ScottishPower
EnergyNetworks

MODIFICATION REPORT

SP DISTRIBUTION
SP MANWEB

Amendment Proposal PR-08-001a
Amendment of Use of System Charging Methodologies for IDNO Networks

Date of Issue: 1 May 2008

For approval by the Gas and Electricity Market Authority

1. SCOPE

This document comprises:-

- a report (set out in section 4 below) to the Gas and Electricity Markets Authority (the Authority) in respect of the proposed modification to SP Distribution's and SP Manweb's Use of System Charging Methodology, in respect of charges for Distribution Use of System to connected Independent Distribution Network Operators (IDNOs); and

- a copy (set out in section 5 below) of SP Distribution's and SP Manweb's Use of System Charging Statement revised so as to reflect the implementation of the proposed modification;

together with certain additional and consequential information relating to those two principal items.

2. ISSUE AUTHORITY

Authors	Owner	Issue Authority
Name: Maria Liendo Title: Senior Pricing Analyst Name: Garth Blundell Title: Senior Regulatory Analyst	Name: Allan Hendry Title: Regulatory Economics Manager	Name: Scott Mathieson Title: Regulation Director

3. CONTENTS

4. PROPOSED MODIFICATION

4.1 Introduction

Since April 2005, each DNO has been required to have in place a distribution use of system charging methodology which achieves the objectives set out in distribution standard licence condition (SLC) 4 (3). These objectives (the 'relevant objectives') state:

- that compliance with the use of system charging methodology facilitates the discharge by the licensee of the obligations imposed on it under the Act and by this licence;
- that compliance with the use of system charging methodology facilitates competition in the generation and supply of electricity, and does not restrict, distort, or prevent competition in the transmission or distribution of electricity;
- that compliance with the use of system charging methodology results in charges which reflect, as far as is reasonably practicable (taking account of implementation costs), the costs incurred by the licensee in its distribution business; and
- that, as far as is consistent with sub-paragraphs above, the use of system charging methodology, as far as is reasonably practicable, properly takes account of developments in the licensee's distribution business.

SP Distribution Ltd (SPD) and SP Manweb plc (SPM) are obliged under SLC 4(2) of their distribution licences, to keep their use of system charging methodologies under review and make such modifications as are necessary for the purpose of better achieving the relevant objectives.

SPD and SPM ('SP') have received a number of questions regarding the suitability of our existing use of system charging methodologies for formulating boundary tariffs in respect of Independent Distribution Network Operators (IDNOs). We are now submitting this report to the Authority, in accordance with SLC 4(4), setting out the proposed modifications to our use of system charging methodology in respect of IDNOs.

In summary, we propose that:

(1) IDNO charges would be derived from HV and LV IDNO yardsticks, using domestic demand profiles and typical administrative costs imposed on SP by IDNOs;
(2) Capacity charges would not apply to IDNO HV and LV connections;
(3) No reactive charges will be imposed on IDNO HV and LV connections;
(4) Half-hourly meter is not required for IDNO HV and LV connections.

4.2 Justification for Proposed Modification

The purpose of this section is to set out how the proposed modification to SP's use of system charging methodology would better achieve the relevant objectives.

We recognise that existing charges were developed on the basis of the characteristics of the DNO's own end-customers. As the characteristics of the IDNO networks reflect those of their own end-customers, it is appropriate to develop additional yardsticks for IDNOs, as in general these will be different from directly connected business customers of a similar size. In particular, the load shapes of IDNO sites will be different. Also, the costs incurred in distributing units to the IDNO boundary may be different from those to the end-customer.

Furthermore, the IDNO's own charges to its LV customers, particularly domestic, are unlikely to include a capacity charge component, which leads to a potential mis-match in the structure of the host DNO's and the IDNO's charges.

Tariff structure

The proposed structure of IDNO tariffs is as follows:

- HV & LV IDNO Connections
  - Fixed Charge p/day
  - Day Unit Charge p/kWh
  - Night Unit Charge p/kWh

There are no capacity charges, which avoids any potential mis-match in the structure of the host DNO's and the IDNO's charges.

The use of separate Day and Night charges allows charges to be more cost reflective, as the majority of costs arise from day-time use of the network. A single charge throughout the 24 hours would not reflect this differential in costs.

The rationale for this structure is further explained in the following sections.

IDNO yardsticks

SP proposes the introduction of IDNO specific yardsticks to more accurately reflect the costs that IDNOs impose on our network. These extend the existing yardstick approach to IDNO sites, which ensures a consistent approach to charging.

With the yardstick approach, the demand in kVA at the voltage of connection is calculated using demand coefficients and an assumed power factor for the type of customer. For IDNO networks connected at LV and HV we propose to use the domestic profile, as our analysis of data from existing IDNO sites shows this to give the best fit. Demands are calculated for morning, afternoon and night-time peaks. Demands on higher voltage networks are then calculated taking account of network losses and diversity factors.

The proposed yardsticks are as follows:

- HV IDNO Connection
- LV IDNO Connection Distance Band 1 (up to 25% of average LV feeder length[1])
- LV IDNO Connection Distance Band 2 (from 25% to 50% of average LV feeder length[1])
- LV IDNO Connection Distance Band 3 (from 50% to 75% of average LV feeder length[1])
- LV IDNO Connection Distance Band 4 (above 75% of average LV feeder length[1])

The difference between end customer tariffs and IDNO boundary tariffs should reflect the costs that SP expects to avoid when customers are connected via an IDNO network. For an LV connection, the difference comprises:

- the savings in billing and service costs associated with end customers (typically domestic/ Economy7); and
- the operation and maintenance of part of the LV network nearest to the end-customer. It is assumed that the capital costs of the assets have been funded through connection charges in accordance with the connection charging methodology.

