.69	0.38	39.00	0.38	45.50	0.37	44.50	0.44	49.80	0.44	49.51	0.42	55.00	0.44	49.40	0.51	49.07	0.56	60.00
p67	0.63	38.57	0.60	30.03	0.53	27.23	0.40	38.60	0.38	45.06	0.37	42.48	0.44	48.39	0.44	49.60	0.42	53.51	0.48	47.30	0.58	49.20	0.64	64.18
p68	0.71	45.00	0.66	42.40	0.57	28.00	0.48	39.00	0.43	44.20	0.40	41.99	0.45	46.87	0.46	49.15	0.51	52.50	0.54	48.76	0.64	59.50	0.71	71.02
p69	0.74	45.00	0.69	43.00	0.60	30.65	0.60	39.60	0.53	44.84	0.46	42.25	0.53	46.24	0.56	50.01	0.56	55.00	0.59	51.10	0.68	59.50	0.76	65.93
p70	0.83	50.40	0.78	51.36	0.67	30.89	0.54	41.17	0.53	45.39	0.50	40.54	0.58	46.42	0.55	51.20	0.51	55.00	0.58	49.02	0.76	59.50	0.85	67.63
p71	0.80	38.30	0.76	30.03	0.65	28.62	0.45	39.30	0.41	44.59	0.39	39.10	0.49	46.80	0.47	48.10	0.42	51.63	0.49	47.72	0.73	53.95	0.82	61.56
p72	0.58	32.50	0.55	20.00	0.48	24.00	0.34	39.00	0.29	42.55	0.28	31.26	0.41	45.00	0.40	41.93	0.30	45.01	0.34	43.15	0.53	45.14	0.59	49.55
p73	0.41	26.00	0.38	10.00	0.33	18.50	0.22	39.20	0.22	44.01	0.21	31.96	0.30	44.70	0.29	44.18	0.22	44.62	0.26	48.49	0.36	45.10	0.41	40.00
p74	0.27	18.07	0.25	1.50	0.22	8.00	0.19	38.00	0.19	42.52	0.18	31.42	0.25	39.52	0.24	38.10	0.19	38.94	0.22	44.58	0.25	42.00	0.28	37.15
p75	0.19	12.13	0.17	0.00	0.15	0.10	0.17	35.01	0.17	40.69	0.16	30.48	0.22	36.82	0.22	32.43	0.18	38.00	0.20	42.98	0.17	40.10	0.19	25.03
p76	0.17	12.13	0.16	0.00	0.14	0.00	0.15	32.00	0.17	42.00	0.14	29.10	0.21	36.82	0.21	33.74	0.16	38.00	0.18	38.06	0.16	40.47	0.18	22.22
p77	0.18	12.13	0.16	0.00	0.14	0.00	0.16	29.89	0.17	41.20	0.14	27.34	0.22	35.05	0.21	29.93	0.17	37.39	0.19	37.01	0.16	40.00	0.18	22.22
p78	0.19	15.01	0.18	0.00	0.15	0.00	0.22	32.69	0.20	43.49	0.18	30.16	0.25	37.46	0.24	33.74	0.21	38.29	0.24	37.23	0.17	40.47	0.20	29.00
p79	0.19	18.84	0.18	0.00	0.16	5.09	0.32	37.50	0.29	45.12	0.26	37.01	0.31	42.50	0.29	40.36	0.32	45.41	0.37	44.00	0.17	42.00	0.20	31.21
p80	0.36	30.81	0.33	8.01	0.28	10.00	0.42	39.50	0.39	46.01	0.33	40.20	0.39	44.75	0.36	46.00	0.41	53.00	0.48	51.60	0.32	49.50	0.38	46.72
p81	0.43	33.00	0.39	17.40	0.35	15.01	0.39	41.03	0.36	48.60	0.32	41.11	0.37	45.93	0.36	48.50	0.38	56.51	0.43	53.04	0.39	48.75	0.46	46.72
p82	0.40	35.98	0.37	20.03	0.33	21.77	0.37	41.03	0.34	49.45	0.31	41.11	0.39	47.01	0.37	49.10	0.37	55.95	0.41	51.36	0.36	52.75	0.42	48.38
p83	0.39	33.56	0.38	20.00	0.34	23.01	0.38	42.30	0.36	50.00	0.32	45.01	0.40	50.53	0.39	50.70	0.38	57.75	0.42	53.60	0.37	52.00	0.41	48.09
p84	0.41	32.00	0.40	20.00	0.36	21.77	0.39	41.47	0.39	50.00	0.35	41.65	0.43	50.18	0.43	49.91	0.39	57.03	0.42	52.02	0.38	51.12	0.42	45.03
p85	0.48	36.80	0.47	23.20	0.42	26.26	0.42	41.40	0.41	50.61	0.38	42.48	0.46	53.89	0.47	50.30	0.41	57.13	0.44	52.02	0.45	52.94	0.50	51.54
p86	0.55	34.07	0.54	18.18	0.48	21.77	0.44	41.10	0.43	50.00	0.40	40.00	0.48	51.00	0.49	49.23	0.44	53.03	0.47	50.53	0.51	48.18	0.57	49.55
p87	0.56	33.00	0.56	16.90	0.49	20.01	0.46	40.00	0.45	49.29	0.41	35.00	0.49	47.69	0.50	44.70	0.45	50.74	0.49	47.86	0.53	47.55	0.58	50.00
p88	0.52	31.56	0.52	14.00	0.45	20.00	0.41	40.03	0.43	49.67	0.40	40.01	0.48	49.01	0.49	45.55	0.43	51.53	0.47	48.44	0.50	46.30	0.55	50.00
p89	0.50	31.56	0.50	14.00	0.44	20.00	0.40	39.20	0.42	48.94	0.39	40.00	0.46	49.01	0.48	46.16	0.43	51.08	0.46	48.07	0.49	45.96	0.54	49.55
p90	0.53	34.69	0.53	18.15	0.47	21.77	0.38	39.01	0.39	48.27	0.37	40.54	0.43	48.02	0.45	48.50	0.41	52.50	0.45	48.25	0.52	47.75	0.58	56.85
p91	0.60	42.51	0.60	27.00	0.53	23.01	0.39	39.00	0.39	46.60	0.37	40.44	0.43	46.18	0.44	48.50	0.41	50.00	0.48	47.49	0.59	52.00	0.66	61.14
p92	0.69	53.00	0.66	34.00	0.58	26.23	0.47	39.00	0.44	45.10	0.39	41.65	0.44	44.15	0.47	48.50	0.50	49.57	0.54	47.49	0.65	53.95	0.74	71.33
p93	0.73	50.90	0.68	35.00	0.60	28.23	0.59	39.01	0.53	45.60	0.46	42.00	0.52	43.19	0.58	49.02	0.54	53.01	0.58	49.01	0.68	52.70	0.78	66.54

Hour	25th of Jan.		22nd of Feb.		22nd of Mar.		19th of Apr.		24th of May		21st of Jun.		19th of Jul.		23rd of Aug.		20th of Sep.		25th of Oct.		22nd of Nov.		13th of Dec.	
	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€
p94	0.83	52.25	0.77	36.12	0.67	27.05	0.54	40.20	0.52	47.02	0.51	41.69	0.58	44.00	0.56	51.07	0.50	53.01	0.57	45.00	0.77	52.75	0.88	69.99
p95	0.80	40.09	0.74	26.00	0.65	25.09	0.44	36.45	0.41	45.60	0.40	42.48	0.49	45.01	0.47	48.30	0.41	48.50	0.48	43.25	0.74	48.10	0.85	60.94
p96	0.58	32.00	0.54	15.00	0.47	19.00	0.32	35.93	0.29	39.11	0.29	40.00	0.41	44.15	0.41	42.50	0.30	42.46	0.34	36.76	0.54	41.33	0.60	54.50
p97	0.38	29.95	0.36	0.00	0.30	8.00	0.21	34.50	0.21	42.10	0.21	42.47	0.30	44.71	0.30	41.43	0.21	44.94	0.23	43.00	0.35	37.79	0.40	45.50
p98	0.25	28.36	0.24	0.00	0.21	4.48	0.18	26.84	0.19	40.26	0.18	40.11	0.23	40.01	0.24	37.67	0.18	36.57	0.20	34.64	0.23	33.51	0.27	40.26
p99	0.17	16.16	0.16	0.00	0.14	0.00	0.16	25.43	0.18	37.90	0.15	36.01	0.21	35.75	0.21	32.01	0.15	33.00	0.17	25.00	0.16	25.00	0.18	35.00
p100	0.16	10.01	0.15	0.00	0.13	0.00	0.14	23.64	0.16	37.90	0.13	32.88	0.20	33.00	0.20	24.00	0.15	32.58	0.16	25.00	0.15	30.00	0.17	36.34
p101	0.16	10.00	0.15	0.00	0.13	0.00	0.14	22.79	0.17	37.33	0.14	32.38	0.20	32.92	0.21	20.00	0.15	30.20	0.17	17.07	0.15	28.07	0.17	32.90
p102	0.17	12.00	0.17	0.00	0.14	0.00	0.20	23.98	0.19	37.48	0.19	35.93	0.24	34.81	0.23	33.07	0.19	34.95	0.21	17.07	0.16	32.72	0.18	35.00
p103	0.18	25.00	0.17	0.00	0.15	4.48	0.30	34.00	0.28	40.94	0.27	42.01	0.31	37.15	0.30	40.72	0.31	38.90	0.35	32.60	0.16	36.14	0.19	38.69
p104	0.35	32.00	0.33	13.50	0.28	9.00	0.39	38.14	0.38	45.10	0.37	43.57	0.38	42.10	0.37	44.70	0.38	51.35	0.46	44.78	0.32	48.01	0.37	49.70
p105	0.41	32.30	0.39	17.40	0.34	12.69	0.37	40.03	0.35	45.16	0.35	45.91	0.37	42.00	0.37	47.00	0.36	50.09	0.41	43.15	0.40	44.72	0.44	44.60
p106	0.38	35.07	0.37	21.64	0.32	15.03	0.36	39.20	0.34	46.05	0.34	44.09	0.38	44.51	0.38	49.10	0.35	50.69	0.39	40.69	0.37	48.46	0.41	45.50
p107	0.38	35.00	0.37	20.80	0.33	15.01	0.37	40.50	0.36	49.56	0.35	52.16	0.39	47.14	0.41	50.57	0.35	51.35	0.40	42.58	0.38	49.35	0.42	46.04
p108	0.40	34.00	0.39	20.80	0.35	15.00	0.38	40.20	0.38	49.56	0.37	45.50	0.42	46.02	0.44	50.30	0.36	48.00	0.41	41.77	0.40	49.73	0.44	46.82
p109	0.46	34.07	0.46	25.41	0.41	15.01	0.41	40.50	0.41	49.45	0.40	50.11	0.45	47.14	0.48	52.15	0.38	49.57	0.43	42.03	0.47	50.59	0.52	54.00
p110	0.52	31.50	0.53	22.62	0.47	10.00	0.43	40.50	0.42	49.45	0.41	44.87	0.46	47.00	0.50	52.16	0.41	47.23	0.46	38.43	0.53	49.83	0.59	52.30
p111	0.53	29.85	0.54	20.00	0.47	8.03	0.43	39.02	0.43	45.10	0.42	41.00	0.47	42.43	0.51	49.10	0.42	39.92	0.47	38.00	0.55	49.15	0.60	50.00
p112	0.49	24.50	0.51	18.18	0.43	5.00	0.39	39.90	0.42	46.30	0.41	43.12	0.46	45.44	0.50	49.23	0.41	38.57	0.45	38.01	0.52	49.15	0.56	47.51
p113	0.48	24.50	0.49	20.00	0.41	5.00	0.37	39.01	0.40	46.03	0.40	42.70	0.45	45.56	0.49	49.21	0.40	39.83	0.45	40.15	0.50	49.15	0.55	47.70
p114	0.52	30.01	0.52	24.25	0.44	10.00	0.35	39.00	0.38	46.43	0.38	42.80	0.43	46.01	0.46	49.84	0.38	42.96	0.45	42.03	0.54	50.68	0.59	49.40
p115	0.60	35.07	0.58	35.10	0.51	15.01	0.37	38.50	0.38	45.10	0.39	41.82	0.43	42.95	0.45	50.01	0.39	41.06	0.47	42.03	0.61	60.07	0.66	55.40
p116	0.67	40.80	0.64	54.80	0.56	20.03	0.44	39.01	0.42	44.69	0.41	42.51	0.44	44.51	0.48	49.50	0.48	44.30	0.52	49.51	0.67	62.75	0.74	62.62
p117	0.70	40.09	0.68	55.80	0.59	25.83	0.57	40.13	0.52	46.05	0.47	42.01	0.51	43.06	0.57	50.03	0.53	52.46	0.56	56.80	0.70	64.57	0.77	63.13
p118	0.79	45.35	0.76	66.66	0.66	23.80	0.53	42.30	0.53	48.10	0.53	44.00	0.58	42.79	0.56	51.00	0.50	53.00	0.56	51.70	0.78	70.13	0.86	65.23
p119	0.77	35.00	0.73	45.17	0.64	17.89	0.49	40.03	0.45	48.00	0.45	45.13	0.50	44.56	0.50	48.50	0.46	50.88	0.53	50.06	0.76	60.00	0.82	58.35
p120	0.63	31.81	0.60	34.00	0.52	20.00	0.38	40.00	0.36	45.60	0.36	42.00	0.45	40.01	0.45	44.70	0.38	45.00	0.43	50.05	0.63	51.07	0.68	56.69
p121	0.53	35.00	0.51	40.38	0.44	4.00	0.32	38.00	0.32	49.26	0.31	43.00	0.36	47.01	0.37	50.70	0.33	50.25	0.37	50.10	0.51	56.80	0.56	52.41
p122	0.37	28.01	0.36	15.20	0.33	19.01	0.26	37.18	0.26	48.35	0.26	43.70	0.30	43.41	0.30	49.10	0.27	49.30	0.30	53.68	0.36	47.55	0.39	45.70
p123	0.27	14.15	0.27	6.50	0.23	2.01	0.20	35.93	0.20	45.74	0.20	42.22	0.27	38.87	0.27	40.64	0.21	40.24	0.23	49.01	0.26	40.20	0.29	44.01
p124	0.24	16.16	0.23	5.00	0.21	1.00	0.19	30.84	0.19	40.40	0.20	39.50	0.26	38.87	0.26	41.43	0.20	37.04	0.22	45.69	0.23	40.00	0.25	43.00
p125	0.21	10.00	0.20	0.00	0.18	0.10	0.18	29.93	0.19	40.17	0.19	39.01	0.25	35.37	0.24	40.36	0.20	36.62	0.22	42.10	0.20	38.00	0.22	43.00
p126	0.21	5.00	0.21	0.00	0.18	0.00	0.19	30.54	0.20	40.11	0.20	37.71	0.25	34.07	0.24	37.95	0.21	36.53	0.23	37.31	0.21	37.98	0.22	42.16
p127	0.21	12.13	0.20	0.00	0.18	2.01	0.22	33.50	0.21	39.49	0.21	36.47	0.26	34.77	0.25	37.67	0.23	38.36	0.26	38.08	0.20	37.94	0.22	42.35

Hour	25th of Jan.		22nd of Feb.		22nd of Mar.		19th of Apr.		24th of May		21st of Jun.		19th of Jul.		23rd of Aug.		20th of Sep.		25th of Oct.		22nd of Nov.		13th of Dec.	
	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€
p128	0.23	15.00	0.22	0.00	0.19	4.89	0.25	36.01	0.24	40.11	0.25	37.50	0.29	34.07	0.27	36.96	0.24	40.96	0.28	37.31	0.22	37.39	0.24	45.61
p129	0.28	15.00	0.27	0.00	0.23	0.00	0.31	35.00	0.29	39.79	0.30	39.98	0.33	36.32	0.32	37.67	0.30	38.00	0.34	38.00	0.27	36.99	0.30	45.70
p130	0.34	15.00	0.34	0.00	0.28	0.00	0.35	38.54	0.34	43.48	0.35	41.91	0.39	43.82	0.36	41.00	0.35	42.32	0.40	40.91	0.34	40.10	0.37	48.69
p131	0.42	20.00	0.41	0.00	0.35	0.00	0.36	39.50	0.35	47.25	0.37	41.56	0.41	45.93	0.38	43.91	0.36	49.30	0.42	45.62	0.42	45.55	0.46	49.39
p132	0.45	20.00	0.45	5.00	0.39	0.00	0.39	39.20	0.37	47.76	0.39	41.74	0.43	45.03	0.40	42.85	0.38	42.96	0.44	42.30	0.47	49.00	0.52	50.26
p133	0.46	20.00	0.48	5.00	0.41	0.00	0.43	39.50	0.43	49.00	0.42	41.91	0.45	45.93	0.43	42.85	0.42	47.23	0.48	42.12	0.49	49.68	0.54	50.11
p134	0.53	20.00	0.56	1.98	0.46	0.00	0.45	39.20	0.45	47.24	0.45	41.74	0.47	46.35	0.46	42.31	0.43	48.02	0.50	40.91	0.57	50.41	0.62	50.90
p135	0.58	20.00	0.60	1.00	0.50	0.00	0.42	36.50	0.44	44.69	0.45	39.64	0.49	43.51	0.48	40.40	0.42	42.30	0.50	37.31	0.62	50.81	0.68	51.54
p136	0.56	15.00	0.58	0.00	0.47	0.00	0.40	36.05	0.41	43.48	0.42	39.65	0.48	45.93	0.47	42.85	0.40	41.96	0.49	35.61	0.60	48.34	0.65	48.33
p137	0.52	15.00	0.54	0.00	0.45	0.00	0.37	35.38	0.40	42.10	0.41	40.51	0.47	45.48	0.45	44.32	0.39	40.00	0.47	22.07	0.57	46.30	0.62	46.29
p138	0.55	20.00	0.56	0.00	0.46	0.50	0.36	35.62	0.36	42.48	0.37	41.22	0.41	44.97	0.39	46.85	0.36	41.97	0.44	34.30	0.59	49.55	0.63	48.00
p139	0.64	35.35	0.64	7.00	0.53	30.00	0.37	36.01	0.37	40.26	0.38	41.43	0.41	42.32	0.39	42.85	0.38	42.30	0.47	34.42	0.66	59.27	0.71	57.93
p140	0.72	51.90	0.69	12.40	0.54	32.18	0.47	37.45	0.46	41.89	0.46	41.74	0.43	42.31	0.42	44.32	0.53	49.30	0.56	37.00	0.72	60.03	0.78	62.00
p141	0.74	53.90	0.70	14.60	0.58	39.95	0.61	39.00	0.56	41.89	0.53	41.98	0.49	42.32	0.49	48.50	0.59	56.51	0.63	41.02	0.73	61.78	0.79	62.13
p142	0.76	53.10	0.71	11.30	0.62	52.30	0.55	46.48	0.56	49.02	0.59	41.74	0.56	42.99	0.48	51.00	0.52	59.02	0.60	41.03	0.75	59.57	0.81	62.00
p143	0.74	37.67	0.69	1.00	0.61	34.00	0.47	39.50	0.47	47.76	0.48	44.87	0.48	45.26	0.43	46.12	0.46	50.25	0.54	37.27	0.73	61.00	0.78	58.35
p144	0.64	32.05	0.59	0.00	0.52	32.81	0.42	36.50	0.41	42.15	0.41	40.51	0.43	43.57	0.40	42.85	0.41	46.30	0.49	36.97	0.63	58.08	0.67	56.50
p145	0.54	34.00	0.51	0.00	0.46	34.88	0.32	36.61	0.32	47.48	0.32	39.39	0.35	48.35	0.33	45.35	0.32	50.10	0.38	42.12	0.53	66.18	0.57	55.45
p146	0.45	25.40	0.41	0.00	0.38	26.78	0.25	33.62	0.25	44.82	0.25	34.08	0.29	43.72	0.27	40.09	0.26	39.96	0.29	10.07	0.43	53.06	0.46	50.00
p147	0.33	21.25	0.31	0.00	0.22	16.53	0.24	30.70	0.24	43.38	0.24	37.48	0.27	40.99	0.25	37.67	0.24	36.22	0.29	5.00	0.32	46.82	0.35	44.87
p148	0.26	18.07	0.24	0.00	0.19	14.01	0.24	30.70	0.24	43.13	0.24	38.99	0.23	41.34	0.22	37.26	0.24	35.31	0.28	4.90	0.24	41.77	0.27	42.50
p149	0.23	13.13	0.21	0.00	0.20	14.89	0.24	30.90	0.24	43.10	0.23	38.10	0.24	38.00	0.22	30.75	0.23	34.85	0.27	4.90	0.22	39.00	0.24	41.23
p150	0.23	13.13	0.22	0.00	0.20	14.89	0.21	30.70	0.20	42.80	0.20	38.10	0.24	38.46	0.23	31.49	0.21	34.85	0.27	0.00	0.22	38.49	0.25	41.13
p151	0.24	13.14	0.23	0.00	0.23	14.89	0.20	30.50	0.19	39.14	0.19	35.10	0.23	35.90	0.22	32.00	0.20	33.48	0.23	0.00	0.22	38.48	0.25	41.23
p152	0.28	21.25	0.26	0.00	0.25	19.50	0.24	30.00	0.23	38.02	0.22	31.90	0.26	31.95	0.24	31.49	0.22	32.45	0.23	0.00	0.26	38.48	0.29	42.52
p153	0.29	18.07	0.27	0.00	0.33	19.01	0.31	29.35	0.29	37.90	0.28	31.19	0.30	31.82	0.28	31.49	0.28	29.02	0.26	0.00	0.27	36.50	0.31	42.93
p154	0.35	21.25	0.33	0.00	0.44	24.30	0.40	31.20	0.38	40.45	0.36	35.56	0.33	39.27	0.31	37.69	0.37	33.48	0.33	0.00	0.33	37.93	0.38	42.86
p155	0.47	28.07	0.44	0.00	0.47	28.10	0.42	37.99	0.40	43.10	0.39	40.60	0.39	38.40	0.36	40.09	0.40	36.95	0.41	0.00	0.44	40.00	0.51	45.05
p156	0.51	30.00	0.49	0.00	0.49	30.00	0.41	38.02	0.42	41.45	0.40	42.11	0.43	39.60	0.41	44.38	0.40	37.78	0.43	0.00	0.49	43.39	0.57	48.14
p157	0.56	31.01	0.55	0.00	0.49	30.89	0.42	37.50	0.43	40.82	0.42	42.69	0.46	40.12	0.44	46.15	0.41	38.07	0.45	0.00	0.53	46.22	0.63	50.40
p158	0.58	27.27	0.56	0.00	0.50	28.10	0.44	37.86	0.46	41.16	0.45	42.22	0.49	43.01	0.46	49.20	0.43	38.36	0.47	0.00	0.55	45.07	0.63	48.05
p159	0.60	25.40	0.57	0.00	0.46	25.80	0.39	32.40	0.42	40.00	0.41	42.71	0.47	42.10	0.45	47.85	0.38	37.12	0.50	0.00	0.56	42.10	0.64	45.92
p160	0.57	24.00	0.55	0.00	0.43	22.63	0.35	30.16	0.38	39.07	0.37	41.02	0.44	39.27	0.42	49.01	0.35	32.45	0.47	0.00	0.55	41.54	0.61	42.00
p161	0.54	19.89	0.51	0.00	0.41	22.01	0.34	28.75	0.37	38.20	0.36	38.10	0.42	38.80	0.40	47.85	0.34	30.51	0.42	0.00	0.53	40.00	0.58	41.23

Hour	25th of Jan.		22nd of Feb.		22nd of Mar.		19th of Apr.		24th of May		21st of Jun.		19th of Jul.		23rd of Aug.		20th of Sep.		25th of Oct.		22nd of Nov.		13th of Dec.	
	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€	KW	€
p162	0.52	22.13	0.50	0.00	0.46	21.09	0.33	28.00	0.37	38.20	0.36	37.00	0.42	37.55	0.41	47.30	0.34	34.07	0.42	0.00	0.53	42.80	0.56	41.22
p163	0.57	31.01	0.55	12.00	0.52	22.63	0.36	30.00	0.39	37.90	0.37	38.10	0.44	38.57	0.43	49.10	0.37	38.36	0.43	0.00	0.59	54.66	0.61	43.84
p164	0.65	37.27	0.60	20.00	0.60	26.13	0.49	34.00	0.51	38.73	0.48	39.50	0.46	40.50	0.46	49.90	0.55	40.96	0.43	10.00	0.64	54.69	0.67	52.48
p165	0.73	51.90	0.68	28.57	0.67	33.35	0.64	39.00	0.63	42.15	0.60	38.10	0.53	42.47	0.54	49.91	0.61	56.51	0.51	17.07	0.72	58.95	0.76	54.65
p166	0.78	60.03	0.73	35.00	0.59	48.13	0.59	52.50	0.64	50.01	0.64	43.32	0.65	45.30	0.57	53.50	0.56	66.56	0.60	30.03	0.77	71.23	0.82	60.00
p167	0.76	42.51	0.71	28.00	0.49	35.00	0.46	44.01	0.48	51.68	0.46	51.25	0.51	50.30	0.47	53.87	0.46	58.02	0.64	43.60	0.75	71.51	0.79	58.00
p168	0.60	35.00	0.58	15.68	0.37	20.89	0.36	37.99	0.34	44.48	0.35	42.22	0.47	45.30	0.43	52.26	0.34	53.01	0.56	40.69	0.60	68.56	0.63	53.28
Sum	77,41 KWh		75,27 KWh		64,83 KWh		60,04 KWh		58,61 KWh		56,49 KWh		66,81 KWh		63,82 KWh		60,01 KWh		66,77 KWh		73,85 KWh		80,7 KWh	

Table 48: Old method cost components

Quarter	Q_1	Q_2	Q_3	Q_4
CEMD (euros)	42.16	41.51	42.16	51.06
PR (%)	3.58	6.58	1.53	1.53

ANNEX 3
Monte Carlo analysis

In this section are shown the devices and services of each of the 100 consumers. 1 signifies that the specific consumer has this device or service and 0 that he/she doesn't. This list is the result of the monte carlo analysis, referenced in section 4.2.5.

Consumer	Washing machine	Dishwasher	Tumble Dryer	Air conditioning	Oven	Vacuum cleaner	Boiler	Heating	Cooker	Lighting	Fridge	Standby	Freezer	TV	Computer	Toaster
PROB.	0.929	0.531	0.283	0.488	0.771	1	0.215	0.417	0.63	1	1	1	0.232	1	0.93	1
TOTAL	93	51	28	53	81	100	31	32	63	100	99	100	29	10	91	100
sc1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	0	1
sc2	1	1	0	1	0	1	0	0	1	1	1	1	0	1	1	1
sc3	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1
sc4	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1
sc5	1	1	0	1	1	1	1	0	0	1	1	1	1	1	1	1
sc6	1	0	0	1	1	1	1	0	0	1	1	1	1	1	1	1
sc7	1	0	0	0	0	1	0	0	1	1	1	1	0	1	1	1
sc8	1	0	0	1	0	1	0	0	1	1	1	1	0	1	1	1
sc9	1	0	0	0	1	1	1	0	1	1	1	1	0	1	1	1
sc10	0	0	0	0	1	1	0	0	0	1	1	1	0	1	1	1
sc11	1	1	0	1	0	1	1	0	1	1	1	1	0	1	1	1
sc12	1	1	0	1	1	1	0	1	0	1	1	1	1	1	0	1
sc13	1	1	1	0	1	1	0	0	1	1	1	1	0	1	1	1
sc14	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1
sc15	1	0	1	0	1	1	0	0	1	1	1	1	0	1	1	1
sc16	1	1	0	0	1	1	0	0	1	1	1	1	0	1	1	1
sc17	1	1	1	0	1	1	1	0	0	1	1	1	0	1	1	1
sc18	1	0	0	0	0	1	1	0	1	1	1	1	0	1	1	1
sc19	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1
sc20	1	1	0	1	1	1	0	0	0	1	1	1	0	1	1	1
sc21	1	1	0	0	0	1	0	1	1	1	1	1	0	1	1	1
sc22	1	1	0	0	1	1	0	0	0	1	1	1	0	1	1	1
sc23	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1
sc24	1	1	0	0	1	1	0	0	1	1	1	1	1	1	1	1
sc25	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1

Consum er	Washing machine	Dishwash er	Tumble Dryer	Air conditioning	Oven	Vacuum cleaner	Boiler	Heating	Cooke r	Lightin g	Fridg e	Standb y	Freez er	T V	Comput er	Toast er
sc26	1	0	0	1	0	1	0	0	1	1	1	1	0	1	1	1
sc27	1	0	0	1	1	1	0	1	1	1	1	1	0	1	1	1
sc28	1	0	0	0	0	1	0	0	1	1	1	1	0	1	0	1
sc29	1	0	0	0	1	1	1	1	1	1	1	1	0	1	1	1
sc30	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1
sc31	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1
sc32	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1
sc33	1	0	0	1	1	1	0	0	1	1	1	1	0	1	1	1
sc34	1	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1
sc35	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1
sc36	1	0	0	1	1	1	0	0	1	1	1	1	0	1	1	1
sc37	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1
sc38	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
sc39	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1
sc40	1	0	0	0	0	1	1	0	0	1	1	1	1	1	1	1
sc41	1	1	0	0	1	1	0	0	1	1	1	1	0	1	0	1
sc42	1	1	1	0	1	1	0	0	1	1	1	1	0	1	1	1
sc43	1	1	0	0	1	1	0	0	0	1	1	1	0	1	1	1
sc44	1	0	1	0	1	1	0	1	1	1	1	1	0	1	1	1
sc45	1	0	1	0	1	1	0	1	0	1	1	1	0	1	1	1
sc46	1	0	0	1	1	1	0	1	1	1	1	1	0	1	1	1
sc47	1	0	0	0	1	1	0	0	0	1	1	1	0	1	0	1
sc48	1	1	0	1	0	1	0	1	0	1	1	1	0	1	1	1
sc49	1	1	0	0	1	1	0	0	0	1	1	1	1	1	1	1
sc50	1	1	1	0	0	1	0	0	0	1	1	1	0	1	1	1
sc51	1	1	0	0	0	1	0	0	1	1	1	1	0	1	1	1
sc52	1	0	0	1	1	1	1	0	0	1	1	1	1	1	1	1
sc53	0	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1
sc54	1	1	0	0	1	1	1	0	1	1	1	1	0	1	1	1
sc55	1	1	0	1	1	1	1	0	0	1	1	1	0	1	1	1
sc56	1	1	0	0	0	1	0	1	1	1	1	1	0	1	1	1
sc57	1	0	0	0	1	1	0	0	0	1	1	1	0	1	1	1
sc58	1	0	0	1	1	1	0	0	1	1	1	1	0	1	1	1
sc59	1	1	0	1	1	1	0	1	0	1	1	1	0	1	1	1
sc60	1	0	0	0	0	1	0	1	0	1	1	1	0	1	1	1

Consumer	Washing machine	Dishwasher	Tumble Dryer	Air conditioning	Oven	Vacuum cleaner	Boiler	Heating	Cooker	Lighting	Fridge	Standby	Freezer	TV	Computer	Toaster
sc61	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1
sc62	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1
sc63	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1
sc64	1	0	1	1	1	1	0	1	1	1	1	1	0	1	1	1
sc65	1	0	0	0	0	1	0	1	0	1	1	1	1	1	1	1
sc66	1	0	1	0	1	1	0	1	0	1	1	1	0	1	1	1
sc67	1	1	0	1	1	1	0	0	1	1	1	1	1	1	1	1
sc68	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1
sc69	1	1	0	1	1	1	0	0	1	1	1	1	0	1	1	1
sc70	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1
sc71	1	1	0	0	1	1	0	1	1	1	1	1	0	1	1	1
sc72	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1
sc73	1	1	0	0	0	1	0	0	0	1	1	1	0	1	1	1
sc74	1	0	0	1	1	1	0	0	0	1	1	1	0	1	1	1
sc75	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1
sc76	1	1	0	0	0	1	0	0	1	1	1	1	0	1	1	1
sc77	1	0	0	1	1	1	0	0	1	1	1	1	0	1	1	1
sc78	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1
sc79	0	0	0	0	1	1	0	1	1	1	1	1	0	1	1	1
sc80	1	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1
sc81	1	0	1	1	1	1	0	0	1	1	1	1	0	1	1	1
sc82	1	0	0	1	1	1	0	0	0	1	1	1	0	1	1	1
sc83	1	1	0	0	1	1	0	0	1	1	1	1	0	1	1	1
sc84	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1	1
sc85	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1
sc86	1	0	1	0	1	1	0	0	1	1	1	1	1	1	1	1
sc87	1	1	0	0	1	1	1	0	1	1	1	1	0	1	1	1
sc88	0	1	1	1	0	1	1	0	0	1	1	1	0	1	1	1
sc89	1	0	0	0	1	1	1	0	0	1	1	1	0	1	1	1
sc90	1	1	0	1	1	1	0	0	1	1	1	1	0	1	1	1
sc91	1	0	0	0	1	1	0	0	0	1	1	1	1	1	0	1
sc92	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1
sc93	0	1	0	0	1	1	0	1	1	1	1	1	0	1	1	1
sc94	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1
sc95	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	1

Consumer	Washing machine	Dishwasher	Tumble Dryer	Air conditioning	Oven	Vacuum cleaner	Boiler	Heating	Cooker	Lighting	Fridge	Standby	Freezer	TV	Computer	Toaster
sc96	1	1	0	1	1	1	0	0	1	1	1	1	1	1	1	1
sc97	1	0	1	0	1	1	1	0	1	1	1	1	0	1	1	1
sc98	1	0	0	1	1	1	0	0	1	1	1	1	1	1	0	1
sc99	1	0	0	0	1	1	1	0	1	1	1	1	0	1	1	1
sc100	1	0	0	0	1	1	0	0	1	1	1	1	0	1	1	1

ANNEX 4
Fuse limit

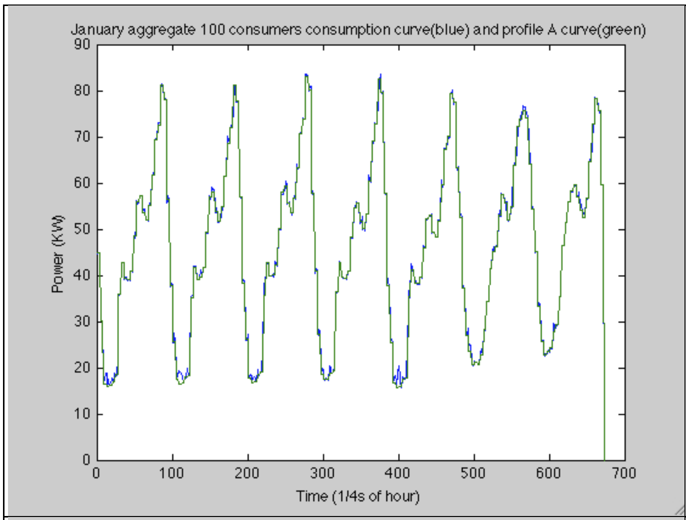
In this section is shown the maximum hourly consumption values found of each consumer for each of the 12 weeks of the yearly months and also the maximum value between these months used as the fuse limit in the demand response optimization model, references in section 5.1.1.