At LV, four distance bands are proposed, which are measured as the distance to the IDNO point of connection from the source substation. The proposed bands are up to 25%, from 25% to 50%, from 50% to 75% and above 75% of the average LV feeder length, calculated separately for SP Manweb and SP Distribution.

The use of distance to differentiate bands reflects the incidence of operation and maintenance (O&M) costs for LV circuits, which are related to their length. The use of distance bands therefore provides a greater degree of cost reflectivity for those costs which are distance related (i.e. O&M costs of LV

[1] The average LV feeder length is calculated as the total length of LV mains divided by the number of LV feeders, calculated separately for SP Manweb and SP Distribution.

circuits). Whilst, theoretically, the more distance bands that are established the greater would be the degree of cost reflectivity, there are practical limitations on the number of bands. In particular, it is very unlikely that an alternative to metering, which uses settlements data, could accommodate more than four sets of charges at LV, as the IDNO would have to assign a separate LLFC to each charge in each of the DNOs' service areas.

The charge for each LV band reflects the corresponding proportion of the components of the yardstick costs that are avoided through connection to the IDNO network. SP will charge as if, within each band, the point of connection is at the band boundary closest to the substation. Thus, in band 1 no O&M of LV circuits is charged; within band 2: 25%; within band 3: 50%; and within band 4: 75% of the O&M of LV circuits is charged. This ensures that no individual IDNO network is charged for more than the proportion of the O&M of LV circuits than it incurs.

For HV connections the cost savings are greater, as the DNO provides none of the LV network and does not provide the HV/LV transformer. The savings for HV also reflect a contribution to the capital costs of the transformer which may not be fully funded through connection charges for domestic customers.

The billing and administration costs associated with IDNOs are different from other types of user of the network. For end customers with a demand less than 100kW, billing is undertaken on a supercustomer basis with data received from the settlement process. For end- customers with a demand greater than 100kW half-hourly data is received by the settlement process. Automated use of system billing systems and processes are in place to undertake these functions. For an IDNO connection, no data is received via the settlement systems and these automated processes and systems cannot be used. These therefore represent avoided costs. However, separate manual processes are required for IDNO billing and these costs need to be reflected in the tariffs in the proposed IDNO yardsticks. Existing yardsticks do not reflect this significant difference in the billing arrangements and hence it is appropriate to introduce IDNO specific yardsticks. These are based only on the budgeted costs for the staff time required for the manual billing process (i.e. IT costs are avoided), divided by the anticipated number of IDNO sites. Nevertheless, this results in only the equivalent of a small amount per end-customer.

Note for IDNO Connections at EHV, no change to the existing charging methodology is proposed.

In terms of demand profiles, SP, having considered the information available, believe that it is more cost reflective to use domestic profiles in determining the costs associated with IDNO connections. Whilst individual connections may differ from this average profile, this is also the case for all other users of the network. The information previously published in our 2nd Consultation Paper indicates that the profile of the average IDNO connection is more similar to the domestic profile than the commercial profiles currently used for

IDNO charging. Whilst there may be justification in the future to use a separate IDNO profile or use different profiles for IDNO networks that comprise mainly industrial/ commercial customers (based on information obtained from actual IDNO sites), this is not possible at the moment due to the small number of sites and the limited time period that these have been in operation. This will be considered by SP in the future when more information becomes available but will also need to be balanced against the potential discrimination against other network users whose profile differs from the average.

Scaling

As it is not possible to attribute all components of regulated revenue (e.g. tax) directly to tariff yardsticks, scaling is necessary to reconcile the aggregate amount of yardstick costs with the allowed revenue, as determined by the price control. Scaling is a feature of existing charges to end-customers. To ensure that an appropriate relationship is maintained between boundary charges to the IDNO and end-user charges, the overall scaling principle must be consistent with the existing methodology.

However, it is not clear that the level of indirect costs is directly related to the length of the LV circuit. In order to avoid introducing potentially discriminatory differences in apportionment of indirect costs through scaling of LV charges across the four bands, we propose to apply no scaling to the LV and LV Substation components of the IDNO yardstick costs.

The effect of this is to cap the total amount of scaling per LV IDNO end-customer at a level (approximately) equivalent to that of an end-customer connected at HV. There are some small differences due to the lower per-customer billing cost for HV IDNO sites and a slightly greater proportion of HV capital cost assumed to be contributed through connection charges.

Capacity Charging Issues

In the absence of capacity charges, it will be important to ensure that capacity is managed in a way which ensures that networks continue to be developed in an economic and efficient manner. We propose to address these issues through the connections process and we shall be reviewing our connection charging statement, in due course.

Reactive Charges

SP tariffs for connections above 100kVA include reactive charges. SP have analysed the power factors on a number of IDNO sites and the data was previously published in our 2nd consultation paper. The data shows that the majority of sites do operate at or close to unity power factor. It was recognised

that some larger customers connected to an IDNO network will have poor power factors and that this will adversely impact the IDNO as well as the DNO. It is recognised good practice that network operators should encourage large users to operate with a good power factor. The Ofgem document 'Structure of electricity distribution charges. Update document and Licence modifications. April 2004', states

> '3.35. It is important that connected parties are encouraged to operate their connections, whether demand or generation, near unity power factor to ensure efficient use of the system and maximise available capacity, avoid requirement for early capital expenditure in reinforcing the network and also to avoid increasing losses on the system. It is therefore Ofgem's view that DNOs should consider how best to reflect these costs.
>
> 3.36. Equipment exists that corrects for low power factor and therefore increases available capacity. This has the benefits of reducing losses, deferring the need for network reinforcement and improving voltage quality. Power factor correcting equipment can be installed both on customers' premises and on the network itself. Ofgem supports the use of this type of equipment because of the benefits outlined and is working with the Carbon Trust to make the case for Enhanced Capital Allowances for power factor correction equipment. It is important that DNOs' charging arrangements reflect the costs that low power factors impose on the networks and Ofgem would expect DNOs to include charges for low power factors for large customers as part of any revised charging methodology.'