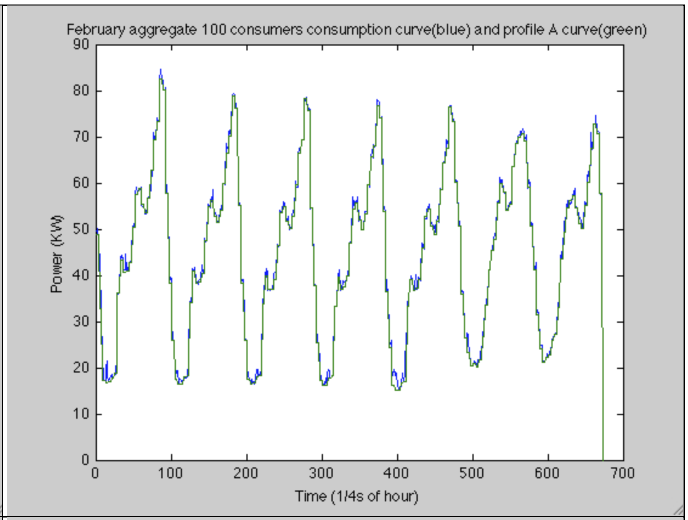
In MW	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max
sc1	3,75	2,73	2,33	2,95	3,07	3,06	3,84	4,77	3,07	3,07	3,1	4,16	**4,77**
sc2	2,2	2,27	2,2	2,55	2,27	2,97	3,78	4,06	2,27	2,27	2,08	2,2	**4,06**
sc3	3,07	3,11	2,52	3,52	2,33	3,06	2,42	2,79	2,27	3,07	2,19	2,33	**3,52**
sc4	3,48	3,48	2,21	3,45	2,77	3,45	2,26	3,57	2,36	2,49	2,21	3,48	**3,57**
sc5	3,03	3,07	2,27	2,95	3,44	2,21	4,03	2,7	2,45	4,12	3,44	3,44	**4,12**
sc6	2,27	2,15	3,45	2,33	2,51	2,33	2,98	2,95	2,77	3,63	3,07	3,07	**3,63**
sc7	2,15	2,15	2,34	2,62	2,2	2,27	2,67	2,55	2,62	2,27	2,27	2,08	**2,67**
sc8	2,08	2,74	2,55	2,08	2,27	2,08	2,69	3,78	2,08	2,08	2,67	2,15	**3,78**
sc9	2,27	2,08	2,2	2,33	2,32	2,08	2,15	3	2,32	2,32	2,08	2,29	**3**
sc10	1,4	1,4	1,52	2,27	1,4	1,4	1,59	1,4	1,59	1,4	1,4	2,26	**2,27**
sc11	2,39	2,29	2,34	2,39	2,27	2,39	2,55	4,06	3,38	2,27	3,38	2,33	**4,06**
sc12	3,14	5,12	2,95	4,12	3,06	3,03	2,33	2,45	3,07	4,12	3,15	3,33	**5,12**
sc13	2,73	2,39	2,55	3	3	2,97	2,08	2,34	2,27	3	2,12	4,09	**4,09**
sc14	3,18	3,08	2,27	2,27	2,27	2,27	3,78	3,85	4,06	2,27	3,08	3,46	**4,06**
sc15	2,59	2,71	2,08	2,27	2,08	2,15	2,67	2,08	2,89	2,2	2,2	2,96	**2,96**
sc16	2,82	2,39	2,55	2,63	2,3	2,88	2,39	2,55	2,88	3	3,12	2,61	**3,12**
sc17	4,06	3,38	2,32	2,34	2,2	4,24	2,63	2,37	3,45	3,38	2,71	3,6	**4,24**
sc18	2,27	2,08	2,46	3,85	2,46	2,2	2,89	2,08	2,27	2,08	2,2	2,74	**3,85**
sc19	2,62	2,56	2,25	2,56	3,43	3,31	2,93	2,93	2,48	2,33	2,48	3,34	**3,43**
sc20	3,19	4,06	2,27	2,33	2,97	2,27	4,06	4,12	4,12	2,08	2,39	2,75	**4,12**
sc21	3,16	2,15	3,2	2,55	2,67	2,89	2,89	2,73	2,55	2,2	2,55	3,88	**3,88**
sc22	2,39	4,06	2,27	2,89	2,63	2,27	3	4,06	4,06	2,33	4,06	2,63	**4,06**
sc23	2,77	1,72	2,09	2,27	2,39	1,65	2,05	3,57	2,39	1,72	1,72	3,46	**3,57**
sc24	2,33	2,15	2,4	2,8	4,12	4,12	2,7	3,06	2,7	2,61	2,68	2,8	**4,12**
sc25	3,14	3,14	2,4	2,46	3,63	3,19	2,44	2,45	3,25	2,33	4,12	3,14	**4,12**
sc26	2,08	2,55	2,15	2,27	2,08	2,15	2,27	2,69	2,2	2,08	2,2	2,55	**2,69**
sc27	2,55	2,08	2,08	2,39	2,08	2,08	2,39	3,62	2,27	2,2	2,08	2,46	**3,62**
sc28	2,08	2,08	2,2	2,21	2,55	2,08	2,2	2,27	2,89	2,08	2,08	2,27	**2,89**
sc29	2,47	2,39	2,55	2,2	3,38	2,55	3	2,08	2,29	2,4	2,08	3,27	**3,38**
sc30	3,53	4,06	3,38	3,16	2,7	2,55	3,5	2,67	3,38	3,38	2,27	3,17	**4,06**
sc31	2,45	2,63	3,08	5,69	3,5	3,38	2,27	2,97	3,57	3,38	3,16	2,57	**5,69**
sc32	2,27	3,1	2,33	2,33	2,89	2,4	3,57	2,7	3,07	3,25	2,27	3,07	**3,57**
sc33	2,55	2,63	2,34	3	2,34	2,39	2,89	2,63	2,55	2,27	2,15	2,63	**3**
sc34	3	2,33	3,38	2,46	2,55	3,57	3,5	3,83	2,36	2,44	2,59	2,2	**3,83**
sc35	2,27	3,38	2,55	4,73	4,53	3	3,76	3,45	3,5	2,73	3,57	2,97	**4,73**
sc36	2,08	2,08	2,95	2,55	2,27	2,63	2,69	2,84	2,62	2,27	2,62	2,27	**2,95**
sc37	2,15	2,45	3,63	3,19	2,68	2,68	3,69	4,49	2,77	2,53	2,62	2,21	**4,49**
sc38	4,28	4,16	3,63	3,68	3,25	3,45	4,56	5,23	3,63	2,94	3,75	3,26	**5,23**
sc39	4,46	3,38	3,98	2,67	3,97	2,63	2,97	2,92	3,5	3,45	4,91	3,38	**4,91**
sc40	3,63	2,53	2,73	3,45	2,52	2,27	2,52	2,27	2,4	3,57	2,95	3,57	**3,63**
sc41	2,75	2,67	2,55	2,63	4,53	2,39	4,24	4,06	3	4,65	4,06	2,65	**4,65**
sc42	3,1	4,09	4,12	4,12	3,07	3,49	2,88	2,73	2,81	2,41	2,67	2,73	**4,12**
sc43	3	3,38	2,63	2,75	2,97	2,75	2,88	4,06	2,63	3	2,48	4,06	**4,06**
sc44	3,27	3,12	3,15	2,27	2,82	2,95	2,27	2,15	2,27	3,08	3,12	3,08	**3,27**
sc45	3,04	3,04	3,31	2,34	2,27	2,39	3	2,08	3,45	2,89	3,15	3,08	**3,45**
sc46	2,28	2,93	3,2	2,27	3,19	2,74	2,27	2,27	3,57	2,46	2,34	3,2	**3,57**
sc47	2,39	2,94	3	3	3	2,89	2,27	2,27	2,82	3	3	2,39	**3**

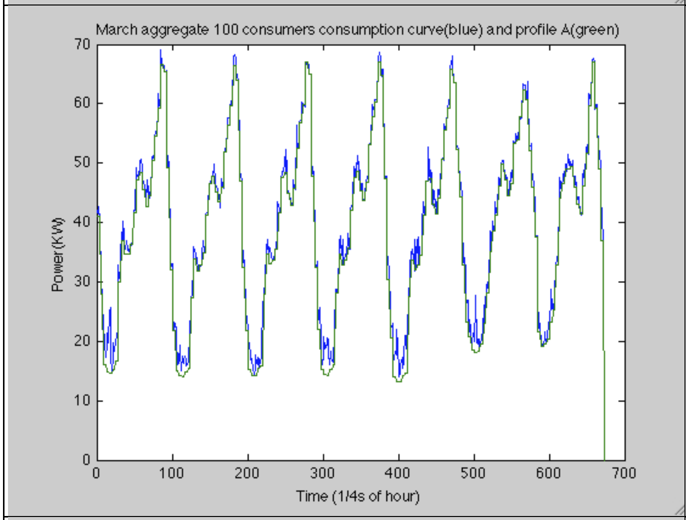
In MW	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max
sc48	2,39	2,27	4,06	2,46	2,39	2,2	2,88	3,85	2,46	2,27	2,27	3,08	**4,06**
sc49	2,33	2,45	4,12	2,4	3,07	2,56	4,12	3,03	3,07	4,12	2,45	2,33	**4,12**
sc50	2,45	4,06	2,97	2,45	2,27	2,39	4,06	2,27	4,12	2,39	2,97	4,09	**4,12**
sc51	4,06	2,95	2,61	2,55	2,73	2,27	4,06	2,97	2,34	2,88	2,34	2,95	**4,06**
sc52	3,45	2,4	2,45	2,46	2,46	2,45	2,79	3,26	2,46	2,42	2,52	3,63	**3,63**
sc53	2,27	2,95	2,67	2,27	2,63	2,33	3,78	2,55	2,67	2,55	2,88	2,33	**3,78**
sc54	3,07	2,73	3,16	3,45	2,55	2,63	4,06	2,55	5,36	3,04	3,07	2,37	**5,36**
sc55	2,27	2,33	3,49	3,38	2,39	2,39	3,78	3,78	4,06	2,77	3,38	3,1	**4,06**
sc56	3,15	3,08	3,27	2,89	2,86	2,55	2,55	2,15	2,88	5,43	3,15	4,06	**5,43**
sc57	2,89	2,2	3,45	3	3,07	2,46	3	2,2	2,2	2,34	3,07	2,34	**3,45**
sc58	2,15	2,62	2,27	2,27	2,55	2,27	3,5	4,25	2,39	3	2,2	2,74	**4,25**
sc59	2,08	2,97	2,63	2,39	4,06	2,3	2,88	2,27	2,33	3,08	4,06	3	**4,06**
sc60	2,34	2,34	3,08	2,39	2,27	2,46	2,27	2,2	2,46	2,39	2,15	3,08	**3,08**
sc61	4,12	2,33	2,69	3,06	2,61	2,7	3,85	2,68	2,62	3,07	2,7	3,15	**4,12**
sc62	2,47	3,38	2,67	3,07	2,34	3,19	3,5	2,27	2,46	2,52	2,96	2,4	**3,5**
sc63	3,39	3,16	2,67	2,63	2,97	2,73	2,72	3	2,27	3,45	3,04	3,04	**3,45**
sc64	3,12	3,12	2,34	3,57	2,74	2,89	2,69	3,5	2,89	2,39	3,12	2,4	**3,57**
sc65	2,33	3,02	3,21	2,52	2,4	2,33	3,45	2,45	2,52	2,33	2,45	2,33	**3,45**
sc66	3,27	3,27	2,27	2,34	2,39	2,2	3,38	3,38	3	2,27	2,59	3,04	**3,38**
sc67	2,88	2,68	3,25	3,54	4,12	2,4	2,34	3,69	4,31	3,25	4,19	2,7	**4,31**
sc68	3,39	3,63	4,18	2,75	2,85	3,38	4,06	2,63	3,73	3,15	3,5	3,38	**4,18**
sc69	3,07	3,29	4,06	2,27	4,06	2,55	2,34	3,97	2,61	3,69	4,37	2,67	**4,37**
sc70	3,01	3,04	3,38	3,5	3,38	2,68	3,5	2,27	2,27	3,07	3,54	3,89	**3,89**
sc71	3,38	3,2	2,86	2,73	2,27	2,55	4,06	2,38	2,67	2,67	3,04	2,39	**4,06**
sc72	3,57	2,78	2,62	2,39	2,34	2,39	2,91	3,62	3	3,2	2,87	2,59	**3,62**
sc73	2,56	2,39	2,46	3,5	2,27	4,06	4,12	3,48	2,97	2,27	2,88	2,56	**4,12**
sc74	2,39	2,46	3,38	2,49	2,63	3,07	2,27	2,13	2,27	2,39	2,46	2,27	**3,38**
sc75	2,4	2,4	2,77	3,03	2,7	2,33	4,49	4,12	6,1	2,27	3,14	4,16	**6,1**
sc76	2,97	2,45	3,04	2,95	2,55	2,34	2,55	2,27	2,55	3,38	2,77	4,12	**4,12**
sc77	2,27	3	2,15	2,62	2,27	2,55	2,63	2,34	2,63	2,55	2,63	3	**3**
sc78	2,65	3,3	3,14	2,7	2,44	2,95	2,4	3,07	3,21	4,12	2,8	3,15	**4,12**
sc79	1,69	2,51	1,72	1,94	2,21	1,59	1,4	1,47	1,59	2,03	1,76	1,87	**2,51**
sc80	2,65	3,15	2,45	2,4	2,89	4,75	3,07	2,21	2,33	3,05	2,58	2,77	**4,75**
sc81	2,92	3,23	2,89	2,34	2,46	2,08	2,27	2,35	2,46	2,74	2,34	2,37	**3,23**
sc82	3	2,39	3,19	3,07	2,46	2,2	3,5	3,5	3	2,34	3	3	**3,5**
sc83	2,39	2,61	3,38	4,06	3	2,63	3,04	2,61	2,55	2,8	3,04	2,97	**4,06**
sc84	2,21	2,8	2,68	2,33	2,95	3,14	3,07	3,85	2,27	2,7	3,07	3,26	**3,85**
sc85	3,03	3,69	3	4,24	2,55	2,33	3,83	2,88	3,26	3,47	4,06	4,09	**4,24**
sc86	2,21	2,37	2,33	2,62	2,4	3,14	2,52	2,62	2,68	2,8	2,84	2,7	**3,14**
sc87	4,06	3,45	3,28	3,38	2,39	2,7	2,55	3,04	4,49	2,55	4,36	4,06	**4,49**
sc88	2,45	2,42	2,27	3,5	2,33	2,33	3,85	3,5	3,38	2,77	3,38	3,42	**3,85**
sc89	3,38	2,36	2,39	3,5	3	3,13	2,7	2,34	2,41	2,27	3,38	3,38	**3,5**
sc90	4,06	3	3,28	2,89	4,12	4,06	3,57	4	2,67	2,97	3	4,06	**4,12**
sc91	2,15	2,33	2,27	3,07	2,7	3,07	2,33	2,45	2,7	2,95	2,33	2,33	**3,07**
sc92	2,95	2,8	3,56	2,61	4,03	2,7	4,03	3,97	3,92	3,44	3,51	4,12	**4,12**
sc93	2,55	2,39	2,55	2,27	2,82	2,82	3	2,55	2,39	2,63	3,08	2,73	**3,08**
sc94	2,18	3,1	1,47	1,96	1,65	1,65	3,82	3,57	1,47	1,53	3,1	3,49	**3,82**
sc95	2,95	3,26	3,15	2,95	3,07	4,12	4,12	3,57	4,12	3,14	2,99	2,37	**4,12**
sc96	2,7	3,37	2,52	2,82	3,1	2,82	3,84	3,82	3,06	4,31	2,77	4,12	**4,31**
sc97	2,67	2,92	2,39	2,82	3,57	2,46	3,19	2,89	2,51	2,55	3,79	2,77	**3,79**
sc98	2,27	3,07	2,33	2,33	2,27	2,89	4,15	3,85	2,33	3,37	2,27	2,51	**4,15**
sc99	2,32	3,5	2,6	2,27	2,63	2,2	2,34	2,67	4,24	2,62	2,34	3	**4,24**
sc100	2,15	3,38	2,39	2,34	3,38	2,34	2,63	2,89	3	2,27	2,55	2,34	**3,38**

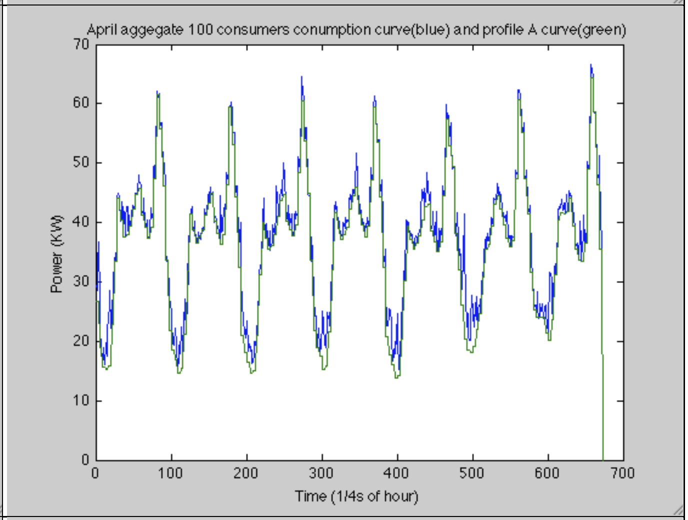
ANNEX 5
Aggregated consumers’ curves

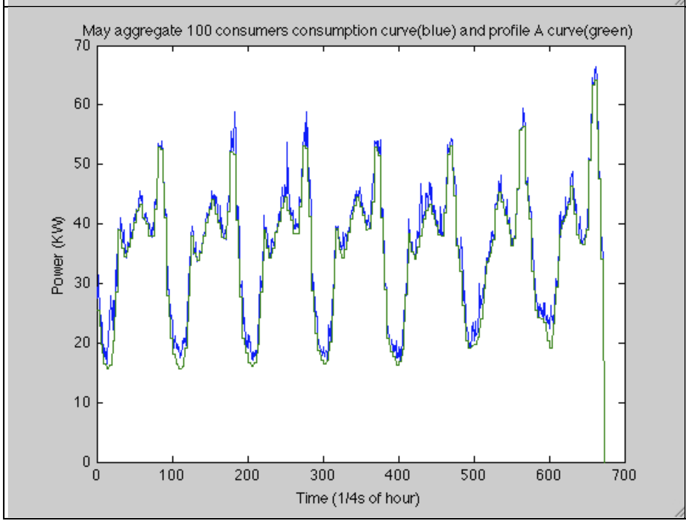
In this section are shown the aggregated consumers’ curves for each month referenced in section 4.3.1.

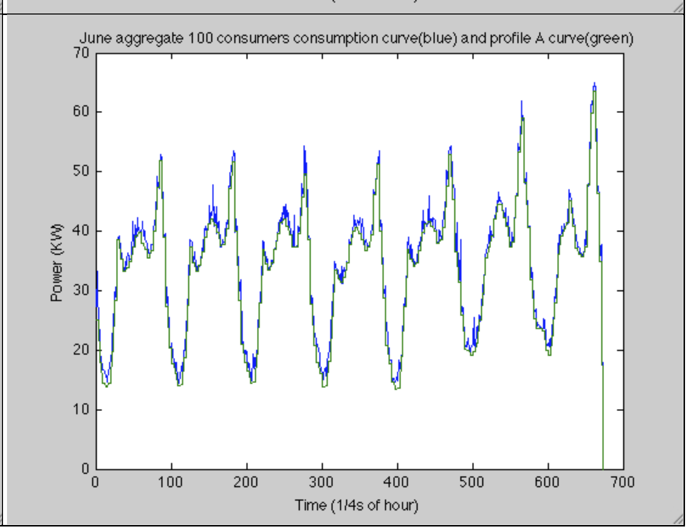


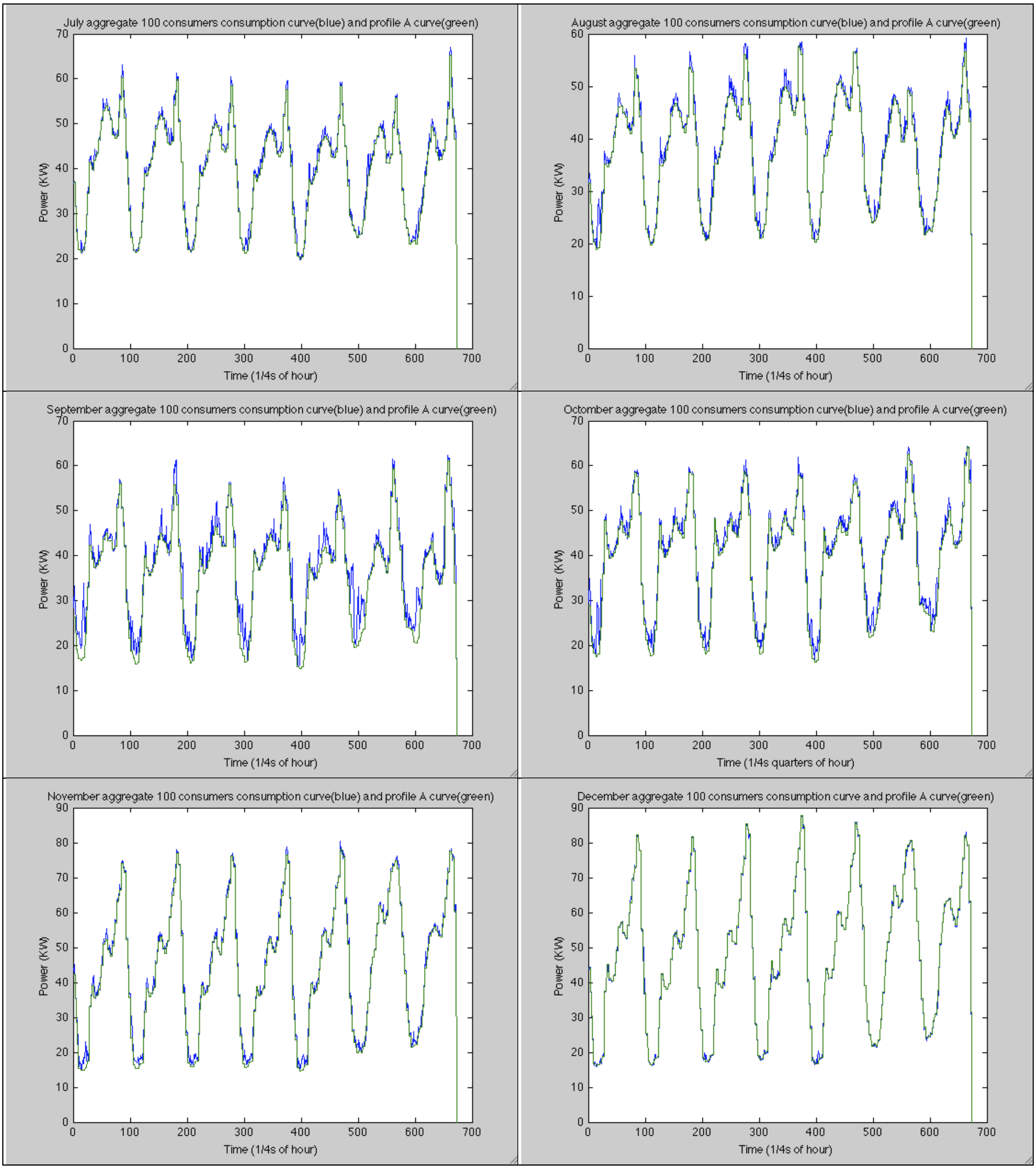











July aggregate 100 consumers consumption curve(blue) and profile A curve(green)
Power (KW)
Time (1/4s of hour)
August aggregate 100 consumers consumption curve(blue) and profile A curve(green)
Power (KW)
Time (1/4s of hour)
September aggregate 100 consumers consumption curve(blue) and profile A curve(green)
Power (KW)
Time (1/4s of hour)
Octomber aggregate 100 consumers consumption curve(blue) and profile A curve(green)
Power (KW)
Time (1/4s quarters of hour)
November aggregate 100 consumers consumption curve(blue) and profile A curve(green)
Power (KW)
Time (1/4s of hour)
December aggregate 100 consumers consumption curve and profile A curve(green)
Power (KW)
Time (1/4s of hour)

ANNEX 6
Results

In this section are shown the results within Table 49, Table 50, Table 51, Table 52, Table 53, Table 54, Table 55, Table 56, Table 57, Table 58, Table 59 and Table 60 of the costs experienced by each of the consumers for each of the 12 weeks. This data was used to calculate with the following formulas the results presented in 4.3.1 and 5.3 sections.

The ratio below was calculated in order to estimate cost savings or the extra losses obtained by consumers that have smart meters with the new method in comparison to the old one.

$$\frac{Cost\ with\ the\ old\ method(1+PR) - Cost\ with\ the\ RTP}{Cost\ with\ the\ old\ method}$$

The ratio below was calculated in order to estimate cost savings or the extra losses obtained by consumers that do not have smart meters with the new method in comparison to the old one.

$$\frac{Cost\ with\ the\ old\ method(1+PR) - Cost\ with\ the\ RTP\ and\ no\ smart\ meter\ (NSM)}{Cost\ with\ the\ old\ method}$$

The ratio below was calculated in order to estimate the maximum losses of the consumers with smart meters when they are careless and they consume the most during the high prices hours.

$$\frac{Cost\ with\ RTP - Cost\ with\ worst\ demand\ response}{Cost\ with\ RTP}$$

The ration below was calculated in order to estimate the cost savings of the consumers that have smart meters when they are optimizing their consumption to reduce costs.

$$\frac{Cost\ with\ the\ RTP - Cost\ with\ best\ demand\ response}{Cost\ with\ the\ RTP}$$

The ratio below was calculated in the scenario case in order to estimate the maximum gains of the consumers with smart meters when they are optimizing their consumption to reduce the cost.

$$\frac{Cost\ with\ RTP - Cost\ with\ scenario\ best\ demand\ response}{Cost\ with\ RTP}$$

The ratio below was calculated in the scenario case in order to estimate the maximum losses of the consumers with smart meters in the scenario case when they are careless and they consume the most during the high prices hours.

$$\frac{Cost\ with\ RTP - Cost\ with\ scenario\ worst\ demand\ response}{Cost\ with\ RTP}$$

Table 49: January Results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	8	1	8	1	8	1	1	1	0.071498147	3.014361887	2.545381744	2.317988493	1.56753546	2.667563713	2.045045938	2.66976324
sc2	8	1	1	1	8	1	8	1	8	1	0.054567958	2.300585095	1.752886048	1.769107352	1.357605889	1.846856188	1.477632503	1.846856188
sc3	8	1	1	1	8	1	1	1	8	1	0.074796604	3.153424813	2.301737953	2.424925309	1.605351457	2.639145726	2.001151966	2.639384487
sc4	8	1	8	1	1	1	8	1	1	1	0.101282936	4.270088584	3.231930085	3.283619078	2.622081304	3.499937949	3.015128726	3.499937949
sc5	8	1	1	1	1	1	8	1	1	1	0.091122135	3.841709193	2.94462338	2.954203256	2.598625955	3.089021482	2.730194991	3.089021482
sc6	8	1	1	1	1	1	1	1	1	1	0.086408467	3.642980964	2.828754806	2.801384927	2.603041196	2.864711819	2.666930536	2.864711819
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.574741421	1.616289023	1.393266498	1.651349121	1.460142587	1.651349121
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.654444179	1.616289023	1.444650844	1.717067681	1.524559699	1.717067681
sc9	8	1	1	1	1	1	1	1	1	1	0.085481134	3.603884614	2.79191461	2.771320557	2.634911577	2.910673384	2.701744421	2.910673384
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.650492738	1.19532073	1.269198363	1.17962973	1.21011473	1.18284073	1.21011473
sc11	8	1	1	1	1	1	1	1	1	1	0.085767958	3.615977095	2.888322034	2.780619451	2.575933618	3.067646143	2.711744467	3.048230082
sc12	8	1	1	1	1	1	1	1	1	1	0.086623678	3.652054267	2.818226343	2.808362129	2.447098952	2.935813789	2.560779884	2.935813789
sc13	8	1	8	1	8	1	8	1	8	1	0.073869271	3.114328463	2.402812449	2.394860939	1.582802375	2.660126991	2.001050693	2.626295073
sc14	8	1	1	1	1	1	8	1	1	1	0.088994802	3.752020843	2.878320048	2.885234575	2.491498422	2.964607734	2.621517939	2.964607734
sc15	8	1	8	1	8	1	1	1	1	1	0.069155603	2.915600234	2.189866069	2.24204261	1.571716716	2.449406739	1.954403792	2.449871071
sc16	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.868913377	1.912626788	1.585988138	2.059910126	1.696316437	2.059910126
sc17	8	1	8	1	8	1	8	1	8	1	0.095207268	4.013938427	3.20192915	3.086644349	2.361791914	3.422549847	2.755066879	3.422549847

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc18	8	1	1	1	1	1	1	1	1	1	0.08105429	3.417248866	2.562325707	2.627801122	2.403079509	2.669038723	2.479844801	2.669038723
sc19	8	1	1	1	8	1	8	1	1	1	0.117710501	4.962674738	3.828227456	3.81620501	3.153412386	4.062711286	3.570983989	4.062711286
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	1.588537894	1.592898099	1.283516604	1.753763794	1.392573473	1.753763794
sc21	8	1	1	1	8	1	8	1	8	1	0.084567958	3.565385095	2.78224995	2.74171514	2.464270846	2.939985467	2.577063043	2.939985467
sc22	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	1.546173798	1.592898099	1.18762468	1.678006105	1.311238699	1.678006105
sc23	8	1	1	1	1	1	1	1	1	1	0.111137645	4.685563124	3.63757095	3.603111308	3.61847395	3.64895895	3.62168495	3.64895895
sc24	8	1	1	1	8	1	8	1	8	1	0.069784137	2.942099229	2.224786056	2.262419846	1.873112685	2.339186737	2.038399331	2.305792666
sc25	8	1	1	1	8	1	8	1	8	1	0.089922135	3.791117193	2.963586938	2.915298945	2.658084658	3.137901255	2.784044836	3.137901255
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.593598488	1.616289023	1.391747945	1.664489781	1.479313799	1.664489781
sc27	8	1	1	1	1	1	1	1	1	1	0.084281134	3.553292614	2.766982808	2.732416246	2.628046719	2.891418653	2.69753073	2.858637359
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.96279394	1.488262811	1.509352207	1.314203019	1.591294162	1.381035863	1.591294162
sc29	8	1	1	1	1	1	1	1	1	1	0.115481134	4.868684614	3.75815173	3.743928345	3.583584803	3.841054025	3.642595863	3.841054025
sc30	8	1	1	1	8	1	1	1	8	1	0.090194802	3.802612843	2.963970604	2.924138887	2.613080246	3.072386722	2.740709154	3.055463302
sc31	8	3	1	1	1	1	1	1	1	1	0.120194802	5.067412843	3.826210502	3.896746674	3.574458746	4.035563777	3.688682662	4.035563777
sc32	8	1	8	1	1	1	8	1	1	1	0.070082936	2.954696584	2.191678926	2.272106979	1.640815388	2.506806467	2.011611493	2.383066046
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.781338351	1.759808458	1.611288962	1.882498437	1.685952316	1.882498437
sc34	8	1	8	1	8	1	8	1	1	1	0.100355603	4.230992234	3.332882767	3.253554709	2.700727915	3.543031856	3.054426735	3.545023767
sc35	8	1	1	1	1	1	1	1	1	1	0.090194802	3.802612843	2.762363816	2.924138887	2.523340401	3.017200797	2.639435991	3.017200797
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.782736697	1.759808458	1.573003836	1.83798805	1.644523628	1.83798805
sc37	8	1	1	1	1	1	1	1	1	1	0.09507047	4.008171	3.09346484	3.082209304	2.896602465	3.165206864	2.97671745	3.165206864
sc38	8	1	8	1	8	1	1	1	1	1	0.145858606	6.149398849	4.375826281	4.728773884	3.885873527	4.825135638	4.211120376	4.687809443
sc39	8	1	1	1	1	1	1	1	1	1	0.120194802	5.067412843	3.709565966	3.896746674	3.385997785	3.859482068	3.501969441	3.859482068
sc40	8	1	1	1	1	1	1	1	1	1	0.081981623	3.456345217	2.622074978	2.657865492	2.434196983	2.696089698	2.50815718	2.664524777
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.348157916	1.778214987	1.805689971	1.472887841	1.945672722	1.578326864	1.945672722
sc42	8	1	8	1	1	1	8	1	1	1	0.073869271	3.114328463	2.498746815	2.394860939	1.693310176	2.7848153	2.121011987	2.7848153
sc43	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	1.612969162	1.592898099	1.293771789	1.758717185	1.396205127	1.758717185
sc44	8	1	1	1	1	1	8	1	1	1	0.099155603	4.180400234	3.186146939	3.214650397	2.615673389	3.490314956	3.055810104	3.490314956
sc45	8	1	8	1	1	1	1	1	1	1	0.089293601	3.764618198	2.930776489	2.894921708	2.334196853	3.088408728	2.737373916	3.048816973
sc46	8	1	1	1	1	1	1	1	1	1	0.084281134	3.553292614	2.665479314	2.732416246	2.52029703	2.798688173	2.635647167	2.736109168
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.733647652	1.376666511	1.333142953	1.150954484	1.427793469	1.217787328	1.427793469
sc48	8	1	1	1	1	1	1	1	1	1	0.074705955	3.14960306	2.478606265	2.421986451	2.180499582	2.664791172	2.309085354	2.664791172
sc49	8	1	1	1	8	1	8	1	8	1	0.059922135	2.526317193	1.915355267	1.942691157	1.574719728	2.059311041	1.68735321	2.059311041
sc50	8	1	1	1	1	1	1	1	8	1	0.059580424	2.51191068	2.080114268	1.931612815	1.161154213	2.281596998	1.604518984	2.279605087
sc51	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	1.779979575	1.769107352	1.424088526	1.89459364	1.548894421	1.89459364
sc52	8	1	1	1	1	1	1	1	1	1	0.086408467	3.642980964	2.808185162	2.801384927	2.632717084	2.893963517	2.70351272	2.893963517
sc53	8	1	1	1	8	1	1	1	8	1	0.068598449	2.892110622	2.324130912	2.223979533	1.620183824	2.485957371	1.867433959	2.483084371
sc54	8	1	1	1	1	1	1	1	1	1	0.090194802	3.802612843	2.901862323	2.924138887	2.623826051	3.093404156	2.741461933	3.076858862
sc55	8	1	1	1	1	1	1	1	1	1	0.080332799	3.386830807	2.601923806	2.604410198	2.33800611	2.822298565	2.463155866	2.776627259

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc56	8	1	1	1	1	1	1	1	1	1	0.084567958	3.565385095	2.73782241	2.74171514	2.416733298	2.894082088	2.528853909	2.894082088
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.483668074	1.440079769	1.276506989	1.548378631	1.343278082	1.548378631
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.827314645	1.759808458	1.608817312	1.875101526	1.690568104	1.875101526
sc59	8	1	1	1	1	1	8	1	1	1	0.079132799	3.336238807	2.630188131	2.565505886	2.340156138	2.817450895	2.462626896	2.817450895
sc60	8	1	1	1	1	1	1	1	1	1	0.069992287	2.950874831	2.304620834	2.269168122	2.110935402	2.368289148	2.183843282	2.357440906
sc61	8	1	1	1	1	1	1	1	1	1	0.099784137	4.206899229	3.12930287	3.235027634	2.827377549	3.314189861	2.958399117	3.264238804
sc62	8	1	1	1	1	1	1	1	1	1	0.115481134	4.868684614	3.713443722	3.743928345	3.547856055	3.823647198	3.611399899	3.823647198
sc63	8	1	1	1	8	1	8	1	8	1	0.073869271	3.114328463	2.410294234	2.394860939	1.59754628	2.719168208	2.055697844	2.67482563
sc64	8	1	8	1	8	1	8	1	1	1	0.099155603	4.180400234	3.245702893	3.214650397	2.672242934	3.554329807	3.080392534	3.585912877
sc65	8	1	1	1	1	1	1	1	1	1	0.080781623	3.405753217	2.532562384	2.61896118	2.378568214	2.635745647	2.4433156	2.635745647
sc66	8	1	1	1	1	1	1	1	1	1	0.089293601	3.764618198	2.765489066	2.894921708	2.316501688	3.028963892	2.670115238	2.952175641
sc67	8	1	1	1	1	1	1	1	1	1	0.069784137	2.942099229	2.271654341	2.262419846	1.969002674	2.423483058	2.074998353	2.387790935
sc68	8	1	1	1	1	1	1	1	1	1	0.120194802	5.067412843	3.648508379	3.896746674	3.368678371	3.828607327	3.490633922	3.775369003
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	1.896248263	1.912626788	1.565837024	2.041051836	1.7057216	2.041051836
sc70	8	1	1	1	8	1	8	1	1	1	0.097057147	4.091929307	3.209920468	3.146617892	2.504565256	3.383127745	2.955665775	3.385119656
sc71	8	1	1	1	8	1	1	1	1	1	0.088994802	3.752020843	2.883375357	2.885234575	2.64108825	3.101317901	2.755754028	3.033275711
sc72	8	1	1	1	1	1	1	1	1	1	0.115481134	4.868684614	3.425300484	3.743928345	3.243876226	3.515318062	3.31853958	3.515318062
sc73	8	1	1	1	8	1	1	1	8	1	0.044705955	1.88480306	1.436518624	1.449378664	1.132375991	1.583272584	1.244956507	1.593872729
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.49927748	1.440079769	1.283647941	1.549238064	1.34431003	1.549238064
sc75	8	1	1	1	8	1	8	1	1	1	0.074796604	3.153424813	2.557568696	2.424925309	1.612474679	2.708339437	2.080358376	2.710538964
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	1.781257908	1.769107352	1.413725838	1.892368027	1.532575303	1.892368027
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.760632309	1.759808458	1.566902824	1.825701097	1.639229305	1.825701097
sc78	8	1	8	1	8	1	8	1	8	1	0.114658606	4.834006849	3.611352617	3.717261785	2.935771967	3.976431839	3.390920673	3.982101863
sc79	8	1	1	1	1	1	1	1	1	1	0.079010312	3.331074773	2.605130987	2.56153484	2.589586237	2.616151737	2.596024487	2.616151737
sc80	8	1	1	1	1	1	1	1	1	1	0.116408467	4.907780964	3.577335866	3.773992714	3.407207883	3.674098006	3.471158973	3.674098006
sc81	8	1	8	1	8	1	8	1	1	1	0.069155603	2.915600234	2.193223071	2.24204261	1.537086421	2.43975896	1.936002848	2.352725178
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.473057826	1.440079769	1.276550675	1.532727389	1.350995467	1.532727389
sc83	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.988571969	1.912626788	1.668439767	2.134100149	1.800410808	2.134100149
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	2.118701734	2.109601517	1.919009904	2.194950546	1.994406497	2.194950546
sc85	8	1	8	1	8	1	8	1	8	1	0.073869271	3.114328463	2.599155215	2.394860939	1.674431801	2.76717155	2.097036286	2.756918324
sc86	8	1	8	1	8	1	1	1	1	1	0.079944939	3.37047862	2.522286723	2.591835668	1.956050986	2.82468116	2.335391426	2.808316992
sc87	8	1	1	1	1	1	8	1	1	1	0.090194802	3.802612843	2.969740919	2.924138887	2.660889172	3.146831291	2.765374943	3.146831291
sc88	8	1	1	1	8	1	8	1	8	1	0.085509602	3.605084839	2.804685192	2.772243508	2.192690101	3.072538413	2.439982937	3.072538413
sc89	8	1	1	1	1	1	1	1	1	1	0.075619131	3.188102578	2.493548671	2.451591868	2.315024918	2.581354317	2.386605404	2.581354317
sc90	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	1.874737646	1.912626788	1.528560281	2.001926748	1.652218433	2.001926748
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.188526038	1.636817	1.682936012	1.464797319	1.737214155	1.544706173	1.737214155
sc92	8	1	1	1	8	1	1	1	8	1	0.100984137	4.257491229	3.352418173	3.273931945	3.064619315	3.530739257	3.205112375	3.530739257
sc93	8	1	1	1	1	1	1	1	1	1	0.08372398	3.529803002	2.762835513	2.714353169	2.568307896	2.800476445	2.617538447	2.800476445

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc94	8	1	1	1	1	1	1	1	1	1	0.064812114	2.732478744	2.106696263	2.101225574	1.560579629	2.266391202	1.753495919	2.266391202
sc95	8	1	8	1	8	1	8	1	1	1	0.097071303	4.092526139	2.990821413	3.147076845	2.518938718	3.483623025	2.848346956	3.350581877
sc96	8	1	1	1	1	1	1	1	1	1	0.069784137	2.942099229	2.165232817	2.262419846	1.893937181	2.360652916	2.015747372	2.360652916
sc97	8	1	8	1	8	1	8	1	8	1	0.100355603	4.230992234	3.272975722	3.253554709	2.778160945	3.629945267	3.118520385	3.517261545
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	2.604308073	1.951834819	2.0026647	1.758849858	2.029141195	1.842076963	2.029141195
sc99	8	1	1	1	1	1	1	1	1	1	0.085481134	3.603884614	2.821591519	2.771320557	2.64419904	2.908032754	2.724282581	2.908032754
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.802030924	1.759808458	1.595204877	1.85760181	1.657436763	1.85760181

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 50: February Results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	8	1	8	1	8	1	0.071498147	3.014361887	1.731262616	1.441903299	0.830800152	1.894225308	1.055219325	1.895297983
sc2	8	1	1	1	8	1	1	1	1	1	0.054567958	2.300585095	1.006175242	1.100472127	0.709148899	1.164632343	0.710356209	1.164764662
sc3	8	1	1	1	8	1	8	1	8	1	0.074796604	3.153424813	1.475217256	1.508423279	0.794034889	1.835498971	0.983970132	1.833980432
sc4	8	1	1	1	8	1	1	1	1	1	0.101282936	4.270088584	2.019360997	2.042573203	1.502406385	2.422293133	1.720620206	2.428711746
sc5	8	1	1	1	8	1	1	1	8	1	0.091122135	3.841709193	1.825561975	1.837660296	1.588102518	2.01577395	1.593812405	2.01577395
sc6	8	1	1	1	1	1	1	1	1	1	0.086408467	3.642980964	1.701012744	1.74259975	1.528876983	1.816087541	1.535750784	1.816087541
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	0.977536562	1.00541158	0.759380625	1.047505782	0.766239084	1.047505782
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.018273119	1.00541158	0.805611456	1.100497741	0.810546599	1.100497741
sc9	8	1	1	1	1	1	1	1	1	1	0.085481134	3.603884614	1.746996282	1.723898227	1.62860573	1.875809533	1.629637623	1.875809533
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.650492738	0.703752757	0.789504052	0.703102757	0.729349757	0.703102757	0.729349757
sc11	8	1	1	1	1	1	1	1	1	1	0.085767958	3.615977095	1.874450437	1.729682598	1.616442933	2.044356316	1.62215282	2.044356316
sc12	8	1	1	1	1	1	1	1	1	1	0.081623678	3.441254267	1.591058847	1.646104902	1.324335559	1.827837313	1.33245986	1.827837313
sc13	8	1	1	1	8	1	1	1	1	1	0.073869271	3.114328463	1.496489202	1.489721756	0.876693342	1.922704294	1.068271071	1.922704294
sc14	8	1	1	1	8	1	1	1	8	1	0.083994802	3.541220843	1.746953732	1.69392336	1.492595559	1.988462277	1.497280979	1.988462277
sc15	8	1	1	1	1	1	8	1	1	1	0.069155603	2.915600234	1.399776533	1.394661209	0.810648819	1.60739894	0.973067576	1.596876851
sc16	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.158477123	1.189748302	0.930118864	1.391527196	0.937039117	1.391527196
sc17	8	1	1	1	1	1	8	1	8	1	0.095207268	4.013938427	1.937974389	1.920045196	1.410201058	2.491214488	1.605001282	2.464735636
sc18	8	1	1	1	1	1	1	1	1	1	0.08105429	3.417248866	1.537401629	1.634622052	1.433972671	1.704302427	1.449325281	1.672177759
sc19	8	1	1	1	8	1	1	1	8	1	0.112710501	4.751874738	2.299940373	2.273032939	1.775598951	2.540854567	1.932765287	2.530332478
sc20	8	1	1	1	8	1	8	1	8	1	0.049132799	2.071438807	0.974240827	0.99086127	0.710775888	1.2485198	0.722871312	1.2485198
sc21	8	1	1	1	1	1	1	1	1	1	0.079567958	3.354585095	1.688530977	1.604647184	1.504529467	1.983319259	1.512879548	1.983319259
sc22	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	0.953792611	0.99086127	0.696466633	1.152740631	0.702884062	1.111626085
sc23	8	1	1	1	1	1	1	1	1	1	0.106137645	4.474763124	2.117182105	2.140478135	2.117182105	2.139932105	2.117182105	2.139932105
sc24	8	1	1	1	1	1	8	1	1	1	0.069784137	2.942099229	1.354964585	1.407336857	1.103043296	1.573269849	1.108635783	1.535583533
sc25	8	1	1	1	8	1	8	1	8	1	0.084922135	3.580317193	1.745157795	1.712624882	1.536447494	1.990829414	1.542105737	1.990829414
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	0.989208124	1.00541158	0.786657531	1.067837824	0.793886927	1.067837824
sc27	8	1	1	1	1	1	1	1	1	1	0.079281134	3.342492614	1.739681378	1.598862813	1.610338131	1.878776646	1.615273274	1.878776646
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.96279394	0.859950336	0.9388916	0.742317469	0.998275984	0.745299363	0.998275984
sc29	8	1	1	1	1	1	1	1	1	1	0.110481134	4.657884614	2.189998895	2.228073284	2.15453072	2.421663796	2.155948892	2.385035174
sc30	8	1	1	1	8	1	1	1	1	1	0.090194802	3.802612843	1.848918303	1.818958774	1.525469269	2.011531593	1.558712506	1.973465123
sc31	8	1	1	1	1	1	1	1	1	1	0.115194802	4.856612843	2.228268857	2.323133831	2.033302309	2.510591852	2.038480152	2.480610775
sc32	8	1	1	1	8	1	1	1	1	1	0.070082936	2.954696584	1.478012427	1.413362732	0.862072397	1.784290161	1.080286218	1.788377758
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.120226913	1.094687756	0.919183194	1.21270649	0.926041653	1.21270649
sc34	8	1	1	1	8	1	1	1	8	1	0.100355603	4.230992234	2.047626558	2.023871681	1.509692671	2.333638024	1.676776357	2.323115935
sc35	8	1	1	1	1	1	1	1	1	1	0.090194802	3.802612843	1.615689797	1.818958774	1.473041404	1.947855452	1.474599558	1.910169136
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.08155816	1.094687756	0.947817984	1.229621372	0.95504738	1.229621372

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.09007047	3.797371	1.880643163	1.816451367	1.732337495	2.00543625	1.733013546	2.00543625
sc38	8	1	1	1	1	1	8	1	8	1	0.140858606	5.938598849	2.442190619	2.840695839	1.916735202	2.912046794	2.035797136	2.70900359
sc39	8	1	1	1	1	1	8	1	1	1	0.115194802	4.856612843	1.966009725	2.323133831	1.739725137	2.194851429	1.746343994	2.194851429
sc40	8	1	1	1	1	1	1	1	1	1	0.081981623	3.456345217	1.438976982	1.653323574	1.243482579	1.520487364	1.244514472	1.497737364
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.348157916	1.250174281	1.123228322	0.972616526	1.468593513	0.980372479	1.468593513
sc42	8	1	1	1	8	1	1	1	8	1	0.073869271	3.114328463	1.564823671	1.489721756	0.854774082	2.019527856	1.014180543	1.808203756
sc43	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	1.033871051	0.99086127	0.740227829	1.235230202	0.747705311	1.205249125
sc44	8	1	1	1	8	1	8	1	8	1	0.094155603	3.969600234	1.912572264	1.898836267	1.429132465	2.29354904	1.629414813	2.283026952
sc45	8	1	1	1	1	1	1	1	8	1	0.084293601	3.553818198	1.590049453	1.699949235	1.212561107	2.053665556	1.365358667	1.895208584
sc46	8	1	1	1	1	1	1	1	1	1	0.079281134	3.342492614	1.637579767	1.598862813	1.454676554	1.739177443	1.465920726	1.716721268
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.733647652	0.821579055	0.829280744	0.686863602	0.955177894	0.694093246	0.955177894
sc48	8	1	1	1	1	1	1	1	1	1	0.069705955	2.93880306	1.428599255	1.405760152	1.21276988	1.682816812	1.218006619	1.682816812
sc49	8	1	1	1	8	1	1	1	8	1	0.059922135	2.526317193	1.218516507	1.208449825	0.941594409	1.427738601	0.945905394	1.427738601
sc50	8	1	1	1	8	1	1	1	8	1	0.059580424	2.51191068	1.370241914	1.201558549	0.613137335	1.588139616	0.768284798	1.566971863
sc51	8	1	1	1	8	1	8	1	8	1	0.054567958	2.300585095	1.075854429	1.100472127	0.839163813	1.351684805	0.850527164	1.351684805
sc52	8	1	1	1	1	1	1	1	1	1	0.086408467	3.642980964	1.761425759	1.74259975	1.615159623	1.901756369	1.615826831	1.901756369
sc53	8	1	1	1	8	1	1	1	8	1	0.068598449	2.892110622	1.400808473	1.383425084	0.905074604	1.853580598	0.922848672	1.853580598
sc54	8	1	1	1	1	1	8	1	1	1	0.090194802	3.802612843	1.838839364	1.818958774	1.626399369	2.132177814	1.631865961	2.132177814
sc55	8	1	1	1	8	1	8	1	8	1	0.080332799	3.386830807	1.726226174	1.620071742	1.475821189	1.931335738	1.488286739	1.931335738
sc56	8	1	1	1	1	1	1	1	1	1	0.079567958	3.354585095	1.472915381	1.604647184	1.324249657	1.852588185	1.325377291	1.815204079
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	0.941008919	0.895800724	0.786812217	1.057993539	0.791442741	1.057993539
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.184432146	1.094687756	0.987592569	1.258728584	0.988624463	1.258728584
sc59	8	1	1	1	1	1	1	1	1	1	0.074132799	3.125438807	1.549875538	1.495036328	1.352872898	1.789263867	1.356079017	1.789263867
sc60	8	1	1	1	1	1	1	1	1	1	0.064992287	2.740074831	1.349711891	1.310699606	1.217207739	1.47768608	1.218246133	1.447892327
sc61	8	1	1	1	8	1	1	1	8	1	0.094784137	3.996099229	1.884705657	1.911511914	1.687247721	2.188799017	1.695461956	2.15881794
sc62	8	1	1	1	1	1	1	1	1	1	0.110481134	4.657884614	2.065050372	2.228073284	1.892864048	2.167909209	1.897633441	2.167909209
sc63	8	1	1	1	8	1	1	1	8	1	0.073869271	3.114328463	1.714194366	1.489721756	0.931609202	1.981491065	1.098020003	1.979736224
sc64	8	1	1	1	8	1	1	1	8	1	0.094155603	3.969600234	1.787474726	1.898836267	1.397803635	2.176002539	1.469133778	2.17526017
sc65	8	1	1	1	1	1	1	1	1	1	0.075781623	3.194953217	1.442439237	1.52828816	1.344599119	1.617697875	1.34527517	1.617697875
sc66	8	1	1	1	1	1	1	1	8	1	0.084293601	3.553818198	1.654894988	1.699949235	1.263097645	1.9517237	1.388532469	1.922328605
sc67	8	1	1	1	1	1	1	1	1	1	0.069784137	2.942099229	1.370210952	1.407336857	1.068206139	1.574201308	1.069764095	1.574201308
sc68	8	1	1	1	1	1	8	1	8	1	0.115194802	4.856612843	2.277443532	2.323133831	2.09046375	2.597598273	2.113601773	2.480363511
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	1.116900731	1.189748302	0.873553253	1.32857464	0.875407666	1.32857464
sc70	8	1	1	1	8	1	1	1	1	1	0.097057147	4.091929307	1.981157142	1.957351701	1.466946644	2.340064416	1.710644121	2.272723532
sc71	8	1	1	1	1	1	8	1	1	1	0.083994802	3.541220843	1.493106302	1.69392336	1.272415052	1.741599566	1.277636355	1.741599566
sc72	8	1	1	1	1	1	1	1	1	1	0.110481134	4.657884614	2.044293823	2.228073284	1.924046735	2.196958166	1.924722786	2.196958166
sc73	8	1	1	1	1	1	8	1	1	1	0.044705955	1.88480306	0.931353254	0.901585095	0.621129431	1.113913142	0.623359187	1.113913142
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.014880433	0.895800724	0.811365544	1.106251829	0.818595187	1.106251829

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	8	1	1	1	8	1	0.074796604	3.153424813	1.60762643	1.508423279	0.880790443	1.898213993	1.050353689	1.894126396
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	1.089311232	1.100472127	0.836282118	1.308084795	0.837487122	1.308084795
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.137943264	1.094687756	0.943678197	1.231044286	0.94471659	1.231044286
sc78	8	1	1	1	8	1	8	1	8	1	0.109658606	4.623206849	2.063615969	2.211485368	1.60672293	2.519155252	1.756149161	2.50133596
sc79	8	1	1	1	1	1	1	1	1	1	0.074010312	3.120274773	1.583333622	1.492566141	1.549624622	1.590256122	1.553527872	1.590256122
sc80	8	1	1	1	1	1	1	1	1	1	0.111408467	4.696980964	2.233222831	2.246774807	2.121598582	2.399412744	2.122630476	2.399412744
sc81	8	1	1	1	8	1	1	1	1	1	0.069155603	2.915600234	1.277474493	1.394661209	0.958685306	1.703793825	1.125184937	1.597923031
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	0.93262671	0.895800724	0.730658581	1.010118327	0.731319289	1.010118327
sc83	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.231283953	1.189748302	0.955214848	1.43284045	0.960580492	1.43284045
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	1.324365072	1.31227631	1.161448448	1.448931456	1.166027501	1.448931456
sc85	8	1	1	1	8	1	1	1	1	1	0.073869271	3.114328463	1.590144083	1.489721756	0.900666661	1.954101617	1.093164981	1.949059198
sc86	8	1	1	1	8	1	1	1	1	1	0.079944939	3.37047862	1.723235297	1.612249764	1.039155565	1.903715958	1.232099153	1.898673539
sc87	8	1	1	1	1	1	1	1	1	1	0.090194802	3.802612843	1.780181047	1.818958774	1.552313536	2.009220505	1.553930446	2.009220505
sc88	8	1	1	1	8	1	8	1	8	1	0.085509602	3.605084839	1.663161878	1.724472348	1.243314255	2.110112359	1.261867487	2.111632056
sc89	8	1	1	1	1	1	1	1	1	1	0.075619131	3.188102578	1.524714532	1.525011195	1.436811034	1.718601307	1.44404043	1.718601307
sc90	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.20162519	1.189748302	0.902938505	1.418900061	0.915028789	1.418900061
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.188526038	1.037873435	1.046869298	0.857406267	1.151250513	0.864264726	1.151250513
sc92	8	1	1	1	1	1	8	1	1	1	0.100984137	4.257491229	2.083496623	2.036547328	1.815600609	2.28193678	1.834893418	2.2108941
sc93	8	1	1	1	1	1	1	1	1	1	0.07872398	3.319003002	1.543947786	1.587626687	1.450742675	1.682473674	1.457763192	1.650627463
sc94	8	1	1	1	1	1	1	1	1	1	0.064812114	2.732478744	1.400641626	1.30706606	0.874031754	1.617388192	0.891916641	1.617388192
sc95	8	1	1	1	8	1	8	1	1	1	0.092071303	3.881726139	1.956714185	1.856802181	1.2574308	2.35266878	1.480442777	2.363112225
sc96	8	1	1	1	1	1	1	1	1	1	0.069784137	2.942099229	1.318979463	1.407336857	1.122432712	1.58179301	1.123890149	1.47976871
sc97	8	1	1	1	1	1	1	1	8	1	0.100355603	4.230992234	1.892397708	2.023871681	1.431420443	2.207073509	1.58602875	2.169713823
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	2.604308073	1.15645147	1.24575633	1.049910966	1.323009722	1.061526075	1.290885054
sc99	8	1	1	1	1	1	1	1	1	1	0.085481134	3.603884614	1.597872107	1.723898227	1.506683378	1.794166386	1.511262432	1.794166386
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.262309691	1.094687756	1.049540734	1.34338498	1.056399192	1.34338498

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 51: March results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.056623678	2.387254267	1.397442776	1.385418856	1.247283586	1.562542091	1.296808563	1.562542091
sc2	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	1.335080597	1.335121279	1.120429585	1.445906529	1.165662561	1.445906529
sc3	8	1	8	1	8	1	8	1	8	1	0.059922135	2.526317193	1.424795254	1.466122618	1.234525021	1.562033432	1.28263396	1.562052807
sc4	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	2.088206596	2.066456235	1.966785733	2.147075007	1.996143251	2.147075007
sc5	8	1	1	1	8	1	1	1	8	1	0.089172135	3.759497193	2.170527509	2.181786152	2.028452766	2.349116626	2.073340571	2.349116626
sc6	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	2.126540048	2.066456235	2.044904882	2.205529563	2.08125104	2.205529563
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.205363586	1.219791363	1.072568079	1.255704228	1.099660628	1.255704228
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.176442391	1.219791363	1.090576011	1.266476804	1.122203725	1.266476804
sc9	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	2.102318594	2.043767064	1.983267392	2.165219228	2.01597891	2.165219228
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.650492738	0.916613767	0.957846758	0.913497017	0.927189267	0.913497017	0.927189267
sc11	8	1	8	1	1	1	1	1	1	1	0.083817958	3.533765095	2.093453948	2.050784813	1.907663563	2.204842305	1.962478321	2.204842305
sc12	8	1	1	1	1	1	1	1	1	1	0.068623678	2.893174267	1.673637377	1.679024408	1.506572357	1.841555873	1.559451333	1.841555873
sc13	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	1.447205456	1.443433447	1.243717847	1.579144196	1.284778989	1.579144196
sc14	8	1	1	1	8	1	1	1	8	1	0.070994802	2.993140843	1.747874209	1.737038999	1.58826788	1.913281071	1.625770724	1.913281071
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.286100532	1.32810353	1.18562283	1.385067313	1.206374897	1.385067313
sc16	8	1	1	1	8	1	8	1	8	1	0.058994802	2.487220843	1.479888771	1.443433447	1.311983132	1.62198343	1.368568392	1.62198343
sc17	8	1	1	1	1	1	1	1	1	1	0.078382799	3.304618807	1.920508594	1.917802084	1.72559135	2.057266543	1.78066905	2.057266543
sc18	8	1	1	1	1	1	1	1	1	1	0.07910429	3.335036866	1.962520306	1.935454897	1.856942903	2.056038596	1.886685061	2.056038596
sc19	8	1	1	1	1	1	1	1	1	1	0.082886032	3.494475118	1.968467103	2.027983272	1.859468305	2.035374486	1.894321056	2.016686206
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	1.186102442	1.20213855	1.025848219	1.318087925	1.069488566	1.318087925
sc21	8	1	8	1	8	1	1	1	8	1	0.066567958	2.806505095	1.666801731	1.628726832	1.495108555	1.822457319	1.539585276	1.822481595
sc22	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	1.158528141	1.20213855	1.020261261	1.319743034	1.053798013	1.295075217
sc23	8	1	1	1	1	1	1	1	1	1	0.091187645	3.844471124	2.247726589	2.231099913	2.230144089	2.248493589	2.236644089	2.248493589
sc24	8	1	1	1	8	1	1	1	8	1	0.069784137	2.942099229	1.613969878	1.707417515	1.47568785	1.777050714	1.519588737	1.761500306
sc25	8	1	1	1	8	1	8	1	8	1	0.071922135	3.032237193	1.807893652	1.759728171	1.586551317	1.88926928	1.640718842	1.88926928
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	1.231269806	1.219791363	1.087617308	1.2673466	1.115995022	1.2673466
sc27	8	1	1	1	1	1	1	1	1	1	0.066281134	2.794412614	1.651613295	1.621709082	1.558494366	1.745773059	1.594283152	1.724770814
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.96279394	1.121252833	1.1390876	1.016831205	1.199044479	1.049542723	1.199044479
sc29	8	1	1	1	1	1	1	1	1	1	0.095531134	4.027592614	2.308478795	2.337372616	2.220180623	2.394679552	2.251511891	2.389780657
sc30	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	2.108997221	2.159096981	1.938724985	2.27693291	1.972714759	2.27693291
sc31	8	1	1	1	1	1	1	1	1	1	0.100244802	4.226320843	2.451859317	2.452702533	2.254224214	2.58679235	2.293940537	2.555971659
sc32	8	1	1	1	1	1	1	1	1	1	0.055208467	2.327588964	1.262852792	1.350792702	1.172731376	1.353684151	1.201894443	1.353684151
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.308912106	1.32810353	1.223967695	1.419234124	1.247106478	1.419234124
sc34	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	2.071793869	2.043767064	1.945317404	2.121548047	1.976022118	2.121548047
sc35	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	2.059771392	2.159096981	1.899948576	2.208915276	1.947346062	2.208915276
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.31641414	1.32810353	1.231697839	1.410952153	1.261440622	1.410952153

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.07707047	3.249291	1.901385283	1.885693151	1.777893674	1.960106948	1.809578192	1.960106948
sc38	8	1	1	1	1	1	1	1	1	1	0.111034137	4.681199229	2.524946222	2.716686601	2.351874728	2.671717465	2.392332739	2.627550207
sc39	8	1	1	1	1	1	1	1	1	1	0.100244802	4.226320843	2.338892416	2.452702533	2.118410055	2.458722513	2.160910021	2.458722513
sc40	8	1	1	1	1	1	1	1	1	1	0.080031623	3.374133217	1.886734546	1.958144068	1.752803709	1.927051211	1.781181423	1.927051211
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.348157916	1.171730515	1.362729685	1.054417095	1.377041751	1.083321177	1.274359218
sc42	8	1	8	1	8	1	1	1	8	1	0.058994802	2.487220843	1.490959158	1.443433447	1.264969595	1.573842929	1.311264414	1.573842929
sc43	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	1.152863834	1.20213855	0.945839429	1.263359711	0.986866005	1.248318711
sc44	8	1	1	1	1	1	1	1	1	1	0.066281134	2.794412614	1.544293277	1.621709082	1.462565239	1.641548012	1.497083756	1.641548012
sc45	8	1	1	1	1	1	1	1	1	1	0.056419131	2.378630578	1.362310668	1.380414186	1.222770526	1.4017533	1.257289044	1.4017533
sc46	8	1	1	1	1	1	1	1	1	1	0.066281134	2.794412614	1.648078801	1.621709082	1.531663628	1.711673921	1.560379411	1.711673921
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.733647652	1.040666937	1.006104871	0.920451391	1.097169568	0.952001175	1.097169568
sc48	8	1	1	1	8	1	1	1	8	1	0.056705955	2.39072306	1.496293039	1.387431935	1.294242748	1.602446877	1.345646077	1.602446877
sc49	8	1	1	1	8	1	1	1	8	1	0.059922135	2.526317193	1.424738529	1.466122618	1.242277143	1.567201959	1.291826175	1.567201959
sc50	8	1	1	1	1	1	1	1	1	1	0.044705955	1.88480306	1.145511848	1.093826382	0.868835177	1.194018323	0.908071082	1.194018323
sc51	8	1	1	1	8	1	1	1	8	1	0.054567958	2.300585095	1.36871184	1.335121279	1.14916862	1.497714064	1.194039282	1.497714064
sc52	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	2.088383142	2.066456235	2.009217041	2.196864815	2.033219107	2.196864815
sc53	8	1	1	1	1	1	1	1	1	1	0.05372398	2.265003002	1.275862246	1.314471572	1.182026379	1.346298756	1.193526879	1.346298756
sc54	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	2.159742642	2.159096981	1.986218787	2.307562614	2.026118585	2.288423593
sc55	8	1	8	1	8	1	1	1	8	1	0.078382799	3.304618807	1.918251981	1.917802084	1.720216901	2.053806326	1.763048116	2.053806326
sc56	8	1	1	1	1	1	1	1	1	1	0.066567958	2.806505095	1.573010291	1.628726832	1.386449184	1.713408423	1.426621591	1.684238725
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.119889732	1.086808633	0.97325167	1.157065863	1.009597828	1.157065863
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.323738466	1.32810353	1.239736747	1.400361428	1.275055905	1.400361428
sc59	8	1	1	1	1	1	1	1	1	1	0.061132799	2.577358807	1.526388577	1.495744102	1.328149357	1.636651245	1.383227057	1.636651245
sc60	8	1	1	1	1	1	1	1	1	1	0.051992287	2.191994831	1.321410833	1.272102018	1.195007993	1.38828747	1.218850542	1.38828747
sc61	8	1	8	1	8	1	1	1	1	1	0.081784137	3.448019229	1.97834362	2.001023067	1.814362017	2.144759323	1.847463795	2.116604599
sc62	8	1	1	1	8	1	1	1	8	1	0.095531134	4.027592614	2.247803881	2.337372616	2.181966668	2.369204531	2.214958826	2.369204531
sc63	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	1.285240134	1.443433447	1.120853477	1.423841752	1.154597055	1.366662945
sc64	8	1	1	1	1	1	1	1	1	1	0.066281134	2.794412614	1.629778792	1.621709082	1.541753066	1.72204234	1.571110584	1.72204234
sc65	8	1	1	1	1	1	1	1	1	1	0.062781623	2.646873217	1.48057966	1.536086086	1.389004493	1.586499267	1.415112011	1.586499267
sc66	8	1	1	1	1	1	1	1	1	1	0.056419131	2.378630578	1.464879665	1.380414186	1.33981949	1.523269683	1.376061647	1.523269683
sc67	8	1	8	1	1	1	8	1	1	1	0.069784137	2.942099229	1.636336831	1.707417515	1.474956422	1.795049304	1.540715644	1.789938834
sc68	8	1	1	1	8	1	1	1	8	1	0.100244802	4.226320843	2.277386736	2.452702533	2.114604336	2.452436446	2.154660461	2.452436446
sc69	8	1	8	1	1	1	8	1	1	1	0.058994802	2.487220843	1.400549142	1.443433447	1.245099164	1.538259543	1.286173783	1.538259543
sc70	8	1	1	1	1	1	1	1	1	1	0.080232678	3.382609687	1.859591151	1.963063302	1.766054999	1.953333692	1.799047157	1.953333692
sc71	8	1	1	1	8	1	8	1	8	1	0.070994802	2.993140843	1.707588744	1.737038999	1.512180842	1.798473999	1.563395515	1.798449723
sc72	8	1	1	1	1	1	1	1	1	1	0.095531134	4.027592614	2.17438472	2.337372616	2.089360624	2.268153567	2.119102782	2.268153567
sc73	8	1	8	1	8	1	8	1	8	1	0.044705955	1.88480306	1.129670902	1.093826382	0.953976759	1.24586403	0.998498846	1.24586403
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.080735287	1.086808633	0.995341659	1.171606452	1.027073373	1.171606452