SP therefore believe that it is the primary responsibility of the IDNO to have charges for large customers connected to their networks with lower power factors. SP propose that IDNO tariffs should not include reactive charges as the IDNOs should be implementing Ofgem's guidelines in their charging methodologies. SP may review this position if we believe that IDNOs are not including appropriate charges for poor power factors in their end-user DUoS tariffs, in accordance with the Ofgem guidance. Connection and Use of System Agreements with IDNOs will continue to include an obligation for them to operate their connections at, or near to, unity power factor.

4.3 Implementation Date

This modification is proposed for implementation on 1 October 2008, provided that the Authority agrees to the necessary Licence consents for reducing implementation timescales under SLC4(4) and, for notice, SLC4A(5).

4.4 Proposed Changes to the Use of System Charging Methodology Statement

The extract below shows the mark-up of the changes required to the statement currently in place under SLC 4(1)(a) in respect of SP's use of system charging methodology. Marked-up charging methodology statements for SPD and SPM are attached.

SPD and SPM Methodologies

3.1.5 **Customer Related and Billing Costs** These are determined by establishing the cost per customer type in providing customer service and billing. The costs include the annualised costs associated with support IT Systems. The customer types are Super-customer, Half-Hourly, ~~and~~ Site-Specific and Independent Distribution Network Operators (IDNOs) for HV and LV connections.

3.3 Determine Long Run Marginal Costs associated with Yardstick Customers

For each yardstick customer type, the average consumption and capacity are determined.

The demand in kVA at the voltage of connection is calculated using electricity load research demand coefficients and an assumed power factor for the type of customer. For IDNO networks connected at HV and LV domestic profiles are used, as these give the best fit. Demands are calculated for morning, afternoon and night-time peaks. Demands on higher voltage networks are then calculated taking account of network losses and diversity factors.

Long run marginal costs are then calculated using these demand figures and the costs associated with providing capacity at each voltage level calculated previously. The required capacity as opposed to the calculated demand is used at the voltage of connection.

Customer service costs are determined from the type of customer. Where manual billing is necessary these will be based on budgeted staff costs but exclude IT costs.

Total yardstick costs are then determined by applying the connection/ use of system boundary rules. All customer related and operation and maintenance costs are recovered through use of system charges. A proportion of network costs at the voltage of connection, and up to one voltage level above, are recovered through connection charges. This connection/ use of system boundary is applied to identify total yardstick use of system costs for the type of customer.

For all half-hourly metered customers, yardstick incremental costs associated with poor power factor are used to determine a charge where the average power factor in the month drops below 0.95 lagging. These are determined by calculating the costs of providing the necessary additional equipment to bring the power factor to within acceptable limits. These are determined by establishing the cost per kVArh in providing reactive compensation. Capital costs for each voltage level of the system are calculated using current prices from SP's estimating package. The Gross Asset Value is converted to an annuitised yardstick cost using assumed asset lives and the cost of capital. Operation and maintenance costs including other business costs such as rates are calculated as a percentage of the Gross Asset Value. This percentage is derived using total forecast costs and the modern equivalent value of the existing distribution network.

For IDNO networks, account is taken of the cost savings that arise from avoiding use of the network nearest to the end-customer. At LV, these comprise the distance related network costs (i.e. O&M costs of LV mains). At HV, the savings also reflect a contribution to the HV/LV transformer, which may not be fully funded through connection charges for domestic customers.

3.6 Determine Final Tariffs to Recover Allowed Revenue

The total revenue that SP is allowed to charge is determined by its Price Control. In order to determine final prices yardstick tariffs are scaled in proportion to match the allowed revenue except in the case of LV IDNO tariffs. In the latter case we apply no scaling to the LV and LV Substation components of the IDNO yardstick costs.

SPD Methodology

3.2 Identify Yardstick Customers

The following Yardstick Customers are used to determine tariffs as these represent the major types of customer.

- Domestic Unrestricted
- Domestic Electrically Heated
- Business Unrestricted
- Business Electrically Heated
- Other Off-Peak Supplies
- Non-Half-Hourly Metered Customers connected to the LV Network
- Half-Hourly Metered Customers connected to the LV Network
- Half-Hourly Metered Customers connected to the HV Network
- Half-Hourly Metered Customers connected to the 33kV (EHV) Network
- Un-metered Street Lighting Supplies
- Un-metered Street 24 hour supplies
- HV IDNO Connections
- LV IDNO Connections, Distance Band 1 (up to 25% of average LV feeder length)
- LV IDNO Connections, Distance Band 2 (from 25% to 50% of average LV feeder length)
- LV IDNO Connections, Distance Band 3 (from 50% to 75% of average LV feeder length)
- LV IDNO Connections, Distance Band 4 (above 75% of average LV feeder length)

~~Connections to other distribution networks will be treated as Half-Hourly Metered Customers at the appropriate point of connection.~~

SPM Methodology

3.2 Identify Yardstick Customers

The following Yardstick Customers are used to determine tariffs as these represent the major types of customer.