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.059922135	2.526317193	1.551787161	1.466122618	1.296468879	1.627648495	1.341717481	1.627648495
sc76	8	1	1	1	8	1	1	1	8	1	0.054567958	2.300585095	1.372617983	1.335121279	1.156173002	1.488848511	1.20002335	1.488848511
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.360684241	1.32810353	1.279673411	1.456339068	1.307392929	1.456339068
sc78	8	1	1	1	8	1	8	1	8	1	0.081784137	3.448019229	1.925028505	2.001023067	1.775416896	2.086148568	1.826929267	2.102720907
sc79	8	1	1	1	1	1	1	1	1	1	0.061010312	2.572194773	1.5183382	1.492747207	1.5085882	1.5273017	1.5141652	1.5273017
sc80	8	1	1	1	1	1	1	1	1	1	0.096458467	4.066688964	2.311068631	2.360061788	2.155697812	2.337547086	2.18830533	2.337547086
sc81	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.357516383	1.32810353	1.242001653	1.402626335	1.278347811	1.402626335
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.072823291	1.086808633	0.978334257	1.156081906	1.005426807	1.156081906
sc83	8	1	1	1	8	1	1	1	8	1	0.058994802	2.487220843	1.486367075	1.443433447	1.304094017	1.602358048	1.345336674	1.602358048
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	1.604206558	1.592087598	1.488136397	1.671955671	1.515388463	1.671955671
sc85	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.471528138	1.443433447	1.281341906	1.607636326	1.333614244	1.607636326
sc86	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	1.57924056	1.592087598	1.49624857	1.676258863	1.525991354	1.676258863
sc87	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	2.122523432	2.159096981	1.968338315	2.288923946	2.01039223	2.288923946
sc88	8	1	1	1	1	1	1	1	1	1	0.068685133	2.895765219	1.671824412	1.680528041	1.580845647	1.724737287	1.606515748	1.724737287
sc89	8	1	1	1	1	1	1	1	1	1	0.073669131	3.105890578	1.831741612	1.802472167	1.689024362	1.864925155	1.720652076	1.864925155
sc90	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	1.44817744	1.443433447	1.237813644	1.53632846	1.293261678	1.53632846
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.188526038	1.163928698	1.270088939	1.058501544	1.219126225	1.095944372	1.202143044
sc92	8	1	1	1	8	1	8	1	8	1	0.099034137	4.175279229	2.367409937	2.423081049	2.174273639	2.465453633	2.226307808	2.461566206
sc93	8	1	1	1	1	1	1	1	1	1	0.06572398	2.770923002	1.565568754	1.608077124	1.512674932	1.691524572	1.54513308	1.686004738
sc94	8	1	1	1	1	1	1	1	1	1	0.049937645	2.105371124	1.196028611	1.221830827	1.190425611	1.212603611	1.193675611	1.212603611
sc95	8	1	1	1	1	1	1	1	1	1	0.064196834	2.706538519	1.585779895	1.570712241	1.383947658	1.705929042	1.432435567	1.705929042
sc96	8	1	1	1	1	1	1	1	1	1	0.069784137	2.942099229	1.699098424	1.707417515	1.498585339	1.813639694	1.534732495	1.813639694
sc97	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	1.973343786	2.043767064	1.84984561	2.037124304	1.882837768	2.037124304
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	2.604308073	1.503818409	1.511383836	1.382137797	1.563090572	1.411300864	1.563090572
sc99	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	1.910594301	2.043767064	1.830057353	2.009786646	1.858435068	2.009786646
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	1.341845302	1.32810353	1.187339523	1.378885815	1.212467237	1.378885815

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 52: April results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.056623615	2.350446259	2.164195379	2.142311384	2.008669886	2.182652843	2.053001813	2.182652843
sc2	8	1	1	1	1	1	1	1	1	1	0.054567908	2.265113861	2.073600231	2.064535274	1.933029082	2.10358002	2.001869508	2.096695941
sc3	8	1	1	1	8	1	1	1	8	1	0.05992205	2.487364295	2.267928185	2.267105162	2.132512495	2.30854753	2.183026486	2.308572489
sc4	8	1	1	1	1	1	1	1	1	1	0.084458382	3.505867437	3.216249423	3.195418612	3.142199501	3.231256031	3.176452753	3.231256031
sc5	8	1	1	1	1	1	8	1	1	1	0.08917205	3.701531796	3.368740135	3.373756654	3.236953127	3.403884025	3.312951853	3.397183379
sc6	8	1	1	1	1	1	1	1	1	1	0.084458382	3.505867437	3.174050897	3.195418612	3.110730966	3.205234384	3.139909008	3.197232012
sc7	8	1	1	1	1	1	1	1	1	1	0.04985424	2.069449502	1.85884133	1.886197232	1.801682507	1.900278023	1.834451807	1.894745886
sc8	8	1	1	1	1	1	1	1	1	1	0.04985424	2.069449502	1.880750949	1.886197232	1.81082571	1.911905214	1.843552731	1.909642843
sc9	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.142397259	3.160335036	3.068113165	3.165808082	3.100131841	3.165808082
sc10	8	1	1	1	1	1	1	1	1	1	0.039148263	1.625044397	1.476670348	1.48114474	1.473810348	1.486976098	1.473810348	1.486976098
sc11	8	1	8	1	8	1	1	1	8	1	0.083817908	3.479281361	3.166869956	3.171186766	3.052315068	3.226916204	3.095706804	3.199709492
sc12	8	1	1	1	1	1	1	1	1	1	0.056623615	2.350446259	2.123073154	2.142311384	2.014671141	2.177928756	2.061917214	2.172021228
sc13	8	1	1	1	1	1	8	1	1	1	0.058994753	2.448872197	2.22458313	2.232021586	2.09946218	2.268229278	2.177433013	2.26261065
sc14	8	1	1	1	1	1	8	1	1	1	0.058994753	2.448872197	2.222657055	2.232021586	2.094517991	2.270833414	2.151936392	2.257564784
sc15	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.06370954	2.053683544	1.983325881	2.081310252	2.017902372	2.081310252
sc16	8	1	1	1	1	1	8	1	1	1	0.058994753	2.448872197	2.249633201	2.232021586	2.117846527	2.294170623	2.170152378	2.294170623
sc17	8	1	1	1	1	1	8	1	1	1	0.078382754	3.253668119	2.967736728	2.96555185	2.82968952	2.999917096	2.883664719	2.999917096
sc18	8	1	1	1	1	1	1	1	1	1	0.07910424	3.283617002	2.952106039	2.992848724	2.889865482	2.982542795	2.920617595	2.982542795
sc19	8	1	1	1	1	1	1	1	1	1	0.070886061	2.942480392	2.66586501	2.681920175	2.585385114	2.687503811	2.621976291	2.685154211
sc20	8	1	8	1	1	1	1	1	8	1	0.049132754	2.039500619	1.850255433	1.858900359	1.725156868	1.88966305	1.794899966	1.884421439
sc21	8	1	8	1	8	1	1	1	8	1	0.054567908	2.265113861	2.074045066	2.064535274	1.959682651	2.112113091	1.99658074	2.104709882
sc22	8	1	1	1	1	1	1	1	1	1	0.049132754	2.039500619	1.863139863	1.858900359	1.733313896	1.910156491	1.792504596	1.902234048
sc23	8	1	1	1	1	1	1	1	1	1	0.079187559	3.287075574	2.993820615	2.996001035	2.987847115	2.996505115	2.993177115	2.996505115
sc24	8	1	1	1	8	1	1	1	8	1	0.069784049	2.896735874	2.614979556	2.64022639	2.488290987	2.653487641	2.542554826	2.661988981
sc25	8	1	1	1	1	1	8	1	1	1	0.05992205	2.487364295	2.264940967	2.267105162	2.140702862	2.298683653	2.220035821	2.297145835
sc26	8	1	1	1	1	1	1	1	1	1	0.04985424	2.069449502	1.890655327	1.886197232	1.812621416	1.904869446	1.851310918	1.904869446
sc27	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.061684883	2.053683544	1.980553464	2.081632968	2.011067359	2.081632968
sc28	8	1	1	1	1	1	1	1	1	1	0.046555805	1.932531466	1.778456647	1.761403454	1.69507798	1.79199301	1.725869982	1.79199301
sc29	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.136499496	3.160335036	3.079447143	3.174804568	3.110033506	3.174804568
sc30	8	1	1	1	1	1	8	1	1	1	0.088244753	3.663039697	3.349860948	3.338673077	3.216335434	3.382471596	3.297585582	3.365223238
sc31	8	1	1	1	1	1	1	1	1	1	0.088244753	3.663039697	3.233702569	3.338673077	3.173042617	3.328441732	3.204573425	3.244246966
sc32	8	1	1	1	1	1	1	1	1	1	0.055208382	2.291699937	2.078569591	2.088767121	2.007614942	2.106723331	2.03501571	2.106723331
sc33	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.049878098	2.053683544	1.981594739	2.079288914	2.013584463	2.079288914
sc34	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.118760416	3.160335036	3.054770703	3.151965121	3.082489977	3.138119922
sc35	8	1	1	1	1	1	10	1	10	1	0.088244753	3.663039697	3.187846342	3.338673077	3.132892453	3.301927627	3.082489977	3.138119922
sc36	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.05699374	2.053683544	1.987431983	2.087555986	2.020789627	2.087555986

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.065070381	2.701071515	2.378491515	2.461888348	2.331250567	2.428444984	2.353435781	2.402122296
sc38	8	1	1	1	1	1	1	1	1	1	0.099034049	4.110903374	3.697546617	3.746877881	3.56993299	3.74539702	3.632975629	3.739402568
sc39	8	1	1	1	1	1	8	1	1	1	0.088244753	3.663039697	3.313965046	3.338673077	3.181297139	3.349155788	3.242613295	3.346219208
sc40	8	1	1	1	1	1	1	1	1	1	0.080031537	3.322109101	2.930112967	3.0279323	2.861727547	2.958556214	2.906928277	2.942581061
sc41	8	1	1	1	1	1	1	1	1	1	0.055696318	2.31195416	2.097905724	2.107227808	1.979979308	2.154223607	2.02584672	2.133962172
sc42	8	1	1	1	1	1	1	1	8	1	0.058994753	2.448872197	2.243957382	2.232021586	2.102793226	2.273298335	2.165900684	2.26620342
sc43	8	1	1	1	1	1	1	1	1	1	0.049132754	2.039500619	1.876164568	1.858900359	1.748577024	1.917777881	1.798013205	1.91576705
sc44	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.003688792	2.053683544	1.923281924	2.015529954	1.961971426	2.015529954
sc45	8	1	1	1	1	1	1	1	1	1	0.044419086	1.84383626	1.699910324	1.680562317	1.619845471	1.714939646	1.651506945	1.714939646
sc46	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.057311103	2.053683544	1.975441924	2.078984121	2.011112305	2.071389559
sc47	8	1	1	1	8	1	1	1	8	1	0.041120651	1.706918223	1.570210517	1.555768539	1.493018909	1.588656524	1.526013927	1.587353274
sc48	8	1	1	1	1	1	1	1	1	1	0.044705909	1.855742283	1.697888848	1.691414047	1.554971453	1.724671857	1.609618064	1.724671857
sc49	8	1	8	1	8	1	1	1	8	1	0.05992205	2.487364295	2.275279712	2.267105162	2.143366248	2.31593699	2.195450944	2.294367766
sc50	8	1	8	1	1	1	1	1	1	1	0.044705909	1.855742283	1.707856183	1.691414047	1.560858768	1.726122456	1.614901179	1.726122456
sc51	8	1	1	1	1	1	1	1	1	1	0.054567908	2.265113861	2.075548742	2.064535274	1.959201275	2.113134587	2.026377344	2.107146598
sc52	8	1	1	1	1	1	1	1	1	1	0.084458382	3.505867437	3.202924656	3.195418612	3.133275542	3.230014959	3.173212434	3.227730688
sc53	8	1	1	1	1	1	1	1	1	1	0.05372393	2.230080334	2.012422851	2.032604009	1.961179806	2.048289976	1.983771552	2.027906994
sc54	8	1	1	1	1	1	1	1	1	1	0.088244753	3.663039697	3.279195358	3.338673077	3.151878591	3.323861666	3.200337759	3.314260902
sc55	8	1	1	1	1	1	1	1	1	1	0.078382754	3.253668119	2.953444261	2.96555185	2.818964602	2.989836765	2.880993762	2.986493875
sc56	8	1	1	1	1	1	1	1	1	1	0.054567908	2.265113861	2.054078027	2.064535274	1.947469225	2.123689729	1.993389548	2.115875672
sc57	8	1	1	1	1	1	1	1	1	1	0.044419086	1.84383626	1.685718108	1.680562317	1.607266359	1.708429556	1.643199377	1.708429556
sc58	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.068725569	2.053683544	1.99238235	2.08367488	2.031442352	2.08367488
sc59	8	1	8	1	1	1	8	1	1	1	0.049132754	2.039500619	1.872023761	1.858900359	1.729332273	1.904094094	1.785183667	1.904094094
sc60	8	1	1	1	1	1	1	1	1	1	0.039992241	1.660077924	1.520476055	1.513076005	1.44545718	1.53674971	1.484751182	1.53674971
sc61	8	1	1	1	1	1	8	1	1	1	0.069784049	2.896735874	2.637587405	2.64022639	2.524803604	2.678722291	2.595949281	2.676836725
sc62	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.156208548	3.160335036	3.075635536	3.179177733	3.108422554	3.17917699
sc63	8	1	1	1	1	1	8	1	8	1	0.058994753	2.448872197	2.206185832	2.232021586	2.087165161	2.247884615	2.153412409	2.247884615
sc64	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	1.997508571	2.053683544	1.935069404	2.040815907	1.961369328	2.033284198
sc65	8	1	1	1	1	1	1	1	1	1	0.050781537	2.107941601	1.927141045	1.921280809	1.840115064	1.935863435	1.874801735	1.935396856
sc66	8	1	1	1	1	1	1	1	1	1	0.044419086	1.84383626	1.70031905	1.680562317	1.625663685	1.726743189	1.65841683	1.726743189
sc67	8	1	1	1	1	1	8	1	1	1	0.069784049	2.896735874	2.637054956	2.64022639	2.517779278	2.685309374	2.563768116	2.674953569
sc68	8	1	1	1	1	1	1	1	1	1	0.088244753	3.663039697	3.320676643	3.338673077	3.211346971	3.382011724	3.261840835	3.372855451
sc69	8	1	1	1	1	1	1	1	1	1	0.058994753	2.448872197	2.240185575	2.232021586	2.104159792	2.273964987	2.158024427	2.273964987
sc70	8	1	1	1	1	1	1	1	1	1	0.08023265	3.330457302	2.914875685	3.035541257	2.857530598	2.956010101	2.883166242	2.948132101
sc71	8	1	1	1	1	1	8	1	1	1	0.058994753	2.448872197	2.253365111	2.232021586	2.129227885	2.299714691	2.184424413	2.299714691
sc72	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.185450159	3.160335036	3.119893306	3.214806619	3.155452169	3.214806619
sc73	8	1	8	1	8	1	8	1	1	1	0.044705909	1.855742283	1.694123802	1.691414047	1.554770948	1.732952504	1.605496747	1.732954696
sc74	8	1	1	1	1	1	1	1	1	1	0.044419086	1.84383626	1.698426873	1.680562317	1.619520307	1.711768336	1.661695975	1.707866814

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.05992205	2.487364295	2.263835252	2.267105162	2.128606458	2.298670736	2.179070595	2.298670736
sc76	8	1	8	1	8	1	8	1	8	1	0.054567908	2.265113861	2.055278047	2.064535274	1.94420588	2.108912395	1.987341381	2.108912395
sc77	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.060084806	2.053683544	1.985744911	2.085868915	2.019102556	2.085868915
sc78	8	1	8	1	8	1	1	1	1	1	0.069784049	2.896735874	2.665150979	2.64022639	2.525450312	2.706978963	2.583842442	2.688459682
sc79	8	1	1	1	1	1	1	1	1	1	0.049010262	2.034415976	1.857334505	1.854265967	1.848923505	1.857581505	1.854253505	1.857581505
sc80	8	1	1	1	1	1	1	1	1	1	0.084458382	3.505867437	3.153583149	3.195418612	3.079559858	3.174063275	3.109352582	3.174063275
sc81	8	1	8	1	1	1	1	1	8	1	0.054281085	2.253207838	2.064815353	2.053683544	2.010397736	2.090282845	2.027313507	2.066892672
sc82	8	1	1	1	1	1	1	1	1	1	0.044419086	1.84383626	1.680772802	1.680562317	1.606394012	1.697686541	1.645454013	1.697686541
sc83	8	1	1	1	8	1	8	1	8	1	0.058994753	2.448872197	2.234960441	2.232021586	2.128749786	2.297120769	2.175491835	2.290874269
sc84	8	1	1	1	1	1	1	1	1	1	0.065070381	2.701071515	2.448016786	2.461888348	2.378970492	2.480588689	2.412138322	2.462410661
sc85	8	1	1	1	1	1	1	1	1	1	0.058994753	2.448872197	2.250046324	2.232021586	2.122660046	2.278059798	2.178253975	2.278059798
sc86	8	1	1	1	8	1	1	1	8	1	0.065070381	2.701071515	2.424054338	2.461888348	2.356810936	2.445108873	2.389431799	2.445118623
sc87	8	1	1	1	8	1	1	1	8	1	0.088244753	3.663039697	3.275815784	3.338673077	3.154003285	3.333283825	3.19394135	3.333283825
sc88	8	1	1	1	1	1	1	1	1	1	0.068685086	2.85111792	2.61681589	2.598647961	2.568191548	2.651767406	2.58327411	2.651767406
sc89	8	1	1	1	1	1	1	1	1	1	0.073669086	3.05800376	2.72509063	2.787213808	2.658101841	2.759154124	2.695679131	2.751622415
sc90	8	1	1	1	1	1	1	1	1	1	0.058994753	2.448872197	2.246600927	2.232021586	2.123514983	2.28918807	2.174164235	2.281246948
sc91	8	1	1	1	1	1	1	1	1	1	0.051909947	2.1547819	1.968565192	1.963973342	1.886428287	1.983167704	1.921261761	1.983167704
sc92	8	1	8	1	1	1	1	1	1	1	0.099034049	4.110903374	3.681993625	3.746877881	3.585179358	3.731719615	3.611809981	3.71143565
sc93	8	1	1	1	1	1	1	1	1	1	0.05372393	2.230080334	2.005111572	2.032604009	1.961104298	2.040656656	1.994352925	2.030134159
sc94	8	1	1	1	1	1	1	1	1	1	0.049937559	2.072908074	1.867414805	1.889349543	1.858204305	1.868506805	1.866472305	1.868506805
sc95	8	1	1	1	1	1	1	1	1	1	0.05219677	2.166687923	1.963002621	1.974825072	1.829484182	2.009803524	1.883900476	2.009803524
sc96	8	1	8	1	8	1	8	1	8	1	0.069784049	2.896735874	2.602010451	2.64022639	2.494800098	2.675804493	2.553127337	2.675804493
sc97	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.115791959	3.160335036	3.041397285	3.134666098	3.074018148	3.134666098
sc98	8	1	1	1	1	1	1	1	1	1	0.061771946	2.564153478	2.316124767	2.33709457	2.251613849	2.346527161	2.287172712	2.346527161
sc99	8	1	1	1	1	1	1	1	1	1	0.083531085	3.467375338	3.122902354	3.160335036	3.060709684	3.149766214	3.086027035	3.136354815
sc100	8	1	1	1	1	1	1	1	1	1	0.054281085	2.253207838	2.055071721	2.053683544	1.981011317	2.072303847	2.020305319	2.072303847

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 53: May results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.056623678	2.350448876	2.496805937	2.470483012	2.393193663	2.517485847	2.405349933	2.517485847
sc2	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.372302534	2.380792224	2.289499298	2.41401551	2.315584536	2.407615076
sc3	8	1	1	1	8	1	8	1	8	1	0.059922135	2.487367806	2.621098805	2.6143942	2.533775516	2.652198792	2.555862822	2.626771506
sc4	8	1	1	1	1	1	1	1	1	1	0.077308467	3.209074461	3.371896535	3.372957404	3.330518511	3.402150685	3.345469474	3.396690188
sc5	8	1	1	1	8	1	1	1	8	1	0.082022135	3.404738806	3.58781124	3.578614053	3.519873037	3.620305351	3.534939565	3.613706795
sc6	8	1	1	1	1	1	1	1	1	1	0.077308467	3.209074461	3.366626531	3.372957404	3.320392663	3.387771854	3.328708317	3.387771854
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.069451578	2.168967116	2.175135574	2.12359452	2.196149694	2.137553779	2.196149694
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.069451578	2.173013801	2.175135574	2.120637218	2.191709684	2.134223076	2.191709684
sc9	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.335515453	3.332498006	3.293900306	3.36659317	3.303902123	3.36659317
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.625046336	1.705148177	1.708035179	1.696191177	1.705148177	1.696191177	1.705148177
sc11	8	1	1	1	1	1	8	1	1	1	0.076667958	3.182486923	3.345643002	3.345012077	3.263647534	3.386736208	3.302755082	3.386736208
sc12	8	1	1	1	1	1	1	1	1	1	0.056623678	2.350448876	2.456063837	2.470483012	2.380039397	2.504173631	2.395016239	2.504173631
sc13	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.583537735	2.573934802	2.501996706	2.621221678	2.515166948	2.621221678
sc14	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.569218258	2.573934802	2.493008518	2.618460682	2.51361166	2.612381668
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.360744809	2.368278152	2.314892496	2.38758536	2.324894313	2.38758536
sc16	8	1	1	1	8	1	8	1	8	1	0.058994802	2.448874222	2.575765817	2.573934802	2.490993864	2.616079135	2.510189255	2.594484616
sc17	8	1	1	1	1	1	1	1	1	1	0.071232799	2.956873488	3.107127253	3.10787688	3.034576557	3.160682127	3.065528933	3.153357495
sc18	8	1	1	1	1	1	1	1	1	1	0.07195429	2.986822578	3.125534376	3.139355428	3.078883176	3.148649142	3.087750034	3.148649142
sc19	8	1	1	1	1	1	1	1	1	1	0.063736032	2.645682697	2.786951478	2.78079401	2.746416756	2.818690181	2.757681962	2.818690181
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.039502488	2.155712513	2.143657026	2.054392387	2.18364316	2.074087997	2.18364316
sc21	8	1	1	1	8	1	1	1	1	1	0.054567958	2.265115923	2.363484893	2.380792224	2.285732143	2.407759885	2.312030522	2.395234388
sc22	8	1	1	1	1	1	1	1	1	1	0.049132799	2.039502488	2.157867397	2.143657026	2.080895545	2.197614297	2.097921968	2.192980552
sc23	8	1	1	1	1	1	1	1	1	1	0.072037645	2.990282654	3.137040578	3.142992206	3.131372578	3.139322078	3.133875078	3.139322078
sc24	8	1	1	1	1	1	1	1	1	1	0.069784137	2.89673954	3.028581693	3.044671975	2.961906735	3.082507699	2.974535212	3.076358699
sc25	8	1	1	1	1	1	1	1	1	1	0.059922135	2.487367806	2.631238431	2.6143942	2.550978768	2.671026056	2.561799923	2.671026056
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.069451578	2.176118478	2.175135574	2.132520094	2.20376806	2.141386952	2.20376806
sc27	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.381204001	2.368278152	2.346614014	2.413993205	2.354929667	2.413993205
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.932532648	2.02471524	2.031224386	1.981349327	2.0529815	1.994236085	2.0529815
sc29	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.335566845	3.332498006	3.295940259	3.36374891	3.303347995	3.36374891
sc30	8	1	8	1	1	1	1	1	1	1	0.081094802	3.366245222	3.526710497	3.538154655	3.460970915	3.584031786	3.483460629	3.566061271
sc31	8	1	1	1	1	1	1	1	1	1	0.081094802	3.366245222	3.567678318	3.538154655	3.475822539	3.596752548	3.493493266	3.596752548
sc32	8	1	1	1	1	1	1	1	1	1	0.055208467	2.291703461	2.402368977	2.40873755	2.344286518	2.413892877	2.358054224	2.413892877
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.375050153	2.368278152	2.322612402	2.393878328	2.336978108	2.393878328
sc34	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.314834338	3.332498006	3.272791129	3.345064555	3.284056335	3.345064555
sc35	8	1	1	1	1	1	8	1	1	1	0.081094802	3.366245222	3.480207524	3.538154655	3.418929129	3.541640913	3.455717695	3.521575892
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.369132366	2.368278152	2.319087372	2.389701231	2.330352577	2.389701231

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.06507047	2.701075195	2.828082746	2.839015326	2.783181028	2.852946994	2.792047886	2.852946994
sc38	8	1	8	1	1	1	1	1	1	1	0.091884137	3.81411054	4.003426527	4.008891828	3.934636297	4.032863837	3.932752489	4.029578087
sc39	8	1	1	1	1	1	1	1	1	1	0.081094802	3.366245222	3.508134545	3.538154655	3.448219554	3.568814203	3.466372963	3.545172239
sc40	8	1	1	1	1	1	1	1	1	1	0.072881623	3.025316162	3.150634098	3.179814825	3.109351781	3.17895814	3.120802237	3.17119389
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.311955292	2.384720427	2.430023614	2.325882327	2.444278497	2.334396791	2.409303092
sc42	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.560043947	2.573934802	2.492187821	2.613292771	2.509101864	2.613292771
sc43	8	1	1	1	1	1	1	1	1	1	0.049132799	2.039502488	2.150449243	2.143657026	2.075715407	2.197631187	2.092930185	2.197631187
sc44	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.361449309	2.368278152	2.327002832	2.395981023	2.338223986	2.395981023
sc45	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.954346982	1.938000377	1.893317853	1.966010717	1.906886878	1.960733214
sc46	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.376903236	2.368278152	2.33001443	2.400100795	2.340211248	2.400100795
sc47	8	1	1	1	1	1	10	1	10	1	0.041120675	1.706919213	1.790638925	1.794089189	1.756754208	1.827184455	2.340211248	2.400100795
sc48	8	1	1	1	1	1	8	1	1	1	0.044705955	1.855744189	1.961164085	1.950514448	1.883031492	2.00200629	1.893584254	2.00200629
sc49	8	1	1	1	8	1	1	1	1	1	0.059922135	2.487367806	2.612288247	2.6143942	2.522948182	2.649878117	2.559216629	2.649728737
sc50	8	1	1	1	1	1	1	1	1	1	0.044705955	1.855744189	1.960919674	1.950514448	1.876701901	1.996818326	1.894464754	1.996818326
sc51	8	1	1	1	8	1	1	1	1	1	0.054567958	2.265115923	2.358669846	2.380792224	2.281317752	2.403833017	2.299687252	2.410454092
sc52	8	1	1	1	1	1	1	1	1	1	0.077308467	3.209074461	3.368379908	3.372957404	3.328742371	3.401015796	3.341227042	3.393906621
sc53	8	1	1	1	1	1	1	1	1	1	0.05372398	2.230082415	2.357958522	2.343969604	2.307054747	2.36862026	2.314344066	2.36862026
sc54	8	1	1	1	1	1	1	1	1	1	0.081094802	3.366245222	3.540368911	3.538154655	3.465206019	3.589405069	3.495935481	3.582422492
sc55	8	1	8	1	1	1	1	1	1	1	0.071232799	2.956873488	3.077097333	3.10787688	3.002591728	3.128473845	3.025486843	3.120765417
sc56	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.333407262	2.380792224	2.280372907	2.405769416	2.297088388	2.382436306
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.943776642	1.938000377	1.899414537	1.969180503	1.908281395	1.969180503
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.370676814	2.368278152	2.323263283	2.393248974	2.331383936	2.393248974
sc59	8	1	1	1	1	1	1	1	1	1	0.049132799	2.039502488	2.148341309	2.143657026	2.073484045	2.192929428	2.090398088	2.192929428
sc60	8	1	1	1	1	1	1	1	1	1	0.039992287	1.660079844	1.757338525	1.744857799	1.701037703	1.770704629	1.712497909	1.770704629
sc61	8	1	1	1	8	1	1	1	8	1	0.069784137	2.89673954	3.036756568	3.044671975	2.967074202	3.071145852	2.985773927	3.091366703
sc62	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.327223841	3.332498006	3.29836434	3.368794587	3.305108518	3.360307327
sc63	8	1	8	1	1	1	8	1	1	1	0.058994802	2.448874222	2.574183027	2.573934802	2.496863542	2.618110068	2.511958612	2.618110068
sc64	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.365628928	2.368278152	2.319729154	2.39132812	2.331709512	2.39132812
sc65	8	1	1	1	1	1	1	1	1	1	0.050781623	2.107945162	2.228547757	2.215594972	2.173469482	2.243455173	2.181590135	2.243455173
sc66	8	1	1	1	8	1	1	1	8	1	0.044419131	1.843838143	1.936761418	1.938000377	1.889824647	1.951682553	1.900683406	1.951682553
sc67	8	1	1	1	8	1	1	1	8	1	0.069784137	2.89673954	3.027780051	3.044671975	2.963217007	3.087476466	2.977749529	3.087476466
sc68	8	1	8	1	8	1	1	1	1	1	0.081094802	3.366245222	3.529674213	3.538154655	3.461875223	3.552693563	3.482447697	3.570713227
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.535337535	2.573934802	2.482179729	2.601505638	2.495437216	2.575325306
sc70	8	1	1	1	1	1	1	1	1	1	0.073082678	3.033661947	3.215345852	3.188586818	3.158828336	3.232215509	3.174406095	3.232215509
sc71	8	1	1	1	8	1	1	1	8	1	0.058994802	2.448874222	2.580150811	2.573934802	2.497640463	2.62104878	2.513529062	2.62104878
sc72	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.320246651	3.332498006	3.284457401	3.355705367	3.293324259	3.355705367
sc73	8	1	1	1	1	1	1	1	1	1	0.044705955	1.855744189	1.949425803	1.950514448	1.871796871	1.994277627	1.889558445	1.994277627
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.955117437	1.938000377	1.902949915	1.972760106	1.915984568	1.972760106

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.059922135	2.487367806	2.552659792	2.6143942	2.491217229	2.618945698	2.519095836	2.607649436
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.379377879	2.380792224	2.316620823	2.437135419	2.328154927	2.437135419
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.373171814	2.368278152	2.317165614	2.388797788	2.330052373	2.388797788
sc78	8	1	8	1	8	1	1	1	1	1	0.069784137	2.89673954	3.043186414	3.044671975	2.962917249	3.086225079	2.99188938	3.060062791
sc79	8	1	1	1	1	1	1	1	1	1	0.049010312	2.03441807	2.136545282	2.138312955	2.132157782	2.140133282	2.135271282	2.140133282
sc80	8	1	1	1	1	1	1	1	1	1	0.077308467	3.209074461	3.379459405	3.372957404	3.334117721	3.405190187	3.347703579	3.405190187
sc81	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.354229595	2.368278152	2.306937971	2.378623335	2.320040288	2.378623335
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.940077278	1.938000377	1.899817734	1.968317481	1.90905847	1.968317481
sc83	8	1	1	1	8	1	1	1	8	1	0.058994802	2.448874222	2.542596937	2.573934802	2.471157362	2.601715459	2.503537489	2.584429712
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	2.701075195	2.848694385	2.839015326	2.804923131	2.87452949	2.818690837	2.87452949
sc85	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.569365407	2.573934802	2.492565954	2.614887669	2.519688589	2.602182893
sc86	8	1	1	1	8	1	1	1	8	1	0.06507047	2.701075195	2.847828804	2.839015326	2.800897944	2.862755849	2.808671787	2.852178696
sc87	8	1	1	1	1	1	1	1	1	1	0.081094802	3.366245222	3.509217771	3.538154655	3.447359169	3.570531334	3.465339958	3.5641309
sc88	8	1	1	1	1	1	1	1	1	1	0.061535133	2.554323382	2.681459323	2.684769104	2.64567513	2.706525683	2.648571911	2.706525683
sc89	8	1	1	1	1	1	1	1	1	1	0.066519131	2.761209143	2.894149868	2.90222023	2.852590402	2.926153075	2.86344916	2.926153075
sc90	8	1	1	1	1	1	1	1	8	1	0.058994802	2.448874222	2.546017063	2.573934802	2.49403279	2.617043314	2.512557093	2.566974459
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.154784531	2.270280393	2.264826362	2.222094479	2.292856843	2.233630296	2.292856843
sc92	8	1	8	1	8	1	1	1	8	1	0.091884137	3.81411054	3.957696087	4.008891828	3.925167599	4.016967247	3.91775935	3.98398087
sc93	8	1	1	1	1	1	1	1	1	1	0.05372398	2.230082415	2.354314656	2.343969604	2.308936117	2.37387466	2.318905805	2.37387466
sc94	8	1	1	1	1	1	1	1	1	1	0.049937645	2.072911654	2.155900094	2.178772352	2.154002094	2.162959094	2.154002094	2.162959094
sc95	8	1	1	1	1	1	8	1	1	1	0.052196834	2.166690577	2.291167095	2.277340433	2.206141357	2.328847389	2.220074174	2.328847389
sc96	8	1	1	1	8	1	1	1	8	1	0.069784137	2.89673954	3.036681357	3.044671975	2.954157524	3.083412245	2.976019185	3.074270351
sc97	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.299999125	3.332498006	3.26802594	3.336529631	3.272106992	3.324997791
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	2.564156265	2.689652986	2.695104138	2.652632388	2.722618079	2.660753041	2.722618079
sc99	8	1	1	1	1	1	1	1	1	1	0.076381134	3.170580877	3.327784587	3.332498006	3.275679008	3.346441372	3.287214825	3.346441372
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.388973669	2.368278152	2.33543894	2.403938686	2.344679676	2.403938686

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 54: June results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.056623678	2.350448876	2.321261211	2.32046381	2.18418495	2.368407124	2.219809641	2.368407124
sc2	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.247922461	2.236219463	2.111337363	2.305777648	2.172182687	2.299213248
sc3	8	1	1	1	1	1	8	1	1	1	0.059922135	2.487367806	2.449313604	2.455636042	2.302204532	2.502393786	2.357184132	2.502393786
sc4	8	1	1	1	1	1	1	1	1	1	0.068208467	2.831333461	2.816498019	2.79521367	2.747247973	2.843700543	2.766675412	2.843700543
sc5	8	1	8	1	1	1	1	1	1	1	0.072922135	3.026997806	2.991352284	2.988381892	2.823129585	3.03642044	2.901589456	3.030862569
sc6	8	1	1	1	1	1	1	1	1	1	0.068208467	2.831333461	2.791557708	2.79521367	2.718760937	2.833126782	2.750702982	2.833126782
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.069451578	2.045275059	2.04305124	1.957250241	2.07269945	1.98367673	2.07269945
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.069451578	2.044106981	2.04305124	1.955622957	2.072792977	1.985011252	2.072792977
sc9	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.777478011	2.757211155	2.705634277	2.802003701	2.725061716	2.802003701
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.625046336	1.594967881	1.60431535	1.588607631	1.601464631	1.594210631	1.601464631
sc11	8	1	1	1	8	1	1	1	8	1	0.067567958	2.804745923	2.772574661	2.768965313	2.640077474	2.830286916	2.687894499	2.817899371
sc12	8	1	1	1	1	1	1	1	1	1	0.056623678	2.350448876	2.308237461	2.32046381	2.154262311	2.3566695	2.208271565	2.3566695
sc13	8	1	1	1	1	1	8	1	1	1	0.058994802	2.448874222	2.431059197	2.417633527	2.296475603	2.483444147	2.344365288	2.483444147
sc14	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.398974969	2.417633527	2.288668891	2.461291925	2.319651847	2.461291925
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.226999104	2.224465304	2.145047889	2.254638909	2.175105684	2.254638909
sc16	8	1	8	1	8	1	8	1	8	1	0.058994802	2.448874222	2.423000599	2.417633527	2.28322308	2.467202411	2.3306927	2.467202411
sc17	8	1	1	1	1	1	1	1	1	1	0.062132799	2.579132488	2.557997122	2.546230067	2.393867485	2.59206964	2.447618329	2.59206964
sc18	8	1	1	1	1	1	1	1	1	1	0.06285429	2.609081578	2.575171754	2.575797091	2.487279029	2.604449049	2.516667324	2.604449049
sc19	8	1	1	1	1	1	1	1	1	1	0.054636032	2.267941697	2.271730336	2.239009188	2.169192126	2.284808647	2.201321064	2.278978697
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.039502488	1.978112165	2.013484216	1.849864487	2.033903534	1.893446233	2.017606426
sc21	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.229499219	2.236219463	2.095253239	2.282520783	2.147806333	2.275297359
sc22	8	1	8	1	1	1	1	1	1	1	0.049132799	2.039502488	2.009295953	2.013484216	1.839650812	2.056829111	1.905319028	2.056829111
sc23	8	1	1	1	1	1	1	1	1	1	0.062937645	2.612541654	2.58685012	2.579213027	2.58144862	2.59448762	2.58144862	2.59448762
sc24	8	1	1	1	1	1	10	1	10	1	0.069784137	2.89673954	2.840244517	2.859785352	2.71017779	2.904465987	2.58144862	2.59448762
sc25	8	1	1	1	8	1	8	1	8	1	0.059922135	2.487367806	2.451151992	2.455636042	2.318579972	2.494682708	2.353204475	2.494682708
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.069451578	2.032880058	2.04305124	1.96499692	2.070363612	1.990684387	2.070363612
sc27	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.237031128	2.224465304	2.151153042	2.259356946	2.184439153	2.259356946
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.932532648	1.914419982	1.907879008	1.82033431	1.934700154	1.852276355	1.934700154
sc29	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.763391719	2.757211155	2.687326173	2.791332255	2.706058624	2.791332255
sc30	8	1	8	1	1	1	8	1	1	1	0.071994802	2.988504222	2.942395966	2.950379377	2.806767207	2.990848453	2.862238221	2.990848453
sc31	8	1	1	1	1	1	1	1	1	1	0.071994802	2.988504222	2.92172873	2.950379377	2.821769874	3.001759222	2.863993217	2.970875793
sc32	8	1	1	1	1	1	1	1	1	1	0.055208467	2.291703461	2.249406363	2.262467819	2.163106843	2.268479227	2.18879431	2.268479227
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.226855578	2.224465304	2.162083214	2.266413784	2.181348153	2.266413784
sc34	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.736282164	2.757211155	2.656920148	2.771285992	2.691383527	2.757559585
sc35	8	1	1	1	1	1	1	1	1	1	0.071994802	2.988504222	2.932867513	2.950379377	2.794569677	2.991747174	2.863065991	2.969783269
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.226414308	2.224465304	2.140034055	2.257022076	2.17502535	2.257022076

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.06507047	2.701075195	2.661447593	2.66661713	2.575580918	2.683784821	2.608867029	2.683784821
sc38	8	1	1	1	1	1	1	1	1	1	0.082784137	3.43636954	3.302072962	3.392531203	3.162263533	3.361077892	3.222245474	3.352652372
sc39	8	1	1	1	1	1	1	1	1	1	0.071994802	2.988504222	2.970164743	2.950379377	2.832548124	3.015347081	2.881551036	3.004719515
sc40	8	1	1	1	1	1	1	1	1	1	0.063781623	2.647575162	2.499823064	2.613799606	2.407928913	2.533150176	2.439479235	2.533150176
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.311955292	2.267176963	2.282461294	2.155805046	2.346001003	2.208045775	2.318827478
sc42	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.283529277	2.417633527	2.179174418	2.379651552	2.228354755	2.350639022
sc43	8	1	1	1	1	1	1	1	1	1	0.049132799	2.039502488	2.034329529	2.013484216	1.877929623	2.070127991	1.937075393	2.070127991
sc44	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.233149232	2.224465304	2.153380489	2.26297151	2.183438284	2.26297151
sc45	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.840730673	1.820315993	1.749325547	1.863990392	1.781774593	1.863990392
sc46	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.231595558	2.224465304	2.151389621	2.259593524	2.184675732	2.259593524
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.706919213	1.695481279	1.685143761	1.600572809	1.716272691	1.626999298	1.716272691
sc48	8	1	1	1	1	1	1	1	1	1	0.044705955	1.855744189	1.839815331	1.832070152	1.701545289	1.884888765	1.756919756	1.877665341
sc49	8	1	8	1	8	1	8	1	8	1	0.059922135	2.487367806	2.46094132	2.455636042	2.295631453	2.496053688	2.355703762	2.47470801
sc50	8	1	1	1	8	1	8	1	8	1	0.044705955	1.855744189	1.821654978	1.832070152	1.705901409	1.876241469	1.742028092	1.885055459
sc51	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.251189314	2.236219463	2.110226033	2.307951618	2.171270027	2.29840738
sc52	8	1	1	1	1	1	1	1	1	1	0.068208467	2.831333461	2.776515019	2.79521367	2.708376069	2.821327453	2.738582579	2.812375593
sc53	8	1	1	1	1	1	1	1	1	1	0.05372398	2.230082415	2.199743606	2.201632884	2.152649384	2.231303131	2.167513384	2.215755154
sc54	8	1	1	1	1	1	1	1	1	1	0.071994802	2.988504222	2.979252021	2.950379377	2.821074635	3.018040672	2.878970674	3.018040672
sc55	8	1	1	1	1	1	1	1	1	1	0.062132799	2.579132488	2.563622888	2.546230067	2.418860388	2.619144886	2.486940093	2.60857132
sc56	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.237363601	2.236219463	2.091311032	2.294754499	2.144472178	2.294754499
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.824250699	1.820315993	1.74092412	1.850515141	1.770981916	1.850515141
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.232855072	2.224465304	2.144980094	2.260580998	2.183199706	2.260580998
sc59	8	1	1	1	1	1	1	1	8	1	0.049132799	2.039502488	2.029306677	2.013484216	1.915543663	2.08040457	1.94241625	2.077728309
sc60	8	1	1	1	1	1	1	1	1	1	0.039992287	1.660079844	1.642198982	1.63890193	1.562829776	1.67608016	1.588354744	1.67608016
sc61	8	1	1	1	1	1	8	1	8	1	0.069784137	2.89673954	2.869786543	2.859785352	2.714816459	2.910658155	2.771865586	2.910480256
sc62	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.762529963	2.757211155	2.683311482	2.791432364	2.71046884	2.791432364
sc63	8	1	1	1	1	1	8	1	1	1	0.058994802	2.448874222	2.411457066	2.417633527	2.256387968	2.468721744	2.318335371	2.448560728
sc64	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.23062354	2.224465304	2.143279399	2.26044942	2.172667694	2.26044942
sc65	8	1	1	1	1	1	1	1	1	1	0.050781623	2.107945162	2.07399969	2.081053755	1.995308972	2.100894041	2.02191891	2.100894041
sc66	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.822767785	1.820315993	1.745571311	1.855162331	1.780817648	1.846210472
sc67	8	1	1	1	1	1	1	1	1	1	0.069784137	2.89673954	2.83060737	2.859785352	2.704829636	2.911278646	2.768145166	2.882426837
sc68	8	1	1	1	1	1	8	1	1	1	0.071994802	2.988504222	2.962803982	2.950379377	2.84477991	3.021363361	2.880812684	3.021363361
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.417926595	2.417633527	2.283380056	2.464192817	2.322441573	2.464192817
sc70	8	1	1	1	1	1	1	1	1	1	0.063982678	2.655920947	2.608958277	2.622038922	2.542143409	2.644621479	2.563728848	2.644621479
sc71	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.409388632	2.417633527	2.28191051	2.461891102	2.32529117	2.455107208
sc72	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.766466807	2.757211155	2.681805302	2.796034705	2.714682795	2.78183578
sc73	8	1	8	1	8	1	8	1	8	1	0.044705955	1.855744189	1.841633714	1.832070152	1.712429954	1.883260753	1.745890003	1.883260753
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.835315183	1.820315993	1.747030508	1.864200528	1.776418803	1.864200528

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.059922135	2.487367806	2.431001282	2.455636042	2.312625288	2.495410056	2.351960979	2.469110879
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.265115923	2.228954785	2.236219463	2.098689972	2.283162628	2.142363831	2.283162628
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.235878614	2.224465304	2.148600034	2.264299916	2.175026523	2.264299916
sc78	8	1	1	1	1	1	1	1	1	1	0.069784137	2.89673954	2.830983272	2.859785352	2.707378225	2.899977359	2.759074591	2.885723504
sc79	8	1	1	1	1	1	1	1	1	1	0.049010312	2.03441807	2.018323669	2.008464661	2.010094669	2.021580169	2.012922169	2.021580169
sc80	8	1	1	1	1	1	1	1	1	1	0.068208467	2.831333461	2.653761871	2.79521367	2.570877456	2.69469436	2.616546068	2.69469436
sc81	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.246912456	2.224465304	2.171507109	2.286011992	2.202453076	2.277347492
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	1.843838143	1.836097751	1.820315993	1.752043689	1.86766021	1.786209936	1.859470021
sc83	8	1	1	1	8	1	1	1	8	1	0.058994802	2.448874222	2.407179262	2.417633527	2.276585481	2.466233322	2.336245281	2.453843205
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	2.701075195	2.663930644	2.66661713	2.575077664	2.700298927	2.612302162	2.689725362
sc85	8	1	8	1	8	1	8	1	8	1	0.058994802	2.448874222	2.426961225	2.417633527	2.291258813	2.478216193	2.328380506	2.46640377
sc86	8	1	1	1	1	1	1	1	1	1	0.06507047	2.701075195	2.623844435	2.66661713	2.558782731	2.6628143	2.583675238	2.657316561
sc87	8	1	1	1	1	1	1	1	1	1	0.071994802	2.988504222	2.976651303	2.950379377	2.838649833	3.023113201	2.885250603	3.023113201
sc88	8	1	1	1	1	1	1	1	1	1	0.052435133	2.176582382	2.141953062	2.14881536	2.098870707	2.167973448	2.109213429	2.167973448
sc89	8	1	1	1	1	1	1	1	1	1	0.057419131	2.383468143	2.373418327	2.353061844	2.297387192	2.405480854	2.330405927	2.399922983
sc90	8	1	1	1	1	1	1	1	1	1	0.058994802	2.448874222	2.433091188	2.417633527	2.269238078	2.47146214	2.329196649	2.47146214
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.154784531	2.063157505	2.127295587	1.994526954	2.111687571	2.026447346	2.101190071
sc92	8	1	1	1	8	1	1	1	8	1	0.082784137	3.43636954	3.38467277	3.392531203	3.225610426	3.416141564	3.278648464	3.431225495
sc93	8	1	1	1	1	1	1	1	1	1	0.05372398	2.230082415	2.210188766	2.201632884	2.146740243	2.23297299	2.155542078	2.23297299
sc94	8	1	1	1	1	1	1	1	1	1	0.049937645	2.072911654	2.024573427	2.046467176	2.018313927	2.031170927	2.023916927	2.031170927
sc95	8	1	1	1	8	1	1	1	8	1	0.052196834	2.166690577	2.131502116	2.139049746	2.008783748	2.185361971	2.050829621	2.185361971
sc96	8	1	1	1	1	1	1	1	1	1	0.069784137	2.89673954	2.861160418	2.859785352	2.72751383	2.908144591	2.781119394	2.902612776
sc97	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.748748225	2.757211155	2.681830977	2.784058373	2.703591916	2.784058373
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	2.564156265	2.422184052	2.531444898	2.361636713	2.477718617	2.393052988	2.443296786
sc99	8	1	1	1	1	1	1	1	1	1	0.067281134	2.792839877	2.751086147	2.757211155	2.669933663	2.795137683	2.715755326	2.782271311
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.253209877	2.236627746	2.224465304	2.158626048	2.263998432	2.185772024	2.253824633

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 55: July results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.082498678	3.478144267	3.762365294	3.706294632	3.632146984	3.820376981	3.666464053	3.820376981
sc2	8	1	1	1	1	1	1	1	1	1	0.080442958	3.391475095	3.681680088	3.613940358	3.553919099	3.735699792	3.592383905	3.735699792
sc3	8	1	1	1	1	1	8	1	1	1	0.085797135	3.617207193	3.846139949	3.85447945	3.727990572	3.906773188	3.786748729	3.899563916
sc4	8	1	1	1	1	1	1	1	1	1	0.081083467	3.418478964	3.60437049	3.642715558	3.538584847	3.648930217	3.56631062	3.648930217
sc5	8	1	8	1	8	1	8	1	8	1	0.085797135	3.617207193	3.901857806	3.85447945	3.769894339	3.955059574	3.81319277	3.955059574
sc6	8	1	1	1	1	1	1	1	1	1	0.081083467	3.418478964	3.590835475	3.642715558	3.521551173	3.6284094	3.543521214	3.620598933
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.239700599	2.239729069	2.171289399	2.284204834	2.193892332	2.270361627
sc8	8	1	1	1	1	1	1	1	1	1	0.07572929	3.192746866	3.399066047	3.402176466	3.333292456	3.440130392	3.356572407	3.440130392
sc9	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.420462152	2.438607268	2.363812805	2.476728239	2.384637516	2.476728239
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.650492738	1.736129898	1.758757517	1.727829398	1.743429398	1.732512648	1.743429398
sc11	8	1	1	1	8	1	8	1	8	1	0.080442958	3.391475095	3.633057202	3.613940358	3.513578009	3.694790775	3.560961302	3.694790775
sc12	8	1	1	1	1	1	1	1	1	1	0.082498678	3.478144267	3.735009512	3.706294632	3.623350776	3.796991067	3.655857563	3.796991067
sc13	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.632743359	2.650371161	2.518507654	2.70651905	2.555525197	2.70651905
sc14	8	1	1	1	8	1	8	1	1	1	0.084869802	3.578110843	3.785228961	3.812818558	3.701557365	3.891905779	3.733992102	3.867144295
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.421390413	2.438607268	2.350709158	2.461050593	2.373126369	2.461050593
sc16	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	2.639360766	2.650371161	2.520463449	2.701554208	2.553981605	2.701554208
sc17	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	2.202328212	2.207315724	2.077980509	2.260328556	2.112942344	2.260328556
sc18	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.225336983	2.239729069	2.16507167	2.270989439	2.188351373	2.270989439
sc19	8	1	1	1	1	1	1	1	1	1	0.067511032	2.846265118	3.051547281	3.032967099	2.989463836	3.102872717	3.017017008	3.102872717
sc20	8	1	1	1	8	1	8	1	8	1	0.075007799	3.162328807	3.391418974	3.369763122	3.26056205	3.447357882	3.300669759	3.447357882
sc21	8	1	1	1	8	1	8	1	8	1	0.054567958	2.300585095	2.440973143	2.451492961	2.319386127	2.516419821	2.363065104	2.508333193
sc22	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	2.208530278	2.207315724	2.090534049	2.282872785	2.141242689	2.274137726
sc23	8	1	1	1	1	1	1	1	1	1	0.075812645	3.196261124	3.398393383	3.405921243	3.389631383	3.401643383	3.389631383	3.401643383
sc24	8	1	1	1	8	1	8	1	8	1	0.069784137	2.942099229	3.130695907	3.13508749	3.000411616	3.155427106	3.048826253	3.152238051
sc25	8	1	1	1	1	1	8	1	8	1	0.085797135	3.617207193	3.891978083	3.85447945	3.787129964	3.964999568	3.818640043	3.957429732
sc26	8	1	1	1	1	1	1	1	1	1	0.07572929	3.192746866	3.432413086	3.402176466	3.381625702	3.480145344	3.405216723	3.480145344
sc27	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.63892227	3.601054666	3.586847231	3.69006152	3.604815536	3.69006152
sc28	8	1	1	1	8	1	1	1	8	1	0.046555833	1.96279394	2.056598638	2.09154425	1.994727047	2.098103144	2.017145237	2.086929621
sc29	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.406708477	2.438607268	2.344237408	2.447569981	2.362205713	2.447569981
sc30	8	1	8	1	1	1	1	1	1	1	0.084869802	3.578110843	3.82903374	3.812818558	3.736409327	3.899265637	3.74569025	3.899265637
sc31	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.64012671	2.650371161	2.520617417	2.702348168	2.558675742	2.702348168
sc32	8	1	1	1	1	1	1	1	1	1	0.081083467	3.418478964	3.690056722	3.642715558	3.622984192	3.733329561	3.651545214	3.733329561
sc33	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.645754264	3.601054666	3.58554034	3.691997036	3.602666551	3.691997036
sc34	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.603750353	3.601054666	3.533573822	3.639322194	3.556557093	3.639322194
sc35	8	1	1	1	1	1	1	1	1	1	0.084869802	3.578110843	3.731765438	3.812818558	3.641366752	3.814866647	3.673761405	3.770457153
sc36	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.538534201	3.601054666	3.488155863	3.59387939	3.506308073	3.58146809

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.09094547	3.834261	4.086839373	4.085770994	4.038379793	4.14555725	4.06039121	4.121029123
sc38	8	1	1	1	1	1	1	1	1	1	0.095659137	4.032989229	4.162922863	4.297534887	4.053742519	4.236511648	4.083692515	4.236511648
sc39	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.625784925	2.650371161	2.502215816	2.678445058	2.537159443	2.663452787
sc40	8	1	1	1	1	1	1	1	1	1	0.050781623	2.140953217	2.28142377	2.281389961	2.208099381	2.312273838	2.235750404	2.312273838
sc41	8	1	1	1	1	1	8	1	1	1	0.055696345	2.348157916	2.511954375	2.502186342	2.374238348	2.572368625	2.420106571	2.572368625
sc42	8	1	1	1	8	1	1	1	1	1	0.058994802	2.487220843	2.652928012	2.650371161	2.553398157	2.752896364	2.597429806	2.702432218
sc43	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	2.206419661	2.207315724	2.089210515	2.270301248	2.131497727	2.270301248
sc44	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.433611185	2.438607268	2.367511727	2.480896711	2.396037653	2.476353658
sc45	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.996751891	1.995551832	1.932115161	2.039292618	1.960448684	2.039292618
sc46	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.634773003	3.601054666	3.571447711	3.681394195	3.601484188	3.671960785
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.733647652	1.845101681	1.847367013	1.779971685	1.890268412	1.803144386	1.890268412
sc48	8	1	1	1	8	1	1	1	8	1	0.070580955	2.97569306	3.226141473	3.170884922	3.117890691	3.30475347	3.154141599	3.30475347
sc49	8	1	1	1	8	1	8	1	8	1	0.059922135	2.526317193	2.679819294	2.692032053	2.566938401	2.756393571	2.606754942	2.756393571
sc50	8	1	1	1	1	1	1	1	1	1	0.044705955	1.88480306	1.993865827	2.008437525	1.891015433	2.07283643	1.920983563	2.062921347
sc51	8	1	1	1	1	1	8	1	1	1	0.054567958	2.300585095	2.476734442	2.451492961	2.346318938	2.542296075	2.394908365	2.527526379
sc52	8	1	1	1	1	1	1	1	1	1	0.081083467	3.418478964	3.677742935	3.642715558	3.612216493	3.726381477	3.639769665	3.726381477
sc53	8	1	1	1	1	1	1	1	1	1	0.07959898	3.355893002	3.564612787	3.576024243	3.505520578	3.594839989	3.520207952	3.584486399
sc54	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.643826591	2.650371161	2.53654391	2.733023381	2.576452233	2.69968207
sc55	8	1	1	1	8	1	1	1	8	1	0.075007799	3.162328807	3.377930297	3.369763122	3.291104058	3.457009871	3.316379786	3.42695516
sc56	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	2.453244739	2.451492961	2.3236223	2.506781321	2.365240348	2.506781321
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.989600017	1.995551832	1.921721331	2.027469703	1.940255352	2.012103703
sc58	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.609304679	3.601054666	3.529121786	3.639418513	3.552294487	3.639418513
sc59	8	1	1	1	1	1	1	1	1	1	0.075007799	3.162328807	3.402587846	3.369763122	3.274566428	3.461339694	3.312173228	3.461339694
sc60	8	1	1	1	1	1	1	1	1	1	0.039992287	1.686074831	1.783035206	1.796673632	1.729568041	1.835708614	1.747536346	1.820888614
sc61	8	1	1	1	8	1	1	1	8	1	0.095659137	4.032989229	4.27668867	4.297534887	4.152115301	4.310845518	4.195118006	4.337492318
sc62	8	1	10	1	10	1	10	1	10	1	0.080156134	3.379382614	3.611242323	3.601054666	4.152115301	4.310845518	4.195118006	4.337492318
sc63	8	1	8	1	8	1	8	1	8	1	0.084869802	3.578110843	3.785672901	3.812818558	3.699484701	3.848690103	3.724948217	3.825298061
sc64	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.589777798	3.601054666	3.536692716	3.642610485	3.560241528	3.631104875
sc65	8	1	1	1	1	1	1	1	1	1	0.050781623	2.140953217	2.280521218	2.281389961	2.21340602	2.323937477	2.241967043	2.323937477
sc66	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.997949405	1.995551832	1.928480957	2.02904453	1.951057763	2.02904453
sc67	8	1	1	1	1	1	1	1	1	1	0.095659137	4.032989229	4.317867381	4.297534887	4.194218039	4.384669946	4.241407858	4.364282515
sc68	8	1	1	1	8	1	1	1	8	1	0.058994802	2.487220843	2.648427013	2.650371161	2.541575945	2.704155641	2.577466473	2.687661016
sc69	8	1	1	1	1	1	1	1	1	1	0.084869802	3.578110843	3.829641853	3.812818558	3.724737162	3.915758487	3.766754868	3.895404064
sc70	8	1	1	1	1	1	1	1	1	1	0.076857678	3.240319687	3.452732552	3.452869847	3.392443253	3.505358688	3.413025704	3.493649174
sc71	8	1	1	1	1	1	1	1	8	1	0.058994802	2.487220843	2.651239488	2.650371161	2.53106446	2.715939773	2.577846275	2.70476625
sc72	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.567261591	3.601054666	3.498242092	3.608773549	3.526803115	3.608773549
sc73	8	1	1	1	1	1	1	1	1	1	0.044705955	1.88480306	2.013588602	2.008437525	1.889857466	2.071066357	1.926355567	2.071066357
sc74	8	1	1	1	1	1	1	1	1	1	0.070294131	2.963600578	3.214945767	3.157999229	3.13758837	3.247929805	3.160005581	3.247929805

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.085797135	3.617207193	3.868434626	3.85447945	3.741110831	3.923589369	3.781360309	3.923589369
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	2.445851459	2.451492961	2.32168382	2.508159164	2.359484339	2.508159164
sc77	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.632355636	3.601054666	3.57413409	3.687404502	3.597753682	3.649459452
sc78	8	1	1	1	8	1	8	1	8	1	0.069784137	2.942099229	3.098924095	3.13508749	2.991469941	3.184089089	3.046119615	3.184089089
sc79	8	1	1	1	1	1	1	1	1	1	0.049010312	2.066274773	2.192634845	2.201812953	2.182754845	2.194136345	2.186560595	2.194136345
sc80	8	1	1	1	1	1	1	1	1	1	0.055208467	2.327588964	2.466410122	2.480268161	2.395956597	2.505312866	2.419129051	2.505312866
sc81	8	1	1	1	1	1	1	1	1	1	0.080156134	3.379382614	3.654976155	3.601054666	3.594381148	3.693591454	3.617096039	3.685930575
sc82	8	1	10	1	10	1	10	1	10	1	0.070294131	2.963600578	3.178907081	3.157999229	3.594381148	3.693591454	3.617096039	3.685930575
sc83	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.61103116	2.650371161	2.500324125	2.67986969	2.534975239	2.67986969
sc84	8	1	1	1	1	1	1	1	1	1	0.09094547	3.834261	4.052919269	4.085770994	3.984093443	4.094415823	4.015861942	4.088888266
sc85	8	1	1	1	1	1	1	1	1	1	0.084869802	3.578110843	3.739312891	3.812818558	3.623033722	3.804886024	3.654176979	3.793134024
sc86	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	2.919625876	2.923323597	2.840322181	2.954017616	2.862966892	2.954017616
sc87	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.621483589	2.650371161	2.52936703	2.722040322	2.568239697	2.690051675
sc88	8	1	1	1	1	1	1	1	1	1	0.065310133	2.753475219	2.982130821	2.934090607	2.914025548	3.006560217	2.930597376	3.006560217
sc89	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	1.988781391	1.995551832	1.923780136	2.033257071	1.945045545	2.019473006
sc90	8	1	1	1	1	1	1	1	8	1	0.084869802	3.578110843	3.798039974	3.812818558	3.672788742	3.869522451	3.716278199	3.869522451
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.188526038	2.309298642	2.332083342	2.249830573	2.359186842	2.273003027	2.359186842
sc92	8	1	1	1	8	1	1	1	8	1	0.095659137	4.032989229	4.305096525	4.297534887	4.190428091	4.36787767	4.235272547	4.32363243
sc93	8	1	1	1	1	1	1	1	1	1	0.05372398	2.265003002	2.431976002	2.413576846	2.348145116	2.443470014	2.36164797	2.443470014
sc94	8	1	10	1	10	1	10	1	10	1	0.075812645	3.196261124	3.294601174	3.405921243	2.348145116	2.443470014	2.36164797	2.443470014
sc95	8	1	1	1	8	1	8	1	8	1	0.078071834	3.291508519	3.525370143	3.507416432	3.412003983	3.592595761	3.468653461	3.582241355
sc96	8	1	1	1	1	1	1	1	1	1	0.095659137	4.032989229	4.287571641	4.297534887	4.162394709	4.343703824	4.196893495	4.343703824
sc97	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.432011234	2.438607268	2.369919222	2.472866492	2.389393176	2.472866492
sc98	8	1	1	1	1	1	1	1	1	1	0.087647013	3.695198073	3.923054489	3.937586176	3.860380956	3.967239184	3.883660908	3.967239184
sc99	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.445532199	2.438607268	2.380811345	2.487787328	2.403681267	2.487787328
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.439876981	2.438607268	2.370494205	2.475462577	2.392492725	2.475462577

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 56: August results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.077323678	3.259966267	3.662095911	3.58505573	3.479143526	3.703080378	3.556337928	3.703080378
sc2	8	1	1	1	1	1	8	1	1	1	0.075267958	3.173297095	3.488712161	3.489743759	3.333661477	3.536473433	3.389740986	3.528837547
sc3	8	1	1	1	8	1	8	1	8	1	0.080622135	3.399029193	3.788053988	3.737986251	3.601914107	3.797405575	3.677242965	3.827110956
sc4	8	1	1	1	1	1	1	1	1	1	0.075908467	3.200300964	3.504000016	3.5194405	3.406467918	3.532537621	3.443839643	3.532537621
sc5	8	1	1	1	1	1	8	1	1	1	0.080622135	3.399029193	3.747264157	3.737986251	3.569731411	3.785652149	3.637403963	3.785652149
sc6	8	1	1	1	1	1	1	1	1	1	0.075908467	3.200300964	3.53919903	3.5194405	3.442556412	3.563972359	3.478951875	3.563972359
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.291491854	2.311457661	2.187391205	2.309572163	2.215920523	2.309572163
sc8	8	1	1	1	1	1	1	1	1	1	0.07055429	2.974568866	3.259531444	3.271198008	3.154886216	3.278021634	3.195004738	3.278021634
sc9	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.492819592	2.516705047	2.400114897	2.519400706	2.44180786	2.507587755
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.650492738	1.789317523	1.815082722	1.776876523	1.791651023	1.785804273	1.791651023
sc11	8	1	1	1	1	1	1	1	1	1	0.075267958	3.173297095	3.52500956	3.489743759	3.329254452	3.553312836	3.395021962	3.553312836
sc12	8	1	1	1	1	1	1	1	1	1	0.077323678	3.259966267	3.59788054	3.58505573	3.426323925	3.63695704	3.47340219	3.63695704
sc13	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.727784777	2.735250798	2.533812483	2.762655263	2.61185183	2.759000046
sc14	8	1	8	1	1	1	8	1	1	1	0.079694802	3.359932843	3.689772782	3.694991145	3.526527252	3.73682366	3.590325199	3.73682366
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.49984751	2.516705047	2.385999838	2.520162041	2.432887563	2.520162041
sc16	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	2.731873438	2.735250798	2.549376134	2.77810463	2.611369004	2.77810463
sc17	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	2.26988071	2.278006261	2.08121292	2.305415974	2.141759509	2.305415974
sc18	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.289643614	2.311457661	2.195145582	2.310745891	2.231060045	2.310745891
sc19	8	1	1	1	1	1	1	1	1	1	0.062336032	2.628087118	2.891112036	2.890164501	2.795800065	2.916962512	2.842286778	2.916962512
sc20	8	1	8	1	8	1	1	1	8	1	0.069832799	2.944150807	3.266823747	3.237746608	3.09410144	3.309144243	3.152058843	3.277653901
sc21	8	1	1	1	8	1	1	1	8	1	0.054567958	2.300585095	2.507235441	2.530003412	2.330696157	2.543348666	2.39645599	2.543348666
sc22	8	1	8	1	1	1	8	1	1	1	0.049132799	2.071438807	2.28068203	2.278006261	2.093458115	2.313725709	2.164355983	2.313725709
sc23	8	1	1	1	1	1	1	1	1	1	0.070637645	2.978083124	3.292075406	3.275062713	3.282474906	3.296215906	3.289761406	3.296215906
sc24	8	1	8	1	1	1	8	1	1	1	0.069784137	2.942099229	3.219296922	3.235490442	3.044743231	3.258790447	3.11392445	3.258790447
sc25	8	1	8	1	8	1	8	1	8	1	0.080622135	3.399029193	3.784526492	3.737986251	3.615861799	3.826148506	3.684508573	3.798719796
sc26	8	1	1	1	1	1	1	1	1	1	0.07055429	2.974568866	3.290274736	3.271198008	3.188978267	3.308475856	3.23271548	3.308475856
sc27	8	1	10	1	10	1	10	1	10	1	0.074981134	3.161204614	3.43519954	3.476445394	3.188978267	3.308475856	3.23271548	3.308475856
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.96279394	2.136186004	2.158527139	2.026816961	2.14703227	2.070554174	2.14703227
sc29	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.523078915	2.516705047	2.415976744	2.535262553	2.457669707	2.535262553
sc30	8	1	8	1	1	1	1	1	1	1	0.079694802	3.359932843	3.700050358	3.694991145	3.543645475	3.755721128	3.594611789	3.739401487
sc31	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.719461617	2.735250798	2.523259829	2.756082873	2.584281929	2.756082873
sc32	8	1	1	1	1	1	1	1	1	1	0.075908467	3.200300964	3.550480256	3.5194405	3.444603291	3.578765494	3.490269016	3.578765494
sc33	8	1	1	1	8	1	1	1	8	1	0.074981134	3.161204614	3.495103206	3.476445394	3.38659451	3.508471559	3.430124985	3.51194484
sc34	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.488266816	3.476445394	3.40870854	3.517374625	3.432055681	3.506321118
sc35	8	1	1	1	1	1	1	1	1	1	0.079694802	3.359932843	3.594161795	3.694991145	3.493289286	3.689584979	3.53874114	3.638332316