- Domestic Unrestricted
- Domestic Electrically Heated
- Business Unrestricted
- Business Electrically Heated
- Other Off-Peak Supplies
- Non-Half-Hourly Metered Customers connected to the LV Network
- Non-Half-Hourly Metered Customers connected to a LV Substation
- Half-Hourly Metered Customers connected to the LV Network
- Half-Hourly Metered Customers connected to an LV Substation
- Half-Hourly Metered Customers connected to the HV Network
- Half-Hourly Metered Customers connected to an HV Substation
- Half-Hourly Metered Customers connected to the 33kV (EHV) Network
- Half-Hourly Metered Customers connected to a 33kV (EHV) Substation
- Half-Hourly Metered Customers connected to the 132kV (EHV) Network
- Un-metered Street Lighting Supplies
- Un-metered Street 24 hour supplies
- HV IDNO Connections
- LV IDNO Connections, Distance Band 1 (up to 25% of average LV feeder length)
- LV IDNO Connections, Distance Band 2 (from 25% to 50% of average LV feeder length)
- LV IDNO Connections, Distance Band 3 (from 50% to 75% of average LV feeder length)
- LV IDNO Connections, Distance Band 4 (above 75% of average LV feeder length)

~~Connections to other distribution networks will be treated as Half-Hourly Metered Customers at the appropriate point of connection.~~

5 Revised Use of System Charges

In terms of SLC 4A(4), SP is required to give the Authority revised charging statements setting out the amended charges resulting from a modification to its Use of System Charging Methodology and specifying the date from which such revised charges are to have effect. These are set out below.

The revised charges will have effect from the 1st of the month, six weeks after a decision from the Authority not to veto the modification.

The above proposals yield the following IDNO prices additional to the final charges for 2008/09 published by SP in February 2008. For the avoidance of doubt, the rest of the DUoS tariffs published by SP in February 2008 are not affected by this modification.

SP Distribution
Proposed IDNO tariffs

SPD	Fixed p/day	Day p/kWh	Night p/kWh
LV Band 1 IDNO	4.60	1.93	0.19
LV Band 2 IDNO	4.60	1.98	0.19
LV Band 3 IDNO	4.60	2.03	0.20
LV Band 4 IDNO	4.60	2.08	0.20
HV IDNO	4.60	1.73	0.16

SP Manweb
Proposed IDNO tariffs

SPM	Fixed p/day	Day p/kWh	Night p/kWh
LV Band 1 IDNO	2.88	1.75	0.18
LV Band 2 IDNO	2.88	1.79	0.18
LV Band 3 IDNO	2.88	1.84	0.19
LV Band 4 IDNO	2.88	1.89	0.19
HV IDNO	2.88	1.45	0.15

6. Additional Material

6.1. Impact on Other Industry Documents

No amendment to Industry Documents is required. Changes may be required to individual Connection and Use of System Agreements to reflect revised metering arrangements.

6.2. Supporting Documents

The following supporting documents have been previously provided to the Authority. These documents, except for responses marked confidential, have previously been circulated to interested parties and are available on request to commercial@scottishpower.com.

- 1st Consultation Paper – *'Consultation on Possible Changes to SP Distribution and SP Manweb Use of System Charging Methodologies for IDNO Networks – dated 2nd October 2006'*
- Responses received to 1st Consultation Paper.
- Agenda for Workshop held 7th December 2006.
- Notes of Workshop, including presentations.
- 2nd Consultation Paper – *'Consultation on Proposed Changes to SP Distribution and SP Manweb Use of System Charging Methodologies for IDNO Networks – dated 12th January 2007'*
- Responses received to 2nd Consultation Paper.

Appendix Supporting Analysis

This analysis contains:

- Tables of charges generated by proposed methodology
- LV distance banding source data
- IDNO margins under proposals (modeled)
- Simulation of margin under varying patterns of consumption (total kWh and day/night split)
- Total IDNO site consumption at HV and LV
- Difference between present and proposed charges for actual IDNO sites
- Aggregated IDNO demand profiles

This analysis supports the following conclusions:

- IDNO Margin is positive for realistic site sizes and consumption patterns
- IDNO Margin per end-customer (domestic assumed) is essentially constant for sites larger than five plots.
- Margins are similar for Unrestricted and E7 end-customers.
- Simulation shows very low risk of poor margin for a single end-customer under extreme consumption patterns. This risk to the IDNO will be further reduced by diversity.
- Proposals will reduce charges for small (or immature) sites.
- Domestic unrestricted profile is best fit at both LV and HV.

SP Distribution

Proposed IDNO tariffs

SPD	Fixed p/day	Day p/kWh	Night p/kWh
LV Band 1 IDNO	4.60	1.93	0.19
LV Band 2 IDNO	4.60	1.98	0.19
LV Band 3 IDNO	4.60	2.03	0.20
LV Band 4 IDNO	4.60	2.08	0.20
HH HV IDNO	4.60	1.73	0.16

SP Manweb
Proposed IDNO tariffs

SPM	Fixed p/day	Day p/kWh	Night p/kWh
LV Band 1 IDNO	2.88	1.75	0.18
LV Band 2 IDNO	2.88	1.79	0.18
LV Band 3 IDNO	2.88	1.84	0.19
LV Band 4 IDNO	2.88	1.89	0.19
HH HV IDNO	2.88	1.45	0.15

2008-09 End Customer Tariffs

SPD	Fixed p/day	Day Units p/kWh	Night Units p/kWh
Unrestricted	5.71	1.64	1.64
Heating	7.68	1.86	0.56

SPM	Fixed p/day	Day Units p/kWh	Night Units p/kWh
Unrestricted	3.63	1.49	1.49
Heating	4.17	1.64	0.54

Distance Band Data

Specific data only available for 41 IDNO sites in SPD, 0 in SP Manweb.