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc36	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.503443562	3.476445394	3.406372989	3.535969721	3.443336117	3.535969721
sc37	8	1	1	1	1	1	1	1	1	1	0.08577047	3.616083	3.698167199	3.976685038	3.630823973	3.757744959	3.66645393	3.717376404
sc38	8	1	8	1	1	1	10	1	10	1	0.090484137	3.814811229	3.833165204	4.195230789	3.765217342	3.952017417	3.66645393	3.717376404
sc39	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.749511061	2.735250798	2.572359658	2.79933306	2.634171156	2.79933306
sc40	8	1	1	1	1	1	1	1	1	1	0.050781623	2.140953217	2.349673016	2.354452767	2.242870347	2.363764305	2.278205165	2.363764305
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.348157916	2.58405592	2.582320277	2.393037016	2.616845437	2.456194462	2.616845437
sc42	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.750087875	2.735250798	2.556716978	2.791106141	2.628830864	2.791106141
sc43	8	1	1	1	1	1	8	1	8	1	0.049132799	2.071438807	2.276416671	2.278006261	2.094216666	2.315006982	2.174907818	2.305143096
sc44	8	1	8	1	1	1	1	1	1	1	0.054281134	2.288492614	2.529808291	2.516705047	2.452985608	2.552671974	2.476193878	2.552671974
sc45	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.072808363	2.05946051	1.971226395	2.091190853	2.005053213	2.091190853
sc46	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.532537454	3.476445394	3.417110152	3.546811682	3.45407328	3.546811682
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.733647652	1.916925574	1.906529988	1.819312771	1.939259412	1.85430545	1.92834411
sc48	8	1	1	1	1	1	8	1	1	1	0.065405955	2.75751506	3.062101368	3.032499221	2.891439598	3.103764778	2.967981381	3.094966589
sc49	8	1	1	1	1	1	1	1	1	1	0.059922135	2.526317193	2.766301498	2.778245904	2.611116661	2.813546987	2.662959762	2.813546987
sc50	8	1	1	1	1	1	8	1	1	1	0.044705955	1.88480306	2.081122373	2.072758874	1.884195885	2.110905468	1.969865337	2.110905468
sc51	8	1	1	1	1	1	8	1	1	1	0.054567958	2.300585095	2.530212155	2.530003412	2.373949623	2.59648723	2.435274611	2.581063556
sc52	8	1	1	1	1	1	1	1	1	1	0.075908467	3.200300964	3.567737188	3.5194405	3.461741618	3.591510209	3.502129667	3.583968356
sc53	8	1	1	1	1	1	1	1	1	1	0.07442398	3.137715002	3.442923253	3.450613358	3.35990335	3.471236394	3.405384975	3.460018606
sc54	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.758182783	2.735250798	2.587387326	2.804635878	2.640301215	2.794105878
sc55	8	1	1	1	1	1	1	1	1	1	0.069832799	2.944150807	3.194287494	3.237746608	3.047769816	3.263366011	3.099416125	3.222460527
sc56	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	2.552094011	2.530003412	2.370541329	2.584508633	2.424182502	2.584508633
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.0576554	2.05946051	1.950769689	2.084931892	1.996435414	2.084931892
sc58	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.563677324	3.476445394	3.463386448	3.586732651	3.500407173	3.586732651
sc59	8	1	1	1	1	1	1	1	1	1	0.069832799	2.944150807	3.239437721	3.237746608	3.055773119	3.28221356	3.119782746	3.28221356
sc60	8	1	1	1	1	1	1	1	1	1	0.039992287	1.686074831	1.844650004	1.854213123	1.743970874	1.868799464	1.786146239	1.859463429
sc61	8	1	1	1	1	1	1	1	1	1	0.090484137	3.814811229	4.219516818	4.195230789	4.034842965	4.257703621	4.09594603	4.242502002
sc62	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.470912657	3.476445394	3.365646128	3.496007153	3.416029051	3.4960074
sc63	8	1	1	1	8	1	1	1	8	1	0.079694802	3.359932843	3.734475794	3.694991145	3.538280655	3.746209286	3.612540299	3.7384518
sc64	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.499235061	3.476445394	3.423894728	3.551237403	3.45679876	3.515879227
sc65	8	1	1	1	1	1	1	1	1	1	0.050781623	2.140953217	2.332219685	2.354452767	2.240553422	2.356153731	2.276467885	2.356153731
sc66	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.058517504	2.05946051	1.970053868	2.090947826	2.012606384	2.078117706
sc67	8	1	1	1	1	1	8	1	1	1	0.090484137	3.814811229	4.216286665	4.195230789	4.035924898	4.269688957	4.137321287	4.249543407
sc68	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.753944405	2.735250798	2.573978283	2.784643699	2.622335684	2.784643699
sc69	8	1	1	1	1	1	1	1	1	1	0.079694802	3.359932843	3.676556347	3.694991145	3.511170721	3.717357597	3.566435613	3.707637509
sc70	8	1	1	1	1	1	1	1	1	1	0.071682678	3.022141687	3.335907527	3.323514873	3.253532025	3.377004107	3.292542309	3.35750516
sc71	8	1	1	1	8	1	1	1	1	1	0.058994802	2.487220843	2.723645916	2.735250798	2.563593548	2.750394187	2.620482624	2.766943677
sc72	8	1	10	1	10	1	10	1	10	1	0.074981134	3.161204614	3.472743258	3.476445394	2.563593548	2.750394187	2.620482624	2.766943677
sc73	8	1	8	1	8	1	1	1	8	1	0.044705955	1.88480306	2.063236902	2.072758874	1.886743376	2.109590766	1.945247884	2.115948487

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc74	8	1	1	1	1	1	1	1	1	1	0.065119131	2.745422578	3.058413	3.019200857	2.968492588	3.089264179	3.004363657	3.089264179
sc75	8	1	1	1	1	1	1	1	1	1	0.080622135	3.399029193	3.776324801	3.737986251	3.594636702	3.809668755	3.647466091	3.809668755
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	2.508010697	2.530003412	2.353864982	2.570811829	2.415498896	2.570811829
sc77	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.449764247	3.476445394	3.381390857	3.503449448	3.415121462	3.477326217
sc78	8	1	8	1	1	1	8	1	1	1	0.069784137	2.942099229	3.227276106	3.235490442	3.054649041	3.273480048	3.141513646	3.266518548
sc79	8	1	1	1	1	1	1	1	1	1	0.049010312	2.066274773	2.274998917	2.27232726	2.255602917	2.276506917	2.268310417	2.276506917
sc80	8	1	1	1	1	1	1	1	1	1	0.055208467	2.327588964	2.549770142	2.559700153	2.451610225	2.581211806	2.494387639	2.581211806
sc81	8	1	1	1	1	1	1	1	1	1	0.074981134	3.161204614	3.487205196	3.476445394	3.403704256	3.512339905	3.426291954	3.512339905
sc82	8	1	10	1	10	1	10	1	10	1	0.065119131	2.745422578	3.075908769	3.019200857	3.403704256	3.512339905	3.426291954	3.512339905
sc83	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	2.70636009	2.735250798	2.523817454	2.750602859	2.60827575	2.750602859
sc84	8	1	1	1	1	1	1	1	1	1	0.08577047	3.616083	3.983662939	3.976685038	3.886862366	4.010997831	3.927406994	4.010997831
sc85	8	1	1	1	1	1	8	1	1	1	0.079694802	3.359932843	3.724099038	3.694991145	3.541880183	3.761610484	3.610484289	3.761610484
sc86	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	2.929846165	3.016944691	2.854370385	2.978855658	2.891572927	2.950114832
sc87	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.763044501	2.735250798	2.569178765	2.791638529	2.642510627	2.791638529
sc88	8	1	1	1	1	1	1	1	1	1	0.060135133	2.535297219	2.836978536	2.788121434	2.739058812	2.847609783	2.757885787	2.847609783
sc89	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.062884494	2.05946051	1.942855706	2.078500049	1.992045334	2.078500049
sc90	8	1	8	1	1	1	8	1	1	1	0.079694802	3.359932843	3.713512054	3.694991145	3.56654892	3.777207407	3.627180475	3.752008549
sc91	8	1	8	1	1	1	1	1	1	1	0.05191001	2.188526038	2.375649449	2.406769632	2.297272952	2.400906713	2.313153046	2.400906713
sc92	8	1	8	1	8	1	1	1	8	1	0.090484137	3.814811229	4.07140239	4.195230789	3.937382193	4.127500709	3.979017694	4.095062122
sc93	8	1	1	1	1	1	1	1	1	1	0.05372398	2.265003002	2.498527905	2.490873011	2.411002839	2.520426172	2.432916255	2.520426172
sc94	8	1	1	1	1	1	1	1	1	1	0.070637645	2.978083124	3.292184942	3.275062713	3.279639942	3.293380942	3.286926442	3.293380942
sc95	8	1	8	1	1	1	8	1	1	1	0.072896834	3.073330519	3.40765739	3.379808343	3.271882584	3.468410174	3.329168051	3.460051047
sc96	8	1	1	1	8	1	1	1	1	1	0.090484137	3.814811229	4.157647533	4.195230789	3.972270516	4.161039673	4.030026805	4.183463261
sc97	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.515110248	2.516705047	2.410631749	2.540993021	2.463264238	2.537119215
sc98	8	1	1	1	1	1	1	1	1	1	0.082472013	3.477020073	3.803595814	3.823754517	3.710782468	3.830997777	3.753983431	3.830997777
sc99	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.497611002	2.516705047	2.398261329	2.518476638	2.441462292	2.518476638
sc100	8	1	1	1	1	1	1	1	8	1	0.054281134	2.288492614	2.485948975	2.516705047	2.376527167	2.506042258	2.423581545	2.49488732

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 57: September results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.056623678	2.387254267	2.789853815	2.748418227	2.57164664	2.819570047	2.5954527	2.819570047
sc2	8	1	1	1	1	1	8	1	1	1	0.054567958	2.300585095	2.678634251	2.648637012	2.467335612	2.716376355	2.497887374	2.716376355
sc3	8	1	8	1	1	1	1	1	1	1	0.059922135	2.526317193	2.886768069	2.908519766	2.697488938	2.944097595	2.766028611	2.937032479
sc4	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	4.14679152	4.099472126	4.054973126	4.195312686	4.073487276	4.195312686
sc5	8	1	8	1	8	1	8	1	8	1	0.089172135	3.759497193	4.318100408	4.328265638	4.174590189	4.423947511	4.242422746	4.408989185
sc6	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	4.08457625	4.099472126	3.999999927	4.145121497	4.015918993	4.145121497
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.402801438	2.419843501	2.296202602	2.442872302	2.314916956	2.442872302
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.392064251	2.419843501	2.313554845	2.459039766	2.329530463	2.459039766
sc9	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	3.986048869	4.05446095	3.904588064	4.056738359	3.91578522	4.019371451
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.650492738	1.906321588	1.9001932	1.881920588	1.906321588	1.881920588	1.906321588
sc11	8	1	8	1	8	1	8	1	8	1	0.083817958	3.533765095	4.070694306	4.068382884	3.877707031	4.124396867	3.926212728	4.119378417
sc12	8	1	1	1	1	1	1	1	1	1	0.056623678	2.387254267	2.72730141	2.748418227	2.569605644	2.821408341	2.593492983	2.821408341
sc13	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	2.905233506	2.86350859	2.725188879	2.959651432	2.764084553	2.954400531
sc14	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.870551457	2.86350859	2.679916474	2.928277655	2.709250152	2.928277655
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.608061055	2.634715078	2.517256551	2.660737817	2.536310774	2.660737817
sc16	8	1	1	1	1	1	8	1	1	1	0.058994802	2.487220843	2.884240338	2.86350859	2.715704821	2.974119277	2.7575095	2.969424954
sc17	8	1	1	1	8	1	1	1	8	1	0.078382799	3.304618807	3.757949332	3.804569413	3.626164573	3.883415489	3.646456242	3.828011062
sc18	8	1	1	1	1	1	1	1	1	1	0.07910429	3.335036866	3.857194232	3.839589372	3.748599134	3.8903969	3.76742565	3.872150577
sc19	8	1	1	1	1	1	1	1	1	1	0.070886032	2.988555118	3.355166659	3.440688942	3.315983226	3.459455375	3.329321321	3.409448887
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.071438807	2.309671746	2.384823541	2.196337316	2.43863484	2.235546183	2.412088292
sc21	8	1	1	1	1	1	8	1	1	1	0.054567958	2.300585095	2.673304985	2.648637012	2.50769425	2.739885922	2.546394964	2.739885922
sc22	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	2.401812734	2.384823541	2.230927282	2.485511184	2.26067578	2.485511184
sc23	8	1	1	1	1	1	1	1	1	1	0.079187645	3.338551124	3.856479753	3.843635296	3.853915503	3.878316503	3.856479753	3.856479753
sc24	8	1	1	1	1	1	1	1	1	1	0.069784137	2.942099229	3.327198625	3.387204815	3.186697903	3.439329868	3.224303306	3.43047052
sc25	8	1	1	1	8	1	1	1	8	1	0.059922135	2.526317193	2.790483801	2.908519766	2.66683226	2.929026814	2.683821286	2.873752253
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.101856866	2.452978551	2.419843501	2.344701777	2.484534337	2.359858677	2.484534337
sc27	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.66562834	2.634715078	2.570707592	2.714686741	2.594800647	2.70228769
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	1.96279394	2.288320439	2.259741962	2.163406362	2.307879062	2.182338466	2.307879062
sc29	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	4.047065515	4.05446095	3.95080035	4.091738226	3.967091643	4.091738226
sc30	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	4.269175177	4.283254461	4.114732419	4.370634452	4.158534815	4.344438128
sc31	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	4.08260342	4.283254461	3.970394113	4.220968835	4.000067142	4.155052756
sc32	8	1	1	1	1	1	1	1	1	1	0.055208467	2.327588964	2.66419396	2.679726254	2.569862871	2.699756733	2.589007664	2.699756733
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.627991352	2.634715078	2.544653558	2.688632706	2.560234112	2.688632706
sc34	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	4.076104336	4.05446095	3.977529923	4.109315286	4.001977336	4.098820288
sc35	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	4.217708772	4.283254461	4.041465777	4.304748552	4.073547498	4.294914758
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.545686895	2.634715078	2.454702578	2.599824148	2.480176769	2.577406353

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	3.130041081	3.158411303	3.01316663	3.154227493	3.029457923	3.154227493
sc38	8	1	1	1	1	1	1	1	1	1	0.099034137	4.175279229	4.557670826	4.806950686	4.458618606	4.70359313	4.483445755	4.609959176
sc39	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	4.273363437	4.283254461	4.08956845	4.329888568	4.117992242	4.329888568
sc40	8	1	1	1	1	1	1	1	1	1	0.080031623	3.374133217	3.772222028	3.884600548	3.664521379	3.795799742	3.685077407	3.795799742
sc41	8	1	1	1	1	1	8	1	1	1	0.055696345	2.348157916	2.686736403	2.703407051	2.527341352	2.793773927	2.583104012	2.75822668
sc42	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.728570891	2.86350859	2.583863184	2.840161338	2.622106648	2.787426875
sc43	8	1	1	1	1	1	8	1	1	1	0.049132799	2.071438807	2.421617665	2.384823541	2.23089737	2.491738519	2.251667711	2.491738519
sc44	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.583620576	2.634715078	2.497294387	2.646909447	2.511495787	2.646909447
sc45	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.163366045	2.15603003	2.066246723	2.210225872	2.081827277	2.210225872
sc46	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.653595921	2.634715078	2.542593027	2.690274948	2.590582465	2.674604523
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	1.733647652	2.0323993	1.995928491	1.913779631	2.059264552	1.929755249	2.059264552
sc48	8	1	1	1	1	1	8	1	1	1	0.044705955	1.88480306	2.190575826	2.169951963	2.003828095	2.264314286	2.02863642	2.264314286
sc49	8	1	8	1	8	1	8	1	8	1	0.059922135	2.526317193	2.936972567	2.908519766	2.760411881	3.015628327	2.784269171	3.015628327
sc50	8	1	1	1	1	1	8	1	1	1	0.044705955	1.88480306	2.205922765	2.169951963	2.007406641	2.24159663	2.039398493	2.24159663
sc51	8	1	1	1	1	1	8	1	1	1	0.054567958	2.300585095	2.673050686	2.648637012	2.506962648	2.764091468	2.536996626	2.764091468
sc52	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	4.094752349	4.099472126	4.007494483	4.139279845	4.030428776	4.130797345
sc53	8	1	1	1	1	1	1	1	1	1	0.05372398	2.265003002	2.592980041	2.60767176	2.518376571	2.652590914	2.524670722	2.652590914
sc54	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	4.018952455	4.283254461	3.927225289	4.181328873	3.950523513	4.107140369
sc55	8	1	1	1	8	1	1	1	8	1	0.078382799	3.304618807	3.903512976	3.804569413	3.71127326	3.967201071	3.732043936	3.967324057
sc56	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	2.669316591	2.648637012	2.490880193	2.734470217	2.514571663	2.734470217
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.179171747	2.15603003	2.067460863	2.210435129	2.083157837	2.210435129
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.630721089	2.634715078	2.547965207	2.690501767	2.565130607	2.690501767
sc59	8	1	8	1	1	1	1	1	8	1	0.049132799	2.071438807	2.324332499	2.384823541	2.175673305	2.431244581	2.213832043	2.410827522
sc60	8	1	1	1	1	1	1	1	1	1	0.039992287	1.686074831	1.990853157	1.941158452	1.862366718	2.002706278	1.880880868	2.002706278
sc61	8	1	1	1	1	1	8	1	1	1	0.069784137	2.942099229	3.413411102	3.387204815	3.229361032	3.466089609	3.261356242	3.466089609
sc62	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	4.089980491	4.05446095	3.982743464	4.114528827	4.003347508	4.114528827
sc63	8	1	1	1	8	1	8	1	8	1	0.058994802	2.487220843	2.875831745	2.86350859	2.699235729	2.940378901	2.734964864	2.940378427
sc64	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.637717403	2.634715078	2.532557786	2.674355552	2.573349152	2.663735713
sc65	8	1	1	1	1	1	1	1	1	1	0.050781623	2.140953217	2.461696873	2.464854677	2.35358747	2.484865833	2.370834263	2.484865833
sc66	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.171457266	2.15603003	2.075384004	2.217181771	2.096729478	2.217181771
sc67	8	1	8	1	1	1	8	1	1	1	0.069784137	2.942099229	3.373369454	3.387204815	3.208690197	3.458039587	3.252663558	3.446631276
sc68	8	1	1	1	1	1	8	1	1	1	0.088244802	3.720400843	4.290308528	4.283254461	4.098852625	4.355120026	4.128235472	4.355120026
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.887042182	2.86350859	2.700377799	2.945728374	2.746704628	2.918300308
sc70	8	1	1	1	1	1	1	1	1	1	0.080232678	3.382609687	3.782469103	3.894359411	3.659153288	3.811910054	3.673894761	3.811910054
sc71	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.790485444	2.86350859	2.62883182	2.890075803	2.69019289	2.84851645
sc72	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	4.055748088	4.05446095	3.961129939	4.092408302	3.978376732	4.092408302
sc73	8	1	1	1	1	1	1	1	1	1	0.044705955	1.88480306	2.170673637	2.169951963	1.991992566	2.243765419	2.016477265	2.243765419
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.18634156	2.15603003	2.08313326	2.22592246	2.114804001	2.224611189

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.059922135	2.526317193	2.779708826	2.908519766	2.667805828	2.907376538	2.710103168	2.906065266
sc76	8	1	1	1	1	1	1	1	1	1	0.054567958	2.300585095	2.675160328	2.648637012	2.502340754	2.747230288	2.533388681	2.747230288
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.675571866	2.634715078	2.573097781	2.717076929	2.599521086	2.696195378
sc78	8	1	1	1	8	1	1	1	8	1	0.069784137	2.942099229	3.347157002	3.387204815	3.183349629	3.440802045	3.217652874	3.415757964
sc79	8	1	1	1	1	1	1	1	1	1	0.049010312	2.066274773	2.413905064	2.378878249	2.402257064	2.417382564	2.406569814	2.417382564
sc80	8	1	1	1	1	1	1	1	1	1	0.084458467	3.560768964	4.098376816	4.099472126	4.004012379	4.1489903	4.016630748	4.1489903
sc81	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.629028762	2.634715078	2.517773635	2.664443335	2.536487989	2.664443335
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	1.872710578	2.153561608	2.15603003	2.046237408	2.190710109	2.068704798	2.179907028
sc83	8	1	8	1	1	1	1	1	1	1	0.058994802	2.487220843	2.781284422	2.86350859	2.635570696	2.890485008	2.66944373	2.840412649
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	3.117637023	3.158411303	3.007835162	3.146283222	3.024890062	3.146283222
sc85	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.918406977	2.86350859	2.724708733	2.964762645	2.762677662	2.954294867
sc86	8	1	1	1	1	1	1	1	1	1	0.06507047	2.743371	3.157806764	3.158411303	3.060601829	3.208427398	3.085527957	3.182739319
sc87	8	1	1	1	1	1	1	1	1	1	0.088244802	3.720400843	4.064887549	4.283254461	3.932976628	4.189269725	3.953693758	4.136228308
sc88	8	1	1	1	1	1	1	1	1	1	0.068685133	2.895765219	3.417642301	3.333861005	3.332592782	3.461932031	3.361531456	3.452147341
sc89	8	1	8	1	1	1	1	1	1	1	0.073669131	3.105890578	3.532681616	3.575775901	3.428866322	3.558967937	3.450292368	3.558967937
sc90	8	1	1	1	1	1	1	1	1	1	0.058994802	2.487220843	2.86584186	2.86350859	2.688566997	2.942981851	2.71466768	2.942981851
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.188526038	2.498096729	2.519624716	2.420017897	2.563997045	2.444110952	2.551597994
sc92	8	1	1	1	1	1	1	1	1	1	0.099034137	4.175279229	4.511085424	4.806950686	4.426425286	4.672270556	4.452047188	4.552300685
sc93	8	1	1	1	1	1	1	1	1	1	0.05372398	2.265003002	2.63089377	2.60767176	2.563104899	2.688246084	2.572607257	2.688246084
sc94	8	1	1	1	1	1	1	1	1	1	0.049937645	2.105371124	2.427657904	2.423889425	2.419896904	2.444297904	2.419896904	2.444297904
sc95	8	1	8	1	8	1	1	1	8	1	0.052196834	2.200618519	2.56586037	2.53354665	2.356266084	2.617886331	2.378424859	2.617886331
sc96	8	1	1	1	1	1	8	1	1	1	0.069784137	2.942099229	3.393536591	3.387204815	3.233721644	3.481964047	3.289798513	3.481964047
sc97	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	3.963788083	4.05446095	3.865358797	4.013184366	3.883286363	4.013184366
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	2.604308073	2.967336101	2.998309764	2.877482654	3.032386723	2.89244622	3.032386723
sc99	8	1	1	1	1	1	1	1	1	1	0.083531134	3.521672614	3.880729722	4.05446095	3.811786465	3.953584231	3.831291259	3.890122178
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.288492614	2.664089072	2.634715078	2.549670783	2.690010343	2.568184933	2.690010343

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 58: October results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	1	1	1	1	1	1	1	1	0.056623678	2.891205001	2.286434153	2.232983779	2.021195264	2.339834289	2.069801648	2.338670789
sc2	8	1	1	1	1	1	1	1	1	1	0.054567958	2.786239918	2.088865323	2.151915391	1.901642096	2.227091094	1.949655002	2.227091094
sc3	8	1	8	1	1	1	8	1	8	1	0.059922135	3.059624191	2.361646319	2.363060103	2.16683844	2.441892046	2.227578585	2.438563921
sc4	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	3.466432812	3.433195283	3.360471341	3.533210344	3.390054968	3.533210344
sc5	8	1	8	1	8	1	8	1	8	1	0.091772135	4.685885191	3.635052505	3.619081185	3.359041869	3.68383906	3.415272827	3.662948113
sc6	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	3.458227207	3.433195283	3.332071274	3.496422983	3.372509579	3.496422983
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	1.956700761	1.96602949	1.79044346	1.978297589	1.844502137	1.974015232
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	1.950993338	1.96602949	1.828780158	1.996800161	1.854411785	1.996800161
sc9	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	3.43618045	3.396625439	3.341867139	3.524914044	3.394141193	3.523690372
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.998912694	1.519597259	1.543833668	1.499486259	1.520591759	1.509138759	1.520591759
sc11	8	1	1	1	8	1	1	1	8	1	0.086417958	4.412500918	3.345880183	3.407936473	3.211155224	3.5202393	3.260523412	3.5202393
sc12	8	1	1	1	1	1	1	1	1	1	0.071623678	3.657105001	2.824363207	2.824516471	2.645480139	2.959991049	2.70285331	2.959991049
sc13	8	1	1	1	1	1	1	1	1	1	0.058994802	3.012274578	2.321257728	2.326490259	2.14943981	2.432154072	2.187717726	2.432154072
sc14	8	1	1	1	8	1	1	1	8	1	0.073994802	3.778174578	2.926715355	2.91802295	2.720862482	3.045705449	2.793235148	3.041447837
sc15	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.123251779	2.140604357	2.014721366	2.182110359	2.034461583	2.171294119
sc16	8	1	1	1	8	1	8	1	8	1	0.058994802	3.012274578	2.354930301	2.326490259	2.181662336	2.467515646	2.225334369	2.467515646
sc17	8	1	1	1	1	1	8	1	1	1	0.080982799	4.134981719	3.219878161	3.193598205	3.022086554	3.351321011	3.091240509	3.351321011
sc18	8	1	1	1	1	1	1	1	1	1	0.08170429	4.171821047	3.253316989	3.222050571	3.132123082	3.286340036	3.162908887	3.286340036
sc19	8	1	1	1	1	1	1	1	1	1	0.088486032	4.518096804	3.471341561	3.489492053	3.408232628	3.585881111	3.433630733	3.539408178
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.508720719	1.929881662	1.937577124	1.716446483	2.037627237	1.775202556	2.037627237
sc21	8	1	1	1	8	1	1	1	1	1	0.069567958	3.552139918	2.716720466	2.743448083	2.538615933	2.846730674	2.587705586	2.838964007
sc22	8	1	1	1	8	1	8	1	8	1	0.049132799	2.508720719	1.99735539	1.937577124	1.784481731	2.068619565	1.84543572	2.068619565
sc23	8	1	1	1	1	1	1	1	1	1	0.096787645	4.941977166	3.774648604	3.81687042	3.755948104	3.775370104	3.760514354	3.775370104
sc24	8	1	8	1	1	1	1	1	8	1	0.069784137	3.563178051	2.735054625	2.751973238	2.527823101	2.829841343	2.570930601	2.812072299
sc25	8	1	8	1	8	1	1	1	1	1	0.074922135	3.825524191	2.992326514	2.954592794	2.785074008	3.041184921	2.838638564	3.055784422
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	1.973485388	1.96602949	1.851934427	2.02467343	1.897705787	2.018343
sc27	8	1	1	1	1	1	1	1	1	1	0.069281134	3.537494707	2.756881726	2.732137049	2.639368893	2.803186347	2.670154698	2.800859347
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	2.377140858	1.804277173	1.835953166	1.674414892	1.869629724	1.704749955	1.869629724
sc29	8	1	1	1	1	1	1	1	1	1	0.101131134	5.163755707	3.998811729	3.98815813	3.908638272	4.074935676	3.931188898	4.074935676
sc30	8	1	1	1	8	1	1	1	1	1	0.090844802	4.638535578	3.490845311	3.58251134	3.30415938	3.624461361	3.368765307	3.593814442
sc31	8	1	1	1	1	1	1	1	1	1	0.105844802	5.404435578	4.087701927	4.174044032	3.947377406	4.263868425	3.983721712	4.187937811
sc32	8	1	1	1	1	1	1	1	1	1	0.055208467	2.81894432	2.114287128	2.177174201	2.022555396	2.208484879	2.0574223	2.208484879
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.179278327	2.140604357	2.064227056	2.233322511	2.117004897	2.211106245
sc34	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	3.414747314	3.396625439	3.328837976	3.492842327	3.354168605	3.459246283
sc35	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	3.528030635	3.58251134	3.348145078	3.674758317	3.408074572	3.663369507
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.161209325	2.140604357	2.023668048	2.187485503	2.070361713	2.17631635

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.08007047	4.08839818	3.189281492	3.157620028	3.083342718	3.25809942	3.125701773	3.25025067
sc38	8	1	1	1	1	1	1	1	1	1	0.116634137	5.955339051	4.481731167	4.599527011	4.251220047	4.576164615	4.324896982	4.56592264
sc39	8	1	1	1	1	1	1	1	1	1	0.105844802	5.404435578	4.048122226	4.174044032	3.911235757	4.183210062	3.946707757	4.15246981
sc40	8	1	1	1	1	1	1	1	1	1	0.082631623	4.219170659	3.166861537	3.258620416	3.058277645	3.222654099	3.099096291	3.222654099
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.843855389	2.073197239	2.196413935	1.94337312	2.277154278	1.997043217	2.213666773
sc42	8	1	1	1	8	1	1	1	1	1	0.058994802	3.012274578	2.335553371	2.326490259	2.127345018	2.42618841	2.147585607	2.425127212
sc43	8	1	1	1	8	1	8	1	8	1	0.049132799	2.508720719	1.953353025	1.937577124	1.728997481	2.033536268	1.801993053	2.027220075
sc44	8	1	1	1	1	1	1	1	1	1	0.069281134	3.537494707	2.658925327	2.732137049	2.53318281	2.70925777	2.566724042	2.698965148
sc45	8	1	1	1	1	1	1	1	1	1	0.059419131	3.033940847	2.387824289	2.343223914	2.282207028	2.436618982	2.323373921	2.412518707
sc46	8	1	1	1	1	1	1	1	1	1	0.069281134	3.537494707	2.646871778	2.732137049	2.52578848	2.713768812	2.565776043	2.713768812
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	2.099621658	1.650577697	1.621614898	1.532536394	1.705275397	1.562120021	1.705275397
sc48	8	1	1	1	8	1	1	1	8	1	0.059705955	3.048586058	2.404248695	2.354534948	2.210252031	2.531698924	2.258560647	2.537871668
sc49	8	1	8	1	8	1	8	1	8	1	0.059922135	3.059624191	2.276494906	2.363060103	2.114561113	2.415604514	2.174182113	2.404658157
sc50	8	1	1	1	8	1	1	1	8	1	0.044705955	2.282686058	1.736844694	1.763002256	1.562072021	1.872428676	1.600892841	1.872428676
sc51	8	1	1	1	8	1	1	1	1	1	0.054567958	2.786239918	2.201302724	2.151915391	1.949633352	2.263005064	1.995286694	2.2541772
sc52	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	3.506273907	3.433195283	3.408577372	3.592445833	3.436161586	3.592445833
sc53	8	1	1	1	1	1	1	1	1	1	0.05372398	2.743146425	2.113040806	2.118632704	2.002360291	2.129298006	2.024419323	2.129298006
sc54	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	3.502614588	3.58251134	3.331931989	3.662317601	3.377145328	3.653931096
sc55	8	1	1	1	1	1	1	1	1	1	0.080982799	4.134981719	3.256634772	3.193598205	3.032196973	3.314054481	3.081655772	3.302457105
sc56	8	1	1	1	1	1	10	1	10	1	0.069567958	3.552139918	2.61714205	2.743448083	2.50840394	2.802519403	3.081655772	3.302457105
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	1.769133039	1.751691222	1.653517076	1.820186536	1.68380529	1.820186536
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.182383834	2.140604357	2.061105695	2.230201149	2.117774292	2.228556801
sc59	8	1	1	1	1	1	1	1	1	1	0.064132799	3.274620719	2.672263601	2.529109815	2.492966323	2.763784948	2.52338918	2.763784948
sc60	8	1	1	1	1	1	1	1	1	1	0.054992287	2.807906187	2.139660217	2.168649046	2.020784632	2.187377875	2.051781346	2.187377875
sc61	8	1	1	1	8	1	1	1	8	1	0.084784137	4.329078051	3.263114806	3.343505929	3.032967262	3.365363613	3.088931981	3.365363613
sc62	8	1	1	1	1	1	1	1	1	1	0.101131134	5.163755707	3.984393086	3.98815813	3.906761602	4.077783939	3.938912066	4.077783939
sc63	8	1	1	1	8	1	1	1	1	1	0.058994802	3.012274578	2.199786004	2.326490259	2.04759682	2.380885339	2.083030753	2.312238955
sc64	8	1	1	1	1	1	1	1	1	1	0.069281134	3.537494707	2.706321908	2.732137049	2.576783741	2.748394695	2.607076118	2.728374234
sc65	8	1	1	1	1	1	1	1	1	1	0.065781623	3.358809659	2.671828637	2.594132025	2.561462324	2.736219026	2.596814379	2.736219026
sc66	8	1	1	1	8	1	1	1	1	1	0.059419131	3.033940847	2.342881519	2.343223914	2.197124203	2.385053559	2.237492107	2.385079789
sc67	8	1	1	1	8	1	1	1	8	1	0.069784137	3.563178051	2.587885697	2.751973238	2.487083532	2.815582093	2.52359975	2.759140702
sc68	8	1	8	1	1	1	1	1	1	1	0.105844802	5.404435578	4.091832516	4.174044032	3.918611137	4.22856642	3.977325078	4.22856642
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	3.012274578	2.342423633	2.326490259	2.128656983	2.460629425	2.180244289	2.460629425
sc70	8	1	1	1	1	1	1	1	1	1	0.082832678	4.229436518	3.277282237	3.266549115	3.161574246	3.348923568	3.191909309	3.347760068
sc71	8	1	1	1	1	1	1	1	1	1	0.073994802	3.778174578	2.9375056	2.91802295	2.780824226	3.078771576	2.822756021	3.078771576
sc72	8	1	1	1	1	1	8	1	1	1	0.101131134	5.163755707	3.996884878	3.98815813	3.908271565	4.072275916	3.946225646	4.058573635
sc73	8	1	1	1	1	1	1	1	8	1	0.044705955	2.282686058	1.698668414	1.763002256	1.539876107	1.850703722	1.592748797	1.802671131
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	1.736277972	1.751691222	1.623229393	1.800682876	1.651524797	1.800682876