	SPD	SPM
LV Main Length (km)	29738	23577
LV Customers	2127512	1473916
LV Feeder count	99710	91834
Mean LV Feeder length (km)	**0.298245**	**0.256735**
No Customers per feeder	21.337	16.04979

Bands

	SPD Upper band limit (km)	Percentage	Manweb Upper band limit (km)
Band 1	0.075	27%	0.064
Band 2	0.149	41%	0.128
Band 3	0.224	10%	0.193
Band 4		22%	

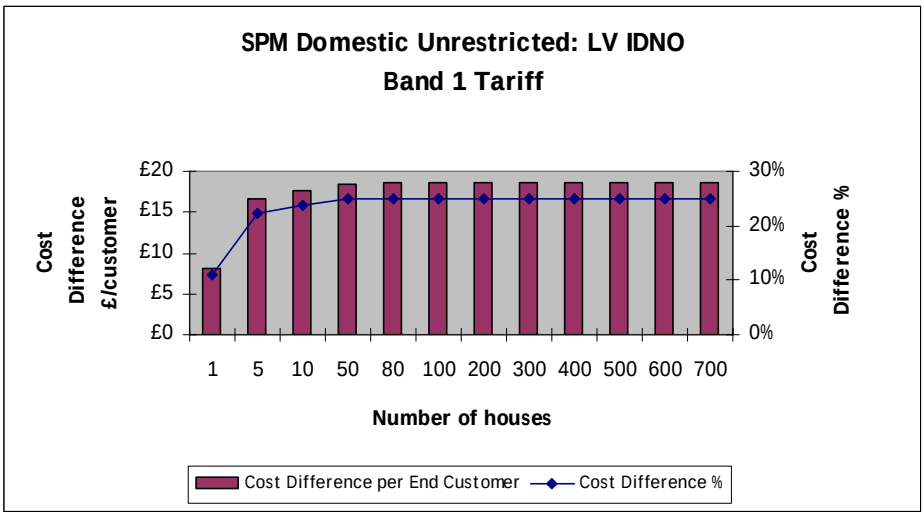
Margins

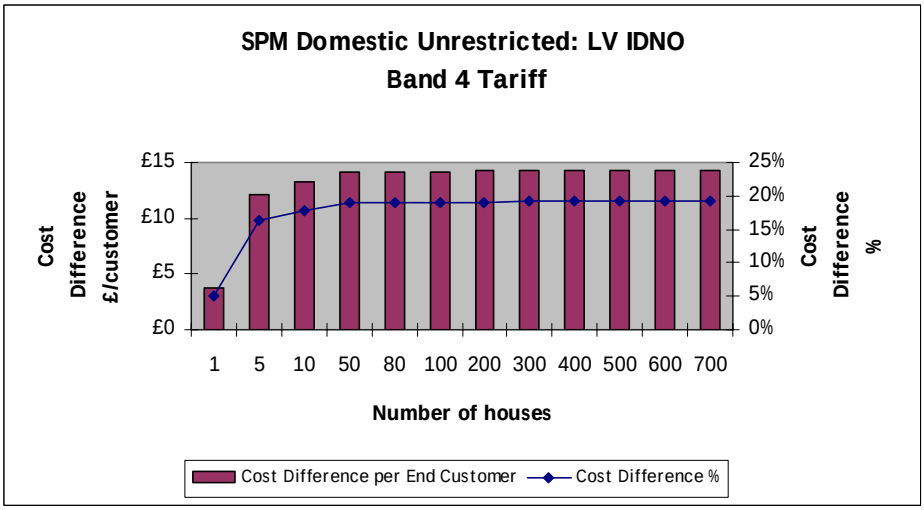
Margins as a function of number of plots per site have been modeled applying these IDNO/End Customer charges
Assumption:
Annual domestic unrestricted consumption 4109kWh per plot (both areas).

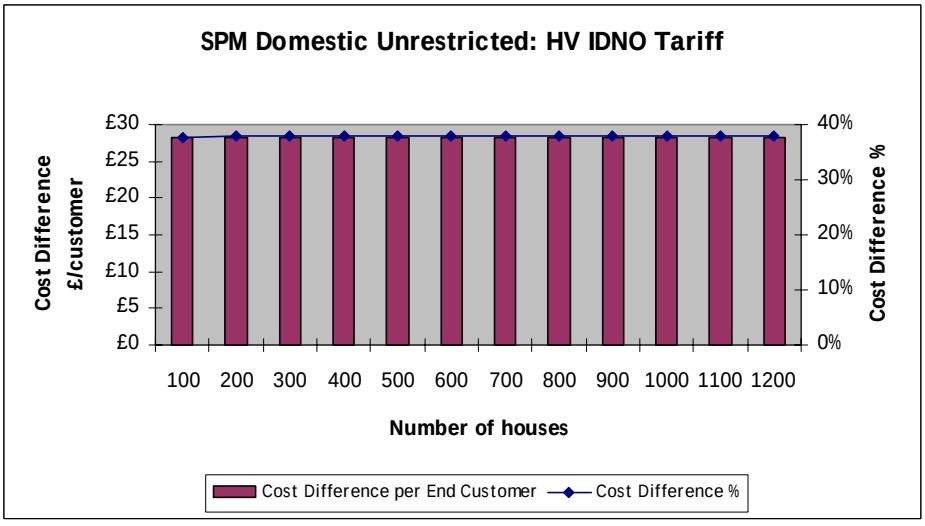
Heating 10,190 kWh (SPD)
Heating 8,799 kWh (SPM)

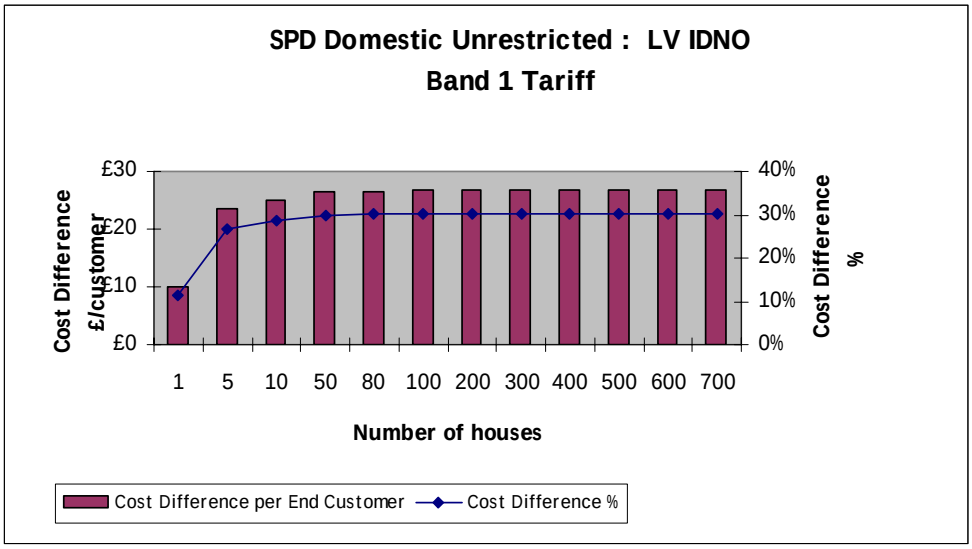
The bar charts below (over) are intended to be comparable with those in the original modification submission:

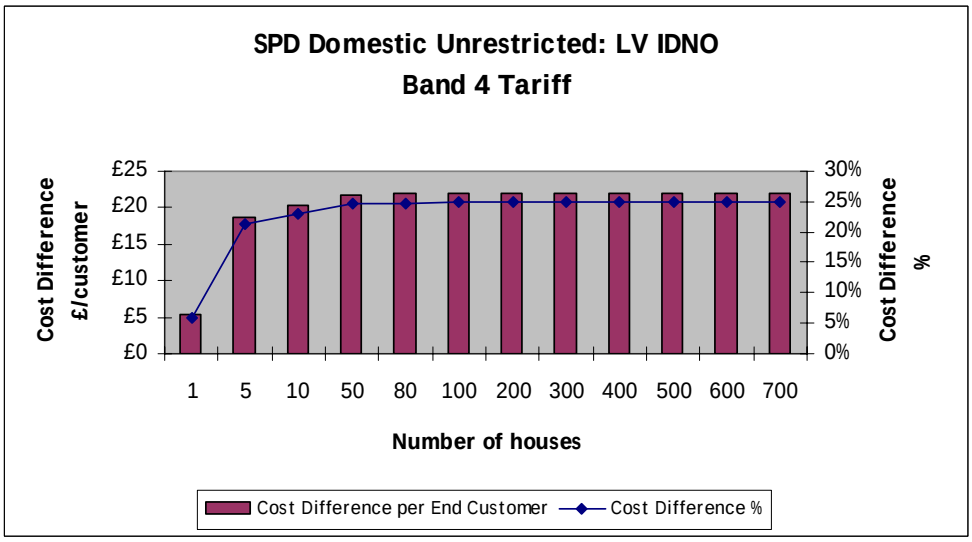
Cost differences per customer and as a percentage for the three IDNO tariffs for different numbers of domestic properties