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	1	1	1	1	1	1	1	1	0.059922135	3.059624191	2.411028043	2.363060103	2.170487144	2.474965913	2.229332056	2.458004384
sc76	8	1	1	1	8	1	1	1	1	1	0.054567958	2.786239918	2.152021271	2.151915391	1.96300282	2.287557561	2.023812859	2.272404339
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.165071806	2.140604357	2.050517954	2.226886146	2.100973047	2.224272264
sc78	8	1	1	1	8	1	10	1	10	1	0.084784137	4.329078051	3.263910884	3.343505929	3.051201819	3.353363499	2.100973047	2.224272264
sc79	8	1	1	1	1	1	1	1	1	1	0.064010312	3.268366554	2.56866911	2.524279494	2.55063161	2.57173711	2.56028411	2.57173711
sc80	8	1	1	1	1	1	1	1	1	1	0.102058467	5.21110532	4.070897577	4.024727975	3.97954181	4.15314666	4.000491222	4.15198316
sc81	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.133530481	2.140604357	2.019737471	2.214584954	2.054196024	2.202394632
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	1.702736027	1.751691222	1.603810653	1.778761114	1.635961117	1.778761114
sc83	8	1	8	1	8	1	8	1	8	1	0.058994802	3.012274578	2.377513059	2.326490259	2.189175967	2.465701582	2.242376949	2.458323568
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	3.32249818	2.586920908	2.566087336	2.433863396	2.621843728	2.47385096	2.621843728
sc85	8	1	1	1	8	1	1	1	1	1	0.058994802	3.012274578	2.307690271	2.326490259	2.142837772	2.40862123	2.169266319	2.427630885
sc86	8	1	1	1	1	1	1	1	1	1	0.06507047	3.32249818	2.617802279	2.566087336	2.518441175	2.672603936	2.558385342	2.659244136
sc87	8	1	1	1	8	1	1	1	1	1	0.090844802	4.638535578	3.680914072	3.58251134	3.504613913	3.741011529	3.548008272	3.76762677
sc88	8	1	1	1	1	1	1	1	1	1	0.071285133	3.639818905	2.796356387	2.811165784	2.712398885	2.873884989	2.73414301	2.873884989
sc89	8	1	1	1	1	1	1	1	1	1	0.076269131	3.894301847	2.998740017	3.007712304	2.883155162	3.075487144	2.925055065	3.075487144
sc90	8	1	1	1	8	1	1	1	8	1	0.058994802	3.012274578	2.338181088	2.326490259	2.151473253	2.457074045	2.202593866	2.456012848
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.65052513	2.014265234	2.047097877	1.91613401	2.088873013	1.950022142	2.055200258
sc92	8	1	8	1	8	1	1	1	8	1	0.101634137	5.189439051	3.911788659	4.00799432	3.744876183	4.034447104	3.771004434	4.003111762
sc93	8	1	1	1	1	1	1	1	1	1	0.06872398	3.509046425	2.660274216	2.710165396	2.556682645	2.695778431	2.567351321	2.694614931
sc94	8	1	1	1	1	1	1	1	1	1	0.049937645	2.549816166	1.949089825	1.969316647	1.928003825	1.953828325	1.941608325	1.953828325
sc95	8	1	1	1	8	1	8	1	8	1	0.067196834	3.431070341	2.631381856	2.649941603	2.403079814	2.733553093	2.463421292	2.733553093
sc96	8	1	1	1	1	1	1	1	1	1	0.069784137	3.563178051	2.685294723	2.751973238	2.513061544	2.840746033	2.554812171	2.840746033
sc97	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	3.417114465	3.396625439	3.309096079	3.478191534	3.348329022	3.4546807
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	3.15407899	2.421832098	2.436011012	2.329685274	2.493502728	2.376997697	2.477232517
sc99	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	3.363800283	3.396625439	3.258770006	3.442638466	3.28635422	3.442638466
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.116265218	2.140604357	2.037531802	2.195392304	2.056763619	2.166368884

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 59: November results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	8	1	8	1	8	1	8	1	0.071498147	3.650695397	3.74190646	3.548029985	3.104908609	3.794020596	3.273004872	3.792687588
sc2	8	1	1	1	1	1	1	1	1	1	0.054567958	2.786239918	2.629701353	2.707884855	2.417322268	2.740334289	2.464327182	2.740334289
sc3	8	1	8	1	8	1	8	1	8	1	0.074796604	3.819114587	3.659338174	3.711712865	3.195117292	3.869060678	3.343751589	3.879146881
sc4	8	1	8	1	8	1	8	1	8	1	0.101932936	5.204695715	5.034588935	5.05832847	4.603742301	5.207412672	4.789289586	5.207412672
sc5	8	1	8	1	8	1	1	1	8	1	0.091772135	4.685885191	4.577265773	4.554108014	4.380693223	4.725483975	4.442389283	4.681230874
sc6	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	4.298785517	4.320196579	4.200054075	4.391857456	4.225416007	4.391857456
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	2.441970367	2.47397342	2.295310207	2.486190295	2.322310919	2.486190295
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	2.43180288	2.47397342	2.335149632	2.50500158	2.346548712	2.50500158
sc9	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	4.353704446	4.274178539	4.234509439	4.421265451	4.259871371	4.421265451
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.998912694	1.888565526	1.942698967	1.873973026	1.896729526	1.873973026	1.896729526
sc11	8	1	8	1	1	1	1	1	1	1	0.086417958	4.412500918	4.377922213	4.288411896	4.108891153	4.437141048	4.14024039	4.437141048
sc12	8	1	1	1	1	1	1	1	1	1	0.078623678	4.014525001	3.877767022	3.901627918	3.705018959	4.016739025	3.739527286	4.016739025
sc13	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.68471301	3.665694825	3.132128901	3.8708336	3.322239538	3.868364794
sc14	8	1	8	1	1	1	8	1	1	1	0.080994802	4.135594578	4.013319395	4.019292758	3.774349332	4.109789456	3.819576852	4.109789456
sc15	8	1	8	1	8	1	8	1	8	1	0.069155603	3.531085103	3.459935588	3.43178339	2.961953456	3.5540498	3.166250588	3.553150864
sc16	8	1	8	1	8	1	1	1	8	1	0.058994802	3.012274578	2.86708611	2.927562934	2.663789498	2.966138295	2.687435431	2.966138295
sc17	8	1	8	1	8	1	8	1	8	1	0.095857268	4.894472114	4.830298889	4.756829024	4.194407466	4.985577437	4.41395797	4.959964776
sc18	8	1	1	1	1	1	1	1	1	1	0.08170429	4.171821047	3.954992061	4.05450046	3.841403646	4.032316522	3.868404358	4.032316522
sc19	8	1	8	1	8	1	8	1	8	1	0.110360501	5.6350072	5.498954877	5.47653867	5.118626035	5.659897947	5.292403073	5.659897947
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.508720719	2.420144313	2.438170093	2.178798113	2.527245348	2.230948133	2.527245348
sc21	8	1	8	1	1	1	8	1	1	1	0.076567958	3.909559918	3.820773717	3.799614679	3.571356755	3.921319528	3.616568201	3.921319528
sc22	8	1	1	1	1	1	8	1	1	1	0.049132799	2.508720719	2.459823039	2.438170093	2.175644237	2.532175181	2.22439496	2.532175181
sc23	8	1	1	1	1	1	1	1	1	1	0.103787645	5.299397166	5.140708211	5.150366713	5.129365711	5.144315711	5.131819461	5.144315711
sc24	8	1	8	1	8	1	8	1	8	1	0.069784137	3.563178051	3.403440739	3.462973815	3.177548416	3.518466458	3.216555842	3.518466458
sc25	8	1	8	1	1	1	8	1	1	1	0.081922135	4.182944191	4.124826543	4.065310798	3.921712335	4.262029153	3.958074439	4.262029153
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	2.432675852	2.47397342	2.297785021	2.488697897	2.324785733	2.488697897
sc27	8	1	1	1	1	1	1	1	1	1	0.076281134	3.894914707	3.848879902	3.785381323	3.705325683	3.879147891	3.726038528	3.879147891
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	2.377140858	2.286060358	2.31029054	2.159937963	2.355036839	2.191534175	2.355036839
sc29	8	1	1	1	1	1	1	1	1	1	0.108131134	5.521175707	5.374200366	5.365908363	5.303506513	5.484016849	5.327034792	5.484016849
sc30	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.471346314	4.508089975	4.251657177	4.597409041	4.306038371	4.597409041
sc31	8	1	1	1	1	1	1	1	1	1	0.112844802	5.761855578	5.500564254	5.599819799	5.374355823	5.704530398	5.414317321	5.671845548
sc32	8	1	8	1	8	1	8	1	8	1	0.070082936	3.578434715	3.490970533	3.477801429	3.018232951	3.618449521	3.202487413	3.607811461
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.688833412	2.693651499	2.545274739	2.73063918	2.568803019	2.73063918
sc34	8	1	1	1	1	1	1	1	1	1	0.101005603	5.157346103	4.926246382	5.012310431	4.584455574	5.137924433	4.722210846	5.08311557
sc35	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.407604115	4.508089975	4.243592189	4.551962494	4.273664787	4.516661847
sc36	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.714032962	2.693651499	2.580710993	2.762131899	2.614795021	2.750266149

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.08707047	4.44581818	4.277878558	4.320792204	4.129769303	4.308718244	4.153297583	4.308718244
sc38	8	1	8	1	8	1	8	1	8	1	0.138508606	7.072249446	6.644843494	6.873362571	6.237220951	6.992176212	6.474666226	6.844653687
sc39	8	1	1	1	1	1	1	1	1	1	0.112844802	5.761855578	5.390770177	5.599819799	5.20626109	5.533893153	5.239392318	5.533893153
sc40	8	1	1	1	1	1	1	1	1	1	0.082631623	4.219170659	4.103565929	4.1005185	3.937162217	4.128965598	3.962524149	4.128965598
sc41	8	1	1	1	1	1	1	1	1	1	0.055696345	2.843855389	2.691990052	2.763880055	2.498961623	2.820501596	2.535433722	2.820501596
sc42	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.718130586	3.665694825	3.256357309	3.945282046	3.443406512	3.908196087
sc43	8	1	8	1	1	1	8	1	1	1	0.049132799	2.508720719	2.494847034	2.438170093	2.23095519	2.542820545	2.249139394	2.542820545
sc44	8	1	8	1	8	1	8	1	1	1	0.091155603	4.654405103	4.454617456	4.523513214	4.182234733	4.795471074	4.435228383	4.807870079
sc45	8	1	8	1	8	1	8	1	1	1	0.081293601	4.150851243	4.102835603	4.034120372	3.698431044	4.272457743	3.920499096	4.277177988
sc46	8	1	1	1	1	1	1	1	1	1	0.076281134	3.894914707	3.785523758	3.785381323	3.670051642	3.843726991	3.699506104	3.843726991
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	2.099621658	2.010087742	2.040575778	1.917051505	2.090873713	1.937764349	2.090873713
sc48	8	1	8	1	1	1	8	1	1	1	0.066705955	3.406006058	3.387232495	3.310221837	3.184522808	3.491589039	3.229855719	3.491589039
sc49	8	1	8	1	1	1	8	1	1	1	0.059922135	3.059624191	2.945082338	2.973580974	2.738592614	3.052881792	2.769869972	3.052881792
sc50	8	1	8	1	8	1	8	1	8	1	0.059580424	3.042176454	3.073659849	2.956623905	2.480512772	3.231372926	2.66384766	3.225656922
sc51	8	1	8	1	1	1	8	1	1	1	0.054567958	2.786239918	2.720739774	2.707884855	2.485676932	2.799746741	2.529785855	2.799746741
sc52	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	4.330664605	4.320196579	4.204514037	4.389878478	4.228042317	4.389878478
sc53	8	1	8	1	8	1	8	1	8	1	0.068598449	3.502636821	3.411417171	3.404135135	3.009554697	3.588471625	3.098989403	3.599737403
sc54	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.554985671	4.508089975	4.314898314	4.643719932	4.346502878	4.643719932
sc55	8	1	8	1	1	1	8	1	1	1	0.080982799	4.134981719	3.956354326	4.018697133	3.775787794	4.111044986	3.821790622	4.111044986
sc56	8	1	1	1	1	1	1	1	1	1	0.076567958	3.909559918	3.7665357	3.799614679	3.602316181	3.89856407	3.629260627	3.89856407
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	2.242452357	2.204258657	2.076978529	2.281112405	2.110901741	2.281112405
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.725165251	2.693651499	2.60328573	2.781001437	2.637583574	2.781001437
sc59	8	1	1	1	1	1	1	1	1	1	0.071132799	3.632040719	3.571365557	3.529899917	3.407817916	3.725930852	3.436723978	3.725930852
sc60	8	1	1	1	1	1	8	1	1	1	0.061992287	3.165326187	3.07940618	3.076310402	2.984739646	3.175758456	3.037614759	3.175758456
sc61	8	1	1	1	1	1	1	1	1	1	0.091784137	4.686498051	4.53789877	4.554703639	4.320665617	4.665724611	4.368836328	4.665724611
sc62	8	1	1	1	1	1	1	1	1	1	0.108131134	5.521175707	5.301268628	5.365908363	5.208960407	5.387043855	5.237340624	5.376025487
sc63	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.650867613	3.665694825	3.218407364	3.972817618	3.427827495	3.981402296
sc64	8	1	8	1	8	1	8	1	8	1	0.091155603	4.654405103	4.554459628	4.523513214	4.127353211	4.708600782	4.291012212	4.597230288
sc65	8	1	1	1	1	1	1	1	1	1	0.072781623	3.716229659	3.541922284	3.611721283	3.435887033	3.617307939	3.469751745	3.607830939
sc66	8	1	8	1	8	1	8	1	8	1	0.081293601	4.150851243	4.132311205	4.034120372	3.714963593	4.261701804	3.881694832	4.240995227
sc67	8	1	1	1	1	1	1	1	1	1	0.069784137	3.563178051	3.422393579	3.462973815	3.214340805	3.513232173	3.231655312	3.513232173
sc68	8	1	8	1	1	1	8	1	1	1	0.112844802	5.761855578	5.412587005	5.599819799	5.223465993	5.541967516	5.259937419	5.541967516
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	3.012274578	2.743893206	2.927562934	2.648409683	2.957633551	2.679295775	2.860777684
sc70	8	1	8	1	8	1	8	1	1	1	0.097707147	4.988926913	4.873324495	4.848627551	4.500203478	5.101054464	4.677494948	5.102113173
sc71	8	1	1	1	8	1	8	1	8	1	0.080994802	4.135594578	3.8933757	4.019292758	3.700737073	4.022158273	3.751811453	4.022158273
sc72	8	1	1	1	1	1	1	1	1	1	0.108131134	5.521175707	5.29265796	5.365908363	5.205775317	5.372954525	5.230151506	5.351248231
sc73	8	1	1	1	1	1	1	1	1	1	0.044705955	2.282686058	2.165062897	2.218492014	1.944953721	2.28696998	1.990307896	2.256245792
sc74	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	2.272011765	2.204258657	2.128347913	2.307069354	2.151876192	2.307069354

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	8	1	8	1	8	1	8	1	0.074796604	3.819114587	3.749305389	3.711712865	3.246156068	3.933424907	3.419843245	3.934483616
sc76	8	1	8	1	1	1	8	1	1	1	0.054567958	2.786239918	2.74503399	2.707884855	2.515936098	2.829394925	2.534239919	2.829394925
sc77	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.672096613	2.693651499	2.576451187	2.761815628	2.612769747	2.742820131
sc78	8	1	8	1	8	1	8	1	8	1	0.106658606	5.445988446	5.339876508	5.29283553	4.869861112	5.582909098	5.056324011	5.584575149
sc79	8	1	1	1	1	1	1	1	1	1	0.071010312	3.625786554	3.548599547	3.523821633	3.524790047	3.551440047	3.538375047	3.551440047
sc80	8	1	1	1	1	1	1	1	1	1	0.109058467	5.56852532	5.277749019	5.411926403	5.191066604	5.360918552	5.218855959	5.323835847
sc81	8	1	8	1	8	1	8	1	1	1	0.069155603	3.531085103	3.344997838	3.43178339	3.019557875	3.611622643	3.221740622	3.617699567
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	2.228412762	2.204258657	2.098828585	2.284193026	2.122356865	2.284193026
sc83	8	1	8	1	1	1	1	1	1	1	0.058994802	3.012274578	2.93803925	2.927562934	2.764019962	3.098508272	2.798602933	3.098508272
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	3.32249818	3.253617756	3.22906238	3.149235359	3.319087307	3.160634439	3.319087307
sc85	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.741787399	3.665694825	3.291861913	3.971752429	3.444461514	3.977335801
sc86	8	1	8	1	8	1	8	1	1	1	0.079944939	4.081988575	3.925323496	3.967194271	3.537847012	4.137926392	3.74420163	4.05905167
sc87	8	1	1	1	8	1	1	1	8	1	0.090844802	4.638535578	4.469932127	4.508089975	4.293992082	4.609915698	4.323971249	4.567275091
sc88	8	1	8	1	8	1	8	1	8	1	0.086159602	4.399309301	4.317173204	4.275591255	3.953677413	4.524680185	4.002298498	4.524680185
sc89	8	1	1	1	1	1	1	1	1	1	0.076269131	3.894301847	3.816568812	3.784785698	3.683226386	3.858065235	3.712402487	3.858065235
sc90	8	1	1	1	8	1	1	1	1	1	0.058994802	3.012274578	2.899708587	2.927562934	2.681787274	3.022767907	2.738310442	2.981843175
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.65052513	2.573662896	2.575986659	2.433021796	2.623934672	2.460022508	2.623934672
sc92	8	1	1	1	8	1	1	1	8	1	0.101634137	5.189439051	5.072604228	5.043500856	4.818115547	5.141876458	4.851513614	5.140212458
sc93	8	1	1	1	1	1	1	1	1	1	0.07572398	3.866466425	3.803417374	3.757733068	3.697488856	3.838025216	3.707023657	3.838025216
sc94	8	1	1	1	1	1	1	1	1	1	0.064812114	3.309306562	3.217369721	3.216241739	2.894622061	3.360797997	2.96526551	3.360797997
sc95	8	1	8	1	1	1	8	1	8	1	0.089071303	4.547980737	4.370541542	4.42008173	3.988118359	4.613557587	4.169084272	4.520987591
sc96	8	1	1	1	8	1	8	1	8	1	0.069784137	3.563178051	3.438376059	3.462973815	3.200473275	3.544798378	3.255245316	3.544627313
sc97	8	1	8	1	8	1	8	1	1	1	0.101005603	5.157346103	4.991562568	5.012310431	4.605312619	5.200226088	4.817948916	5.140093057
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	3.15407899	3.018286976	3.065379501	2.894152472	3.073177322	2.924864684	3.073177322
sc99	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	4.18096103	4.274178539	4.070623435	4.256011315	4.095985366	4.256011315
sc100	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.717102413	2.693651499	2.567331093	2.756589034	2.604444373	2.756589034

A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

Table 60: December results (please look at the end of the table for explanations of the A,B,C,D,E,F,G,H, I and J terms)

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc1	8	1	8	1	8	1	8	1	8	1	0.071498147	3.650695397	3.880170886	3.746755739	3.201199698	3.963284519	3.487924901	3.964093374
sc2	8	1	1	1	1	1	8	1	1	1	0.054567958	2.786239918	2.845637916	2.859553939	2.581359487	2.921243554	2.662561487	2.921243554
sc3	8	1	8	1	8	1	8	1	8	1	0.074796604	3.819114587	3.89217982	3.919606524	3.321225112	4.06929945	3.586375038	4.07179876
sc4	8	1	8	1	8	1	1	1	8	1	0.101932936	5.204695715	5.302018524	5.341646295	4.946892914	5.48056981	5.138404779	5.489298776
sc5	8	1	8	1	8	1	8	1	8	1	0.091772135	4.685885191	4.79133721	4.809184367	4.577330193	4.890805825	4.638385921	4.890805825
sc6	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	4.578321628	4.562171513	4.441347233	4.627428816	4.483247964	4.627428816
sc7	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	2.602650705	2.612541085	2.476674153	2.643797314	2.51125017	2.643797314
sc8	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	2.633618497	2.612541085	2.466120637	2.645506297	2.504143726	2.645506297
sc9	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	4.510416166	4.513575995	4.385434285	4.564052236	4.421273374	4.564052236
sc10	8	1	1	1	1	1	1	1	1	1	0.03914831	1.998912694	2.00391583	2.051509862	1.99512783	2.00739333	1.99518633	2.00739333
sc11	8	1	1	1	1	1	1	1	1	1	0.086417958	4.412500918	4.586397626	4.528606564	4.37848319	4.692328651	4.4403395	4.673202647
sc12	8	1	1	1	1	1	1	1	1	1	0.094623678	4.831485001	4.949183817	4.958615329	4.73486327	5.048956094	4.797654504	5.03987234
sc13	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.887800939	3.871011006	3.334815888	4.009970136	3.54775411	4.013928982
sc14	8	1	8	1	1	1	1	1	1	1	0.096994802	4.952554578	5.123988047	5.082870596	4.902551408	5.224560609	4.967267668	5.211218996
sc15	8	1	1	1	8	1	8	1	8	1	0.069155603	3.531085103	3.608887637	3.623998152	3.20161274	3.739507299	3.410166403	3.739507299
sc16	8	1	8	1	8	1	8	1	8	1	0.058994802	3.012274578	3.046808196	3.091536224	2.834021288	3.142563044	2.89259829	3.142579762
sc17	8	1	8	1	8	1	8	1	8	1	0.095857268	4.894472114	5.126429395	5.023259815	4.493741842	5.272018872	4.804003722	5.269741064
sc18	8	1	1	1	1	1	1	1	1	1	0.08170429	4.171821047	4.301887924	4.28159371	4.200944705	4.361176496	4.229473634	4.361176496
sc19	8	1	8	1	8	1	8	1	8	1	0.126360501	6.4519672	6.518576799	6.621737095	6.116084896	6.747146838	6.441744262	6.747146838
sc20	8	1	1	1	1	1	1	1	1	1	0.049132799	2.508720719	2.60652715	2.574732408	2.315484273	2.670754155	2.386324742	2.670754155
sc21	8	1	8	1	8	1	8	1	8	1	0.092567958	4.726519918	4.872855132	4.850888311	4.648259671	4.94368037	4.72265213	4.94368037
sc22	8	1	1	1	1	1	1	1	1	1	0.049132799	2.508720719	2.477837585	2.574732408	2.314532388	2.595091146	2.360567252	2.595091146
sc23	8	1	1	1	1	1	1	1	1	1	0.119787645	6.116357166	6.325815968	6.277296192	6.317216468	6.330859968	6.317450468	6.330859968
sc24	8	1	1	1	8	1	1	1	8	1	0.069784137	3.563178051	3.64586755	3.656935559	3.441716683	3.700188762	3.491792353	3.703597349
sc25	8	1	8	1	8	1	1	1	8	1	0.097922135	4.999904191	5.136856229	5.131466114	4.933156674	5.229959396	4.998563636	5.176594448
sc26	8	1	1	1	1	1	1	1	1	1	0.04985429	2.545560047	2.638123432	2.612541085	2.50248937	2.681041745	2.538328459	2.681041745
sc27	8	1	1	1	1	1	1	1	1	1	0.092281134	4.711874707	4.880202299	4.835857742	4.759551608	4.957878268	4.814793698	4.944169306
sc28	8	1	1	1	1	1	1	1	1	1	0.046555833	2.377140858	2.435035921	2.439690301	2.293267438	2.471888606	2.329106527	2.471888606
sc29	8	1	1	1	1	1	1	1	1	1	0.124131134	6.338135707	6.490627819	6.504910367	6.381980184	6.559662297	6.419823613	6.559662297
sc30	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.762144263	4.760588849	4.532787153	4.873200665	4.605255019	4.873200665
sc31	8	3	1	1	1	1	1	1	1	1	0.128844802	6.578815579	6.680205245	6.751923222	6.512169655	6.822833632	6.567937454	6.804538055
sc32	8	1	8	1	8	1	8	1	1	1	0.070082936	3.578434715	3.720342843	3.67259367	3.19340548	3.804926375	3.42655295	3.806591876
sc33	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.804374882	2.84452337	2.704504348	2.883677139	2.742347777	2.883677139
sc34	8	1	1	1	8	1	8	1	8	1	0.101005603	5.157346103	5.325210987	5.293050777	4.930284165	5.473848996	5.115097627	5.427356329
sc35	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.712024304	4.760588849	4.513244727	4.855411032	4.587920788	4.822163466
sc36	8	1	1	1	8	1	1	1	8	1	0.054281134	2.771594707	2.819952222	2.84452337	2.672313669	2.845123052	2.7142144	2.840625052

	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc37	8	1	1	1	1	1	1	1	1	1	0.10307047	5.26277818	5.452911613	5.401257076	5.310271689	5.496353272	5.35217242	5.496353272
sc38	8	1	8	1	8	1	8	1	8	1	0.154508606	7.889209446	7.957669204	8.096797337	7.47466114	8.205461125	7.74349099	8.146331759
sc39	8	1	1	1	8	1	1	1	1	1	0.128844802	6.578815578	6.58918508	6.751923221	6.350207382	6.652400357	6.414682587	6.65773344
sc40	8	1	1	1	1	1	1	1	1	1	0.082631623	4.219170659	4.272357334	4.330189228	4.153294949	4.33264151	4.191461563	4.33264151
sc41	8	1	1	1	8	1	1	1	8	1	0.055696345	2.843855389	2.963363573	2.91868544	2.701296872	3.012317033	2.759601167	3.012317033
sc42	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.92179832	3.871011006	3.379668656	4.115241047	3.656460332	4.117740357
sc43	8	1	8	1	1	1	1	1	1	1	0.049132799	2.508720719	2.59184208	2.574732408	2.355628965	2.652533303	2.40292422	2.652533303
sc44	8	1	8	1	8	1	8	1	8	1	0.107155603	5.471365103	5.531546215	5.615332524	5.181265825	5.809531322	5.42776298	5.76686211
sc45	8	1	8	1	8	1	8	1	1	1	0.097293601	4.967811243	5.056928208	5.098528708	4.753015983	5.387187043	4.95330722	5.20979862
sc46	8	1	1	1	1	1	1	1	1	1	0.092281134	4.711874707	4.822847687	4.835857742	4.70453027	4.891225362	4.744422501	4.891225362
sc47	8	1	1	1	1	1	1	1	1	1	0.041120675	2.099621658	2.160828412	2.154868769	2.042476122	2.210623629	2.076367551	2.210623629
sc48	8	1	1	1	1	1	1	1	1	1	0.082705955	4.222966058	4.417144456	4.334084495	4.16799861	4.511428374	4.236131543	4.511428374
sc49	8	1	8	1	1	1	8	1	1	1	0.059922135	3.059624191	3.135883532	3.140131742	2.912293667	3.218675565	2.975033098	3.218675565
sc50	8	1	8	1	8	1	8	1	8	1	0.059580424	3.042176454	3.219344514	3.122224905	2.567745781	3.330506925	2.837547445	3.34295452
sc51	8	1	1	1	1	1	8	1	1	1	0.054567958	2.786239918	2.889282154	2.859553939	2.577073649	2.94201096	2.65479484	2.94201096
sc52	8	1	1	1	1	1	1	1	1	1	0.087058467	4.44520532	4.547138512	4.562171513	4.427226254	4.588273316	4.455442449	4.588273316
sc53	8	1	8	1	8	1	8	1	8	1	0.068598449	3.502636821	3.600409094	3.594801314	3.224842281	3.749867612	3.327504925	3.749396736
sc54	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.795557356	4.760588849	4.594246878	4.906619568	4.652918031	4.906619568
sc55	8	1	1	1	8	1	1	1	1	1	0.080982799	4.134981719	4.267129751	4.243785033	4.065481097	4.348287783	4.125713208	4.34272953
sc56	8	1	1	1	1	1	1	1	1	1	0.092567958	4.726519918	4.849425497	4.850888311	4.621383552	4.952441772	4.686854162	4.93873281
sc57	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	2.322573756	2.327719554	2.180609801	2.37893646	2.22702114	2.37893646
sc58	8	1	1	1	1	1	1	1	1	1	0.054281134	2.771594707	2.92717234	2.84452337	2.771014002	2.976036584	2.821302983	2.976036584
sc59	8	1	8	1	8	1	1	1	1	1	0.087132799	4.449000719	4.579716836	4.56606678	4.388687066	4.655345018	4.418269136	4.666849702
sc60	8	1	1	1	1	1	1	1	1	1	0.077992287	3.982286187	4.104490724	4.087071641	3.980454976	4.184492558	4.031670207	4.184492558
sc61	8	1	8	1	8	1	1	1	8	1	0.107784137	5.503458051	5.587608855	5.64826993	5.418616679	5.692794334	5.465346376	5.648655427
sc62	8	1	1	1	1	1	1	1	1	1	0.124131134	6.338135707	6.476970279	6.504910367	6.374694256	6.558717534	6.414410987	6.558717534
sc63	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.9390825	3.871011006	3.335394607	4.063968589	3.600973087	4.072011646
sc64	8	1	1	1	8	1	1	1	8	1	0.107155603	5.471365103	5.553993166	5.615332524	5.193430367	5.757876881	5.412777708	5.68651798
sc65	8	1	1	1	1	1	1	1	1	1	0.088781623	4.533189659	4.634911897	4.652470975	4.534063164	4.710914251	4.57069394	4.710914251
sc66	8	1	8	1	8	1	8	1	1	1	0.097293601	4.967811243	5.057506008	5.098528708	4.651066279	5.178259921	4.849270841	5.199063178
sc67	8	1	1	1	1	1	1	1	1	1	0.069784137	3.563178051	3.58098088	3.656935559	3.360275627	3.701983603	3.429343781	3.701983603
sc68	8	1	1	1	8	1	8	1	8	1	0.128844802	6.578815578	6.557106212	6.751923221	6.372967879	6.692930503	6.464988812	6.672889987
sc69	8	1	1	1	1	1	1	1	1	1	0.058994802	3.012274578	3.106970489	3.091536224	2.916293263	3.176622188	2.951128352	3.176622188
sc70	8	1	1	1	8	1	1	1	8	1	0.097707147	4.988926913	5.016818159	5.120199992	4.706075778	5.257334832	4.865326971	5.154518279
sc71	8	1	1	1	1	1	1	1	1	1	0.096994802	4.952554578	5.03684498	5.082870596	4.864540494	5.215233123	4.949622372	5.142016301
sc72	8	1	1	1	1	1	1	1	1	1	0.124131134	6.338135707	6.322812622	6.504910367	6.242580347	6.404673908	6.268379387	6.374515423
sc73	8	1	1	1	1	1	1	1	1	1	0.044705955	2.282686058	2.414231791	2.342750123	2.117406131	2.451889116	2.181845927	2.451889116
sc74	8	1	1	1	1	1	1	1	8	1	0.044419131	2.268040847	2.352510855	2.327719554	2.211642644	2.391028303	2.249665733	2.37527281