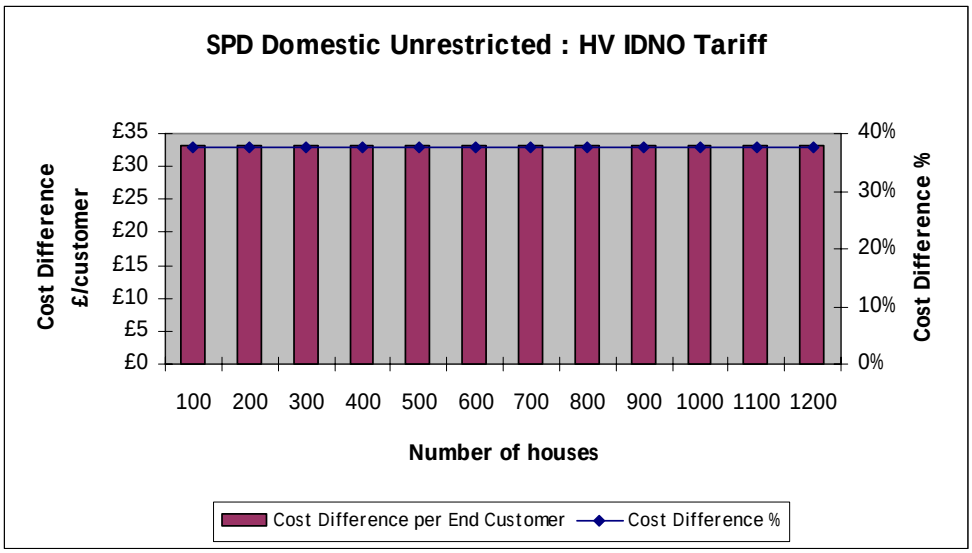




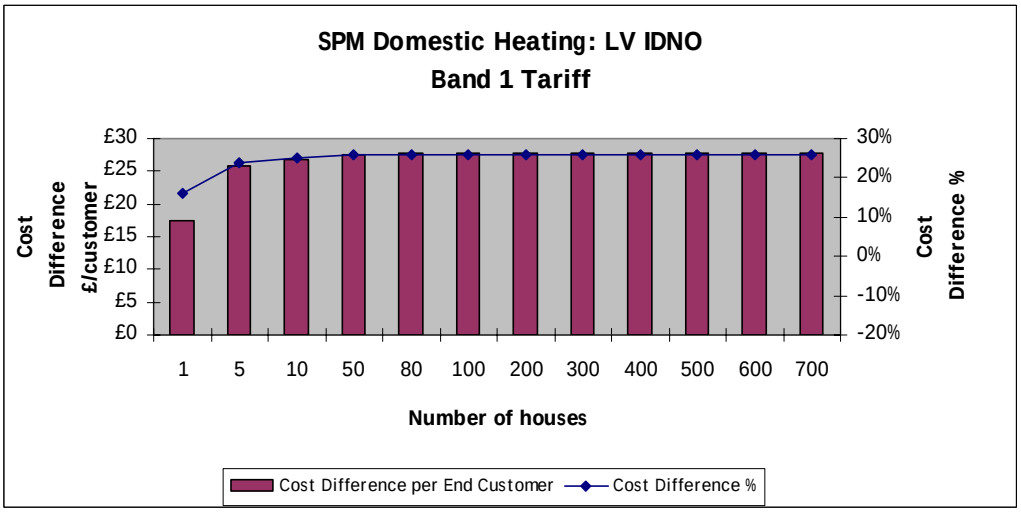


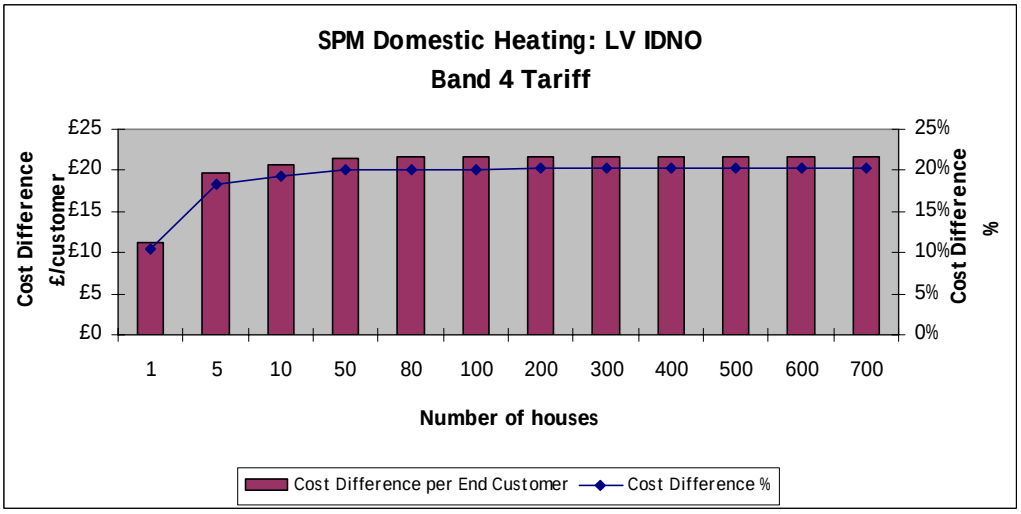

SPD Domestic Unrestricted : LV IDNO
Band 1 Tariff
Cost Difference £/customer
£30
£20
£10
£0
40%
30%
20%
10%
0%
Cost Difference %
1 5 10 50 80 100 200 300 400 500 600 700
Number of houses
Cost Difference per End Customer
Cost Difference %

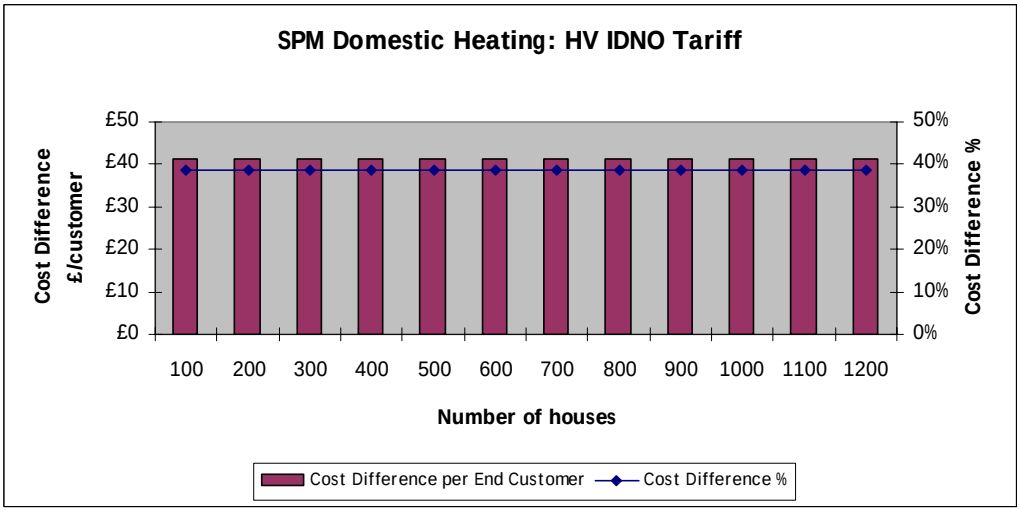

SPD Domestic Unrestricted: LV IDNO
Band 4 Tariff
Cost Difference £/customer
£25
£20
£15
£10
£5
£0
30%
25%
20%
15%
10%
5%
0%
Cost Difference %
1 5 10 50 80 100 200 300 400 500 600 700
Number of houses
Cost Difference per End Customer
Cost Difference %