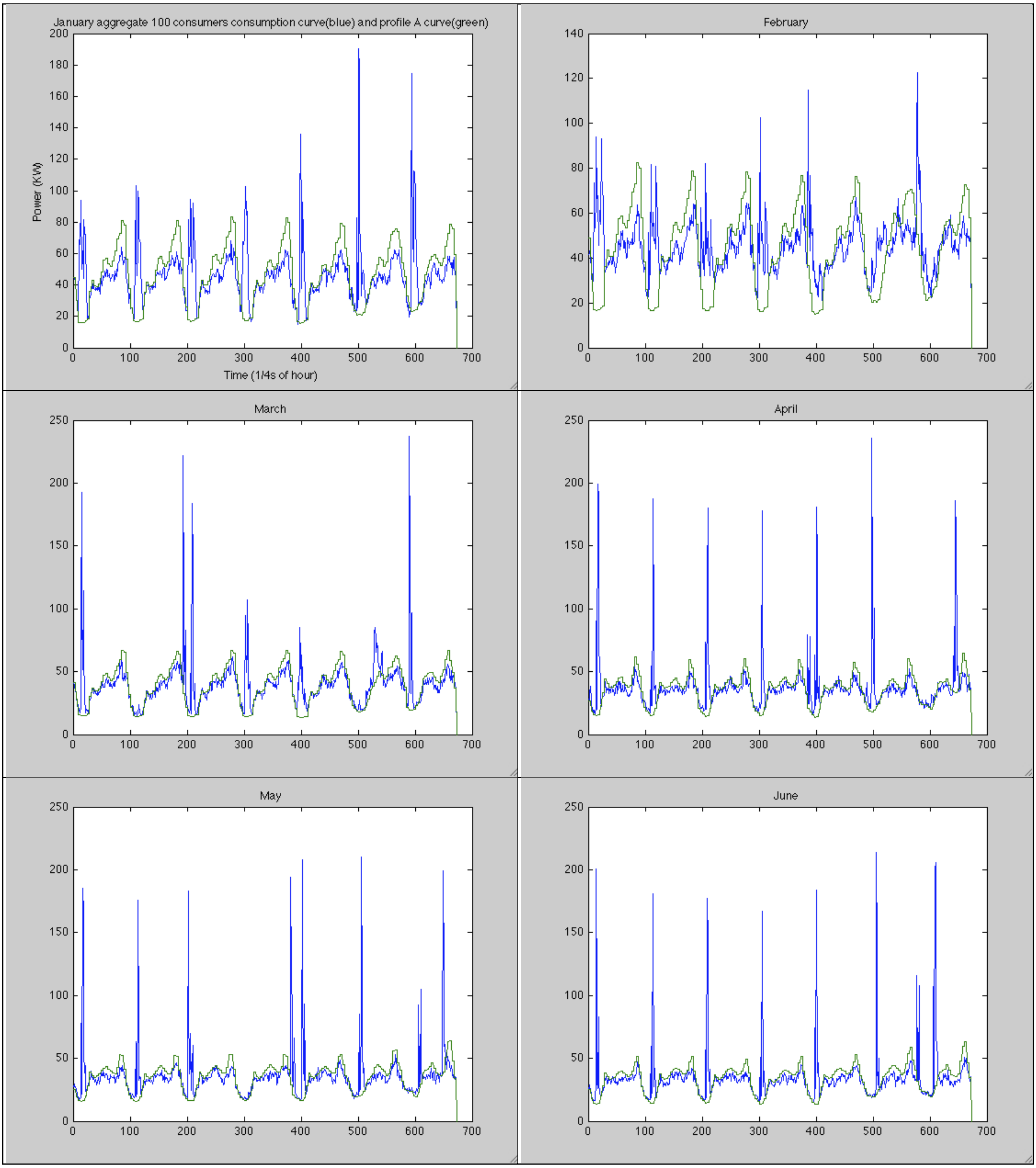
	A	B	C	D	E	F	G	H	I	J	Energy(kWh)	costOLD(€)	costRTP(€)	costNSM(€)	costDR(€)	costDRW(€)	ScostDR(€)	ScostDRW(€)
sc75	8	1	8	1	8	1	8	1	1	1	0.074796604	3.819114587	4.013117199	3.919606524	3.356922994	4.12734798	3.636783124	4.128363481
sc76	8	1	1	1	8	1	1	1	8	1	0.054567958	2.786239918	2.880994327	2.859553939	2.65864599	2.946952872	2.706720917	2.932996376
sc77	8	1	1	1	8	1	1	1	8	1	0.054281134	2.771594707	2.874170509	2.84452337	2.749378936	2.922529569	2.791279667	2.922529569
sc78	8	1	8	1	8	1	8	1	8	1	0.122658606	6.262948446	6.440155082	6.427744712	5.953634172	6.62787561	6.158768072	6.62787561
sc79	8	1	1	1	1	1	1	1	1	1	0.087010312	4.442746554	4.582216384	4.55964805	4.569950884	4.582216384	4.570009384	4.582216384
sc80	8	1	1	1	1	1	1	1	1	1	0.125058467	6.38548532	6.452223964	6.553505885	6.342873272	6.522921932	6.378887862	6.522921932
sc81	8	1	8	1	8	1	8	1	8	1	0.069155603	3.531085103	3.652026701	3.623998152	3.194115274	3.808795319	3.431474895	3.81404217
sc82	8	1	1	1	1	1	1	1	1	1	0.044419131	2.268040847	2.324349439	2.327719554	2.191052104	2.370224895	2.227969283	2.370224895
sc83	8	1	1	1	1	1	1	1	1	1	0.058994802	3.012274578	3.131208147	3.091536224	2.907482811	3.204350504	2.954790912	3.204350504
sc84	8	1	1	1	1	1	1	1	1	1	0.06507047	3.32249818	3.397934502	3.409922705	3.303697444	3.463214234	3.330042373	3.463214234
sc85	8	1	8	1	8	1	8	1	8	1	0.073869271	3.771764974	3.976016588	3.871011006	3.368942815	4.112853163	3.644631237	4.112853163
sc86	8	1	8	1	8	1	8	1	1	1	0.079944939	4.081988575	4.244382892	4.189397487	3.737669133	4.371134149	4.013585938	4.372837717
sc87	8	1	1	1	1	1	1	1	1	1	0.090844802	4.638535578	4.739277691	4.760588849	4.601129837	4.890593109	4.661536409	4.884983272
sc88	8	1	8	1	8	1	8	1	1	1	0.086159602	4.399309301	4.548441552	4.515067837	4.130500727	4.701848905	4.283940302	4.706819897
sc89	8	1	1	1	1	1	1	1	1	1	0.076269131	3.894301847	4.016636172	3.996772179	3.92608231	4.087129371	3.954298504	4.087129371
sc90	8	1	1	1	1	1	1	1	1	1	0.058994802	3.012274578	3.115822954	3.091536224	2.850054938	3.203254837	2.925773809	3.203254837
sc91	8	1	1	1	1	1	1	1	1	1	0.05191001	2.65052513	2.70619428	2.720268103	2.612479139	2.772710929	2.641008068	2.772710929
sc92	8	1	8	1	8	1	1	1	8	1	0.101634137	5.189439051	5.356652459	5.325988183	5.256756931	5.449088053	5.25215866	5.489664747
sc93	8	1	1	1	1	1	1	1	1	1	0.09172398	4.683426425	4.819056311	4.806660904	4.747198953	4.872008951	4.758572849	4.872008951
sc94	8	1	1	1	1	1	1	1	1	1	0.064812114	3.309306562	3.389590541	3.396383978	3.090577552	3.514188838	3.173739389	3.514188838
sc95	8	1	8	1	8	1	8	1	8	1	0.105071303	5.364940737	5.552386567	5.506107826	5.068826782	5.73875668	5.310828412	5.746766278
sc96	8	1	1	1	1	1	1	1	1	1	0.069784137	3.563178051	3.584948165	3.656935559	3.383042249	3.70603923	3.443316983	3.70603923
sc97	8	1	8	1	8	1	8	1	8	1	0.101005603	5.157346103	5.391198682	5.293050777	4.881443402	5.513270297	5.13109765	5.513476942
sc98	8	1	1	1	1	1	1	1	1	1	0.061772013	3.15407899	3.176076724	3.23707192	3.023910464	3.219702551	3.068929489	3.219702551
sc99	8	1	1	1	1	1	1	1	1	1	0.086131134	4.397855707	4.546635123	4.513575995	4.44822144	4.634303023	4.490122172	4.634303023
sc100	8	1	1	1	8	1	1	1	8	1	0.054281134	2.771594707	2.829081081	2.84452337	2.727647242	2.87212354	2.756176171	2.87212354

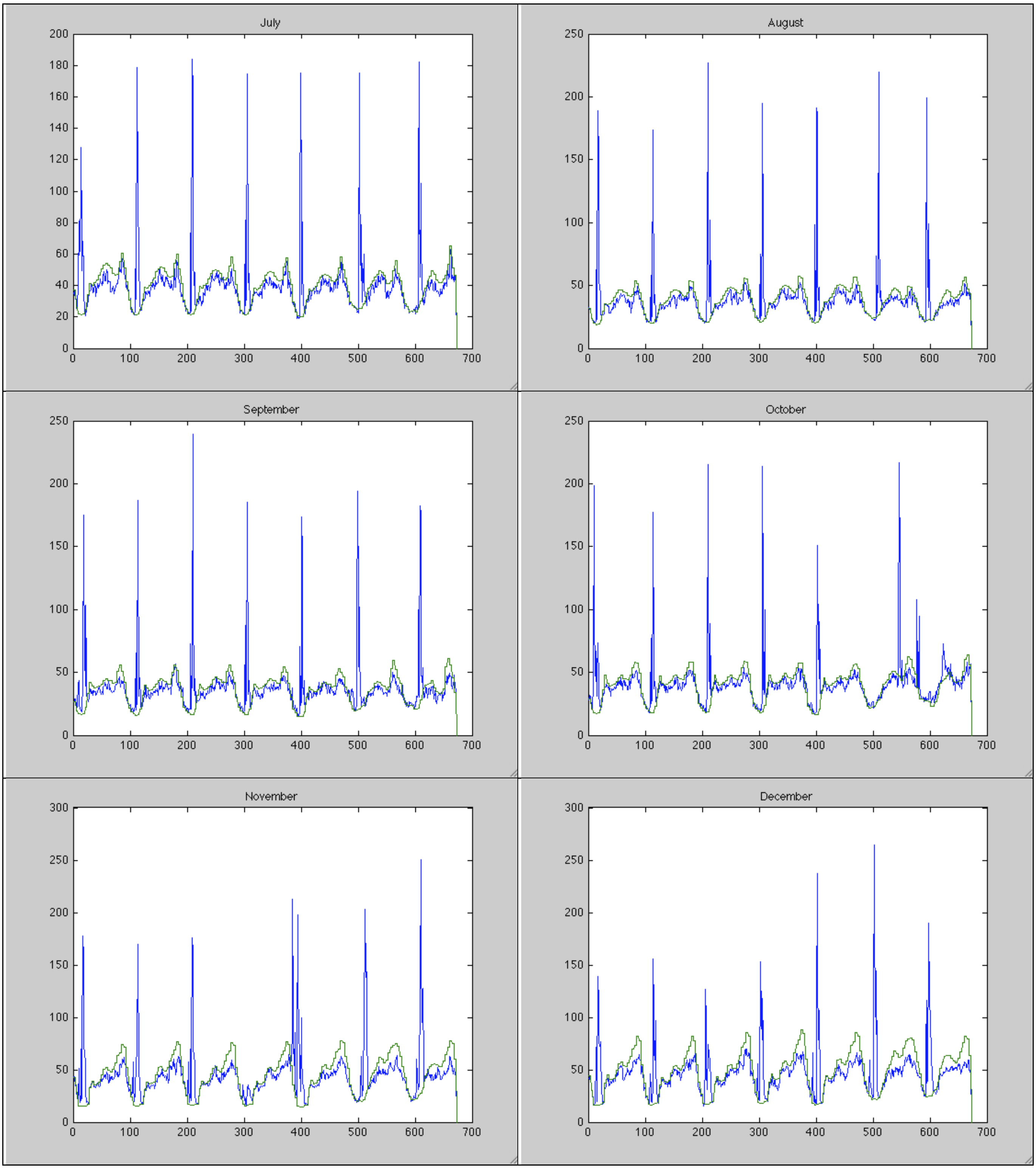
A = FYP_CR_profile.MODELSTAT
B = FYP_CR_profile.SOLVESTAT
C = DR_profile.MODELSTAT
D = DR_profile.SOLVESTAT
E = DRW_profile.MODELSTAT
F = DRW_profile.SOLVESTAT
G = SDR_profile.MODELSTAT
H = SDR_profile.SOLVESTAT
I = SDRW_profile.MODELSTAT
J = SDRW_profile.SOLVESTAT

ANNEX 7

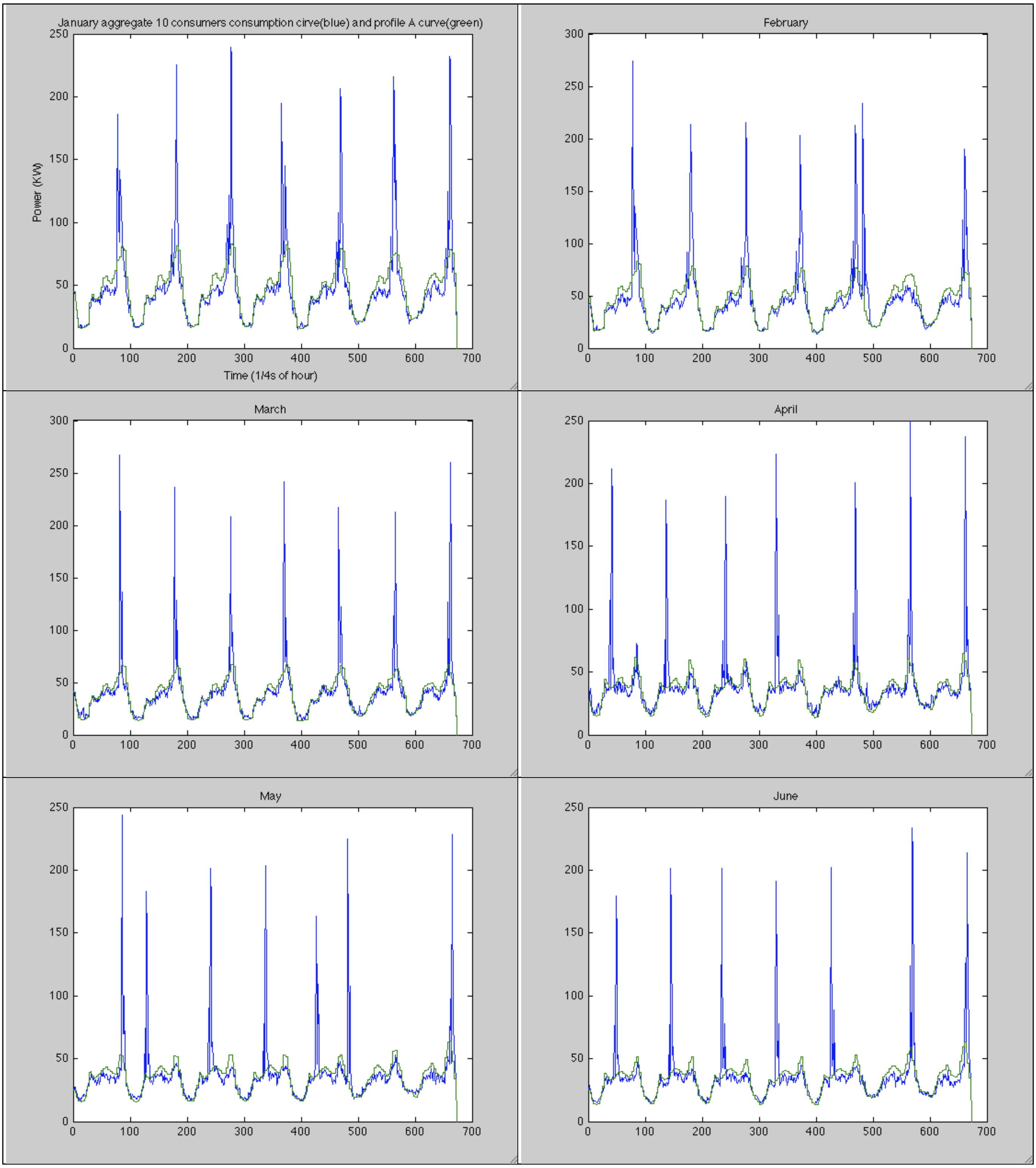
In this section are shown the aggregated consumers' curves for each month for each of the scenario cases reference in 4.3.1 and 5.3 sections.

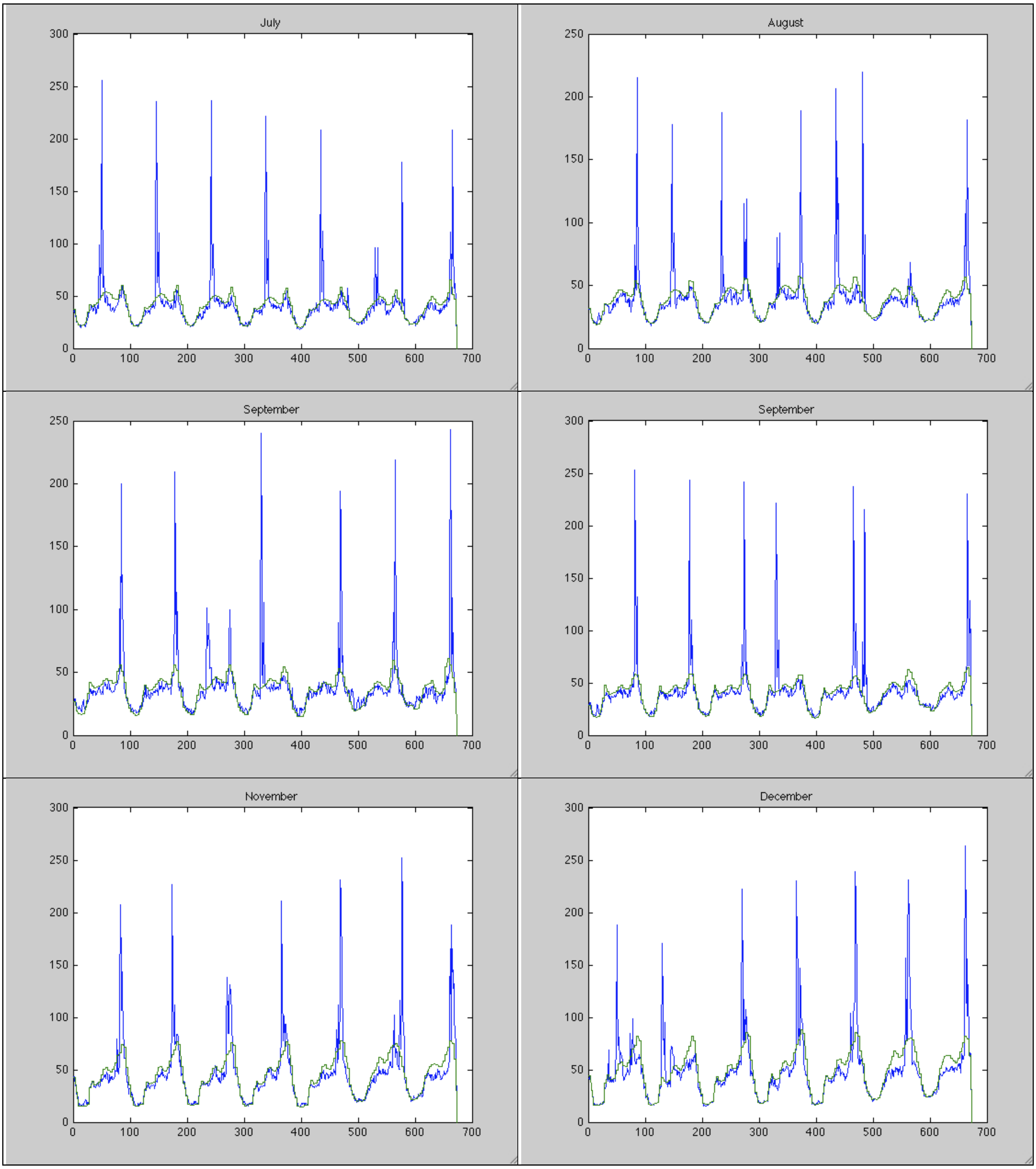
Demand Response



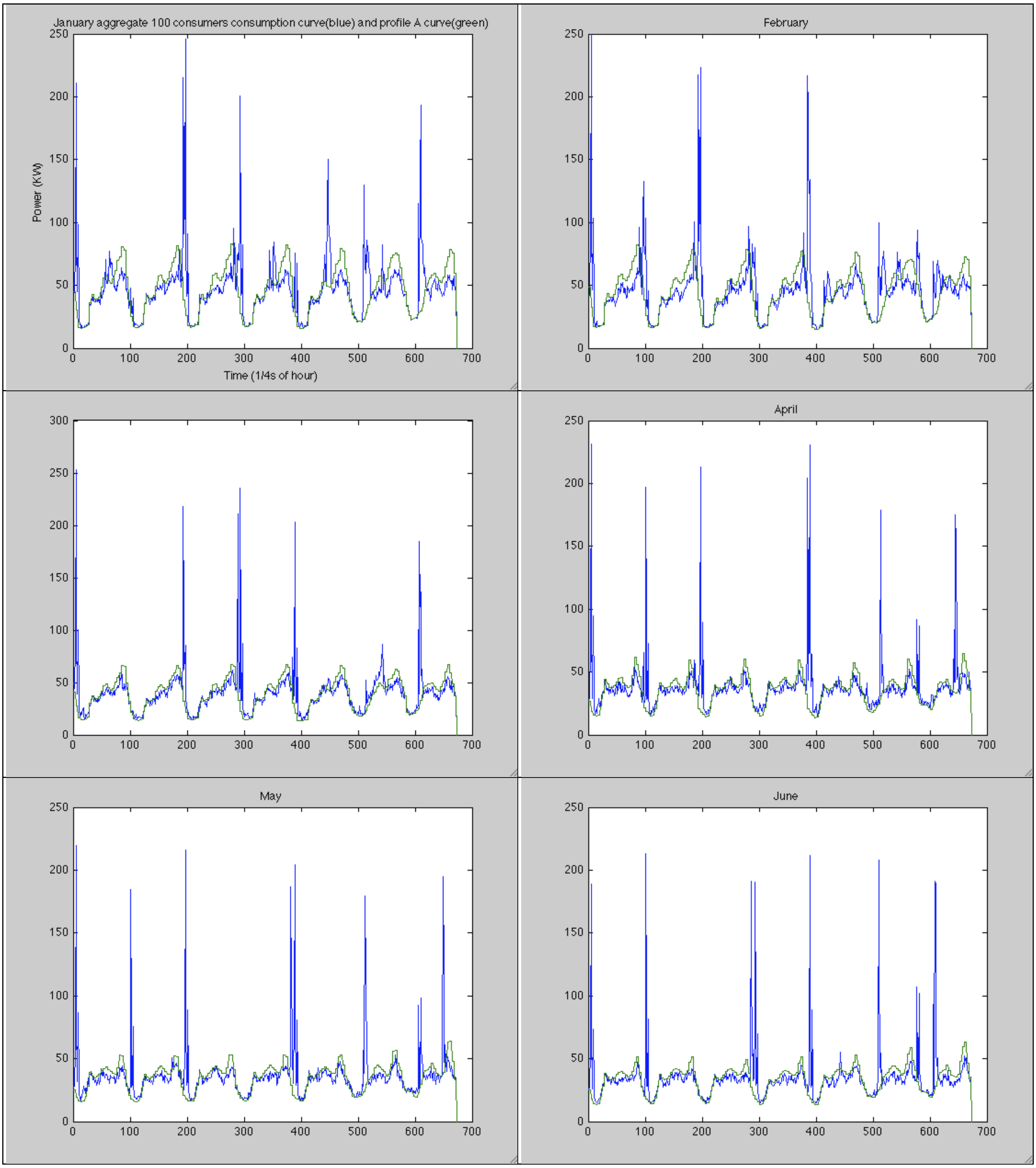

July
August
September
October
November
December
0
100
200
300
400
500
600
700

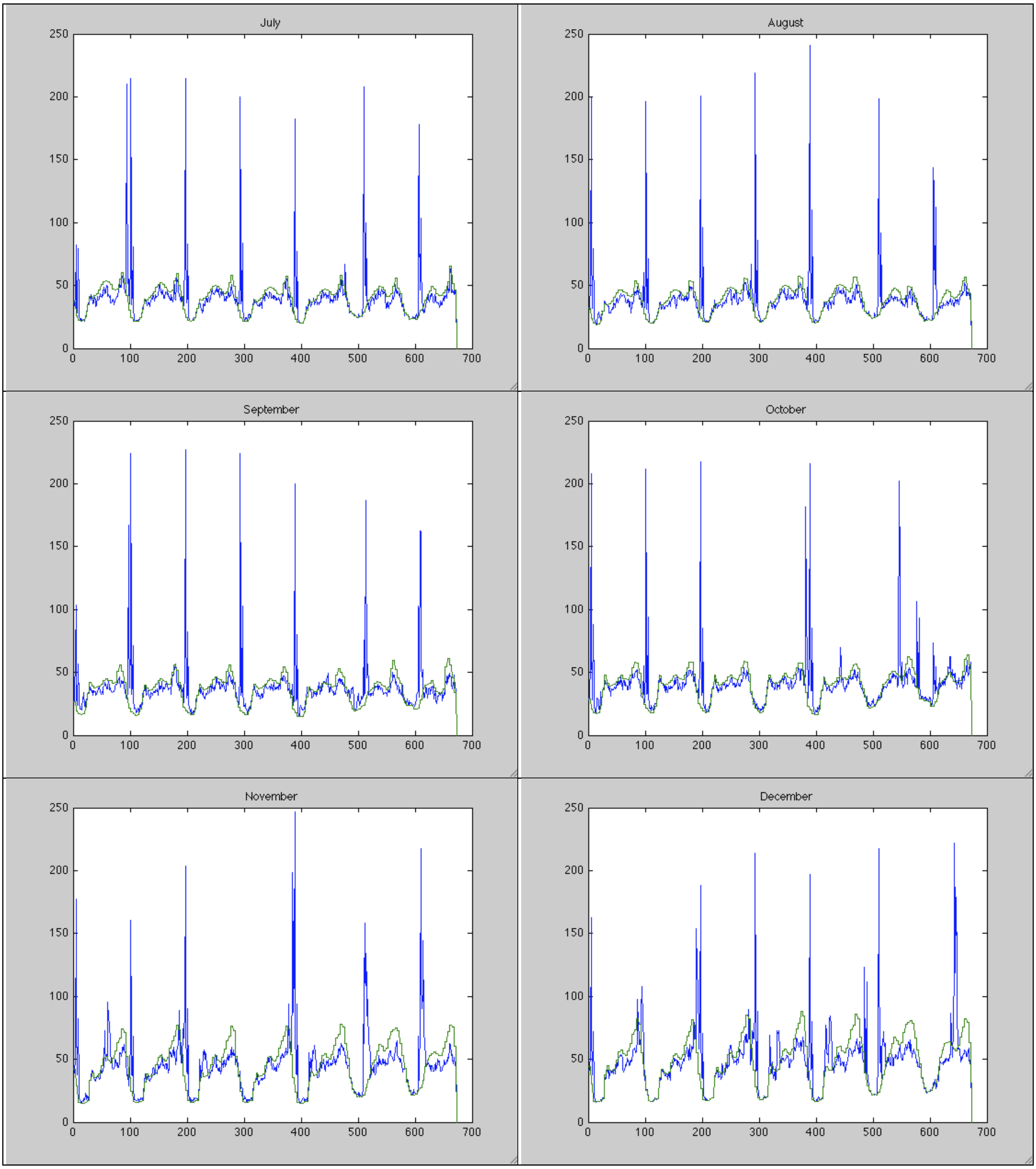
Worst Demand Response



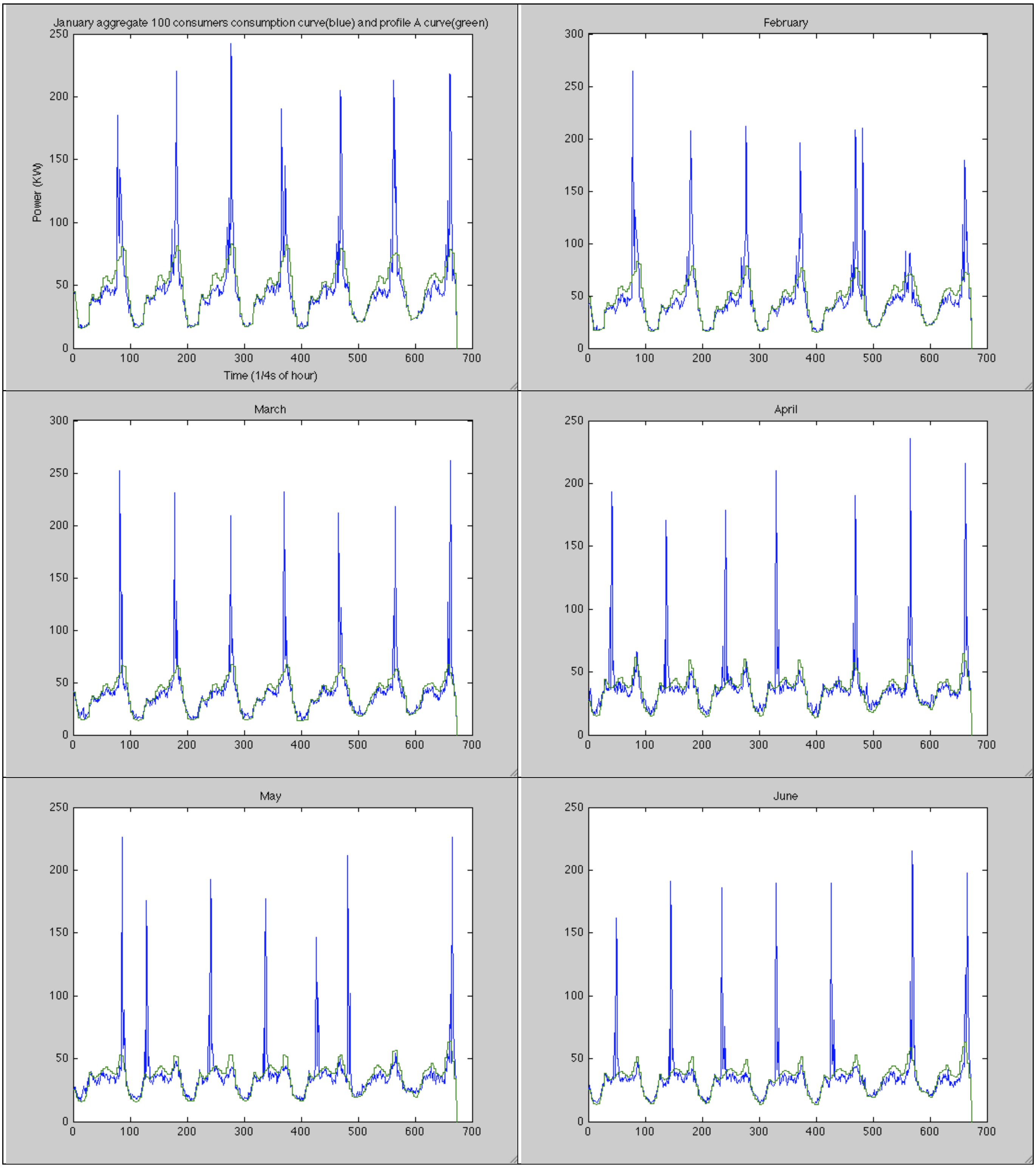

July
0 50 100 150 200 250 300
0 100 200 300 400 500 600 700
August
0 50 100 150 200 250
0 100 200 300 400 500 600 700
September
0 50 100 150 200 250
0 100 200 300 400 500 600 700
September
0 50 100 150 200 250 300
0 100 200 300 400 500 600 700
November
0 50 100 150 200 250 300
0 100 200 300 400 500 600 700
December
0 50 100 150 200 250 300
0 100 200 300 400 500 600 700

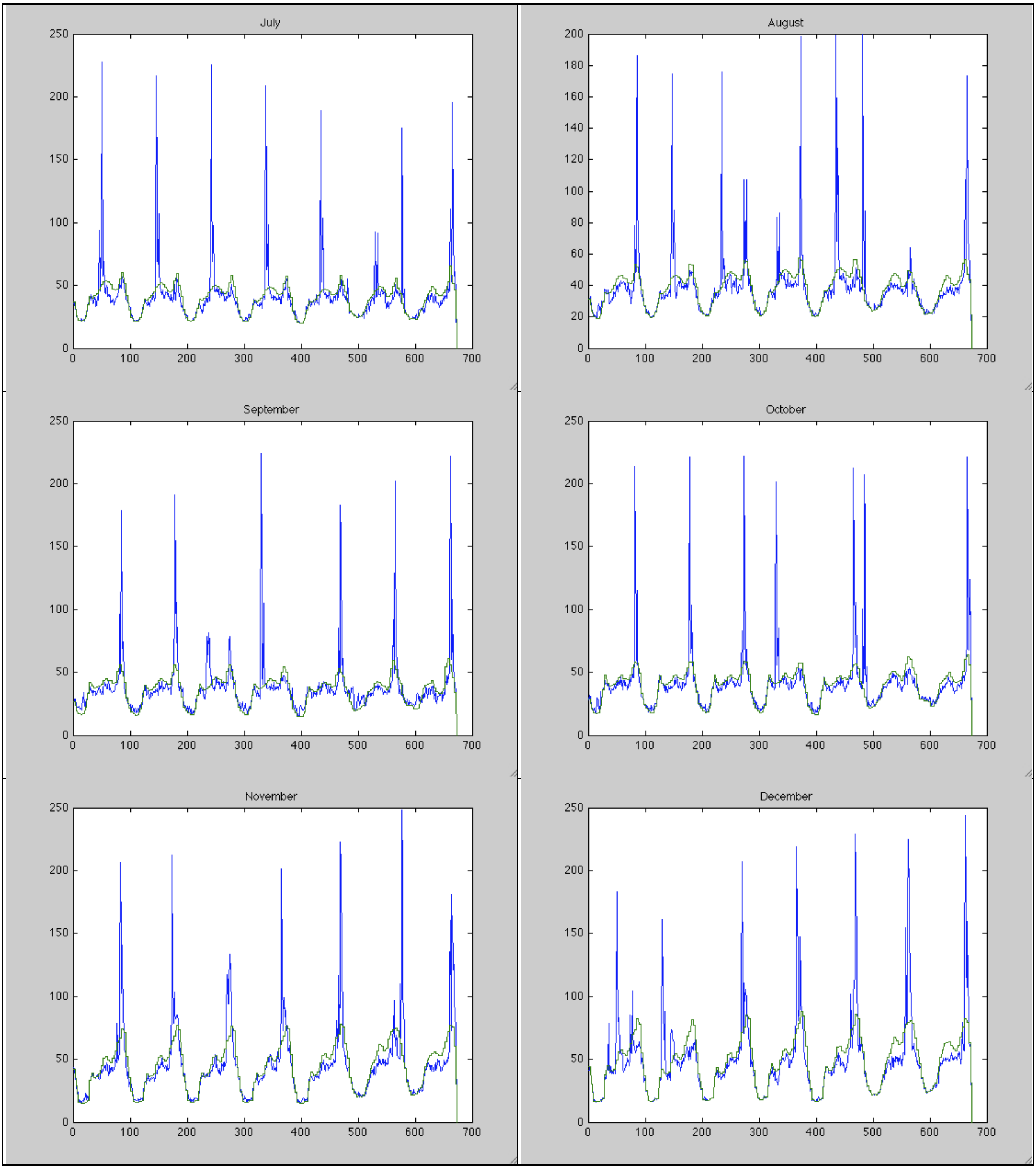
Scenario Demand Response




July
August
September
October
November
December
0
50
100
150
200
250
0
100
200
300
400
500
600
700

Scenario Worst Demand Response




July
250
200
150
100
50
0
0 100 200 300 400 500 600 700
August
200
180
160
140
120
100
80
60
40
20
0
0 100 200 300 400 500 600 700
September
250
200
150
100
50
0
0 100 200 300 400 500 600 700
October
250
200
150
100
50
0
0 100 200 300 400 500 600 700
November
250
200
150
100
50
0
0 100 200 300 400 500 600 700
December
250
200
150
100
50
0
0 100 200 300 400 500 600 700