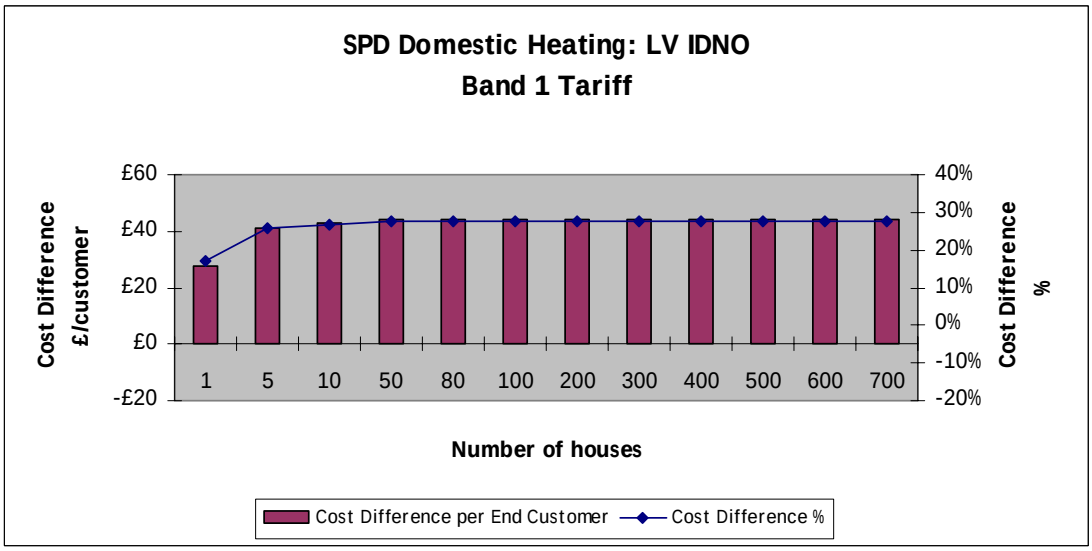


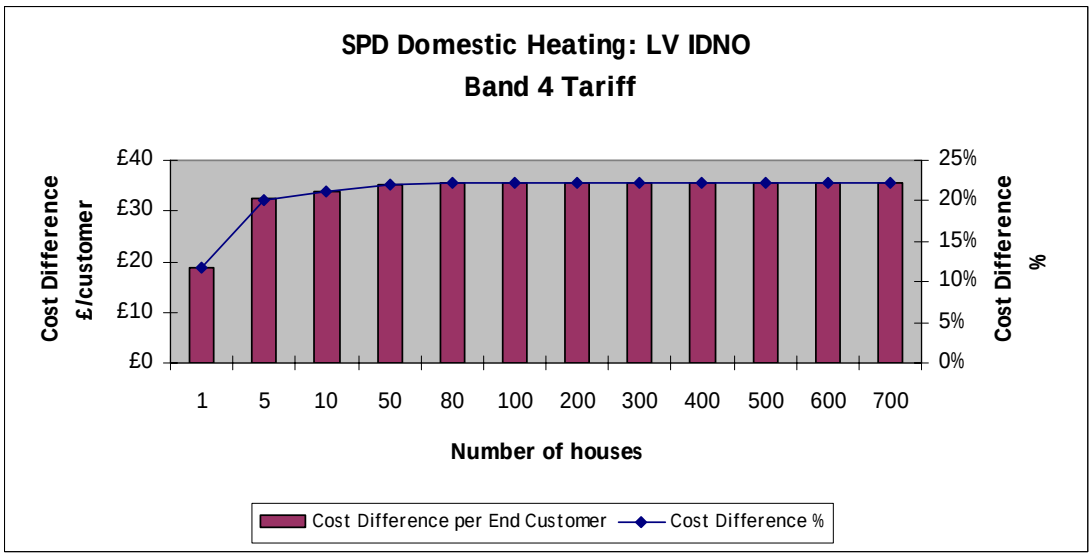
Cost differences per customer and as a percentage for the three IDNO tariffs for different numbers of Economy 7 properties

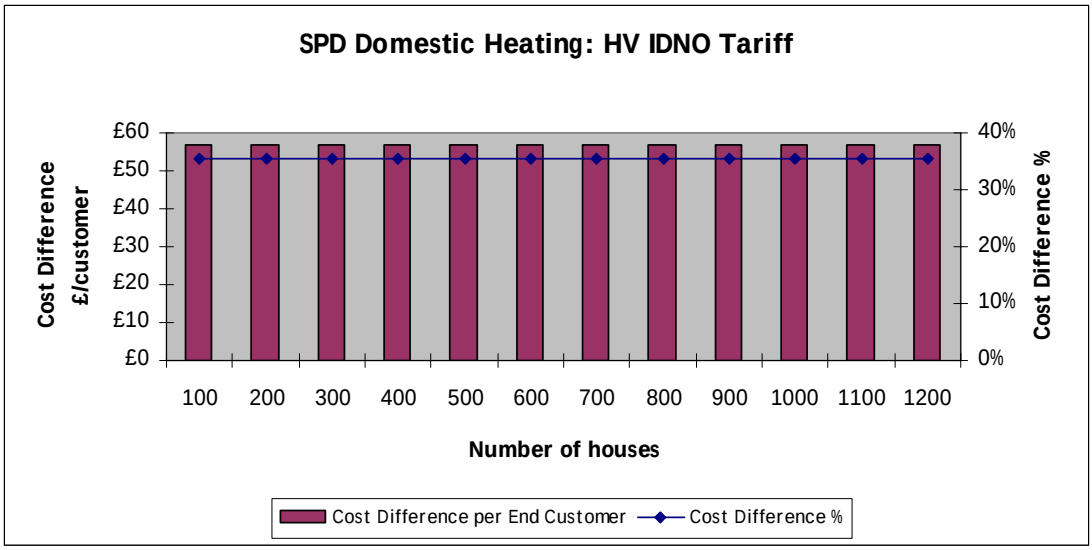





SPM Domestic Heating: HV IDNO Tariff
Cost Difference £/customer
£50
£40
£30
£20
£10
£0
50%
40%
30%
20%
10%
0%
Cost Difference %
100 200 300 400 500 600 700 800 900 1000 1100 1200
Number of houses
Cost Difference per End Customer
Cost Difference %


SPD Domestic Heating: LV IDNO
Band 1 Tariff
Cost Difference £/customer
£60
£40
£20
£0
-£20
40%
30%
20%
10%
0%
-10%
-20%
Cost Difference %
1 5 10 50 80 100 200 300 400 500 600 700
Number of houses
Cost Difference per End Customer
Cost Difference %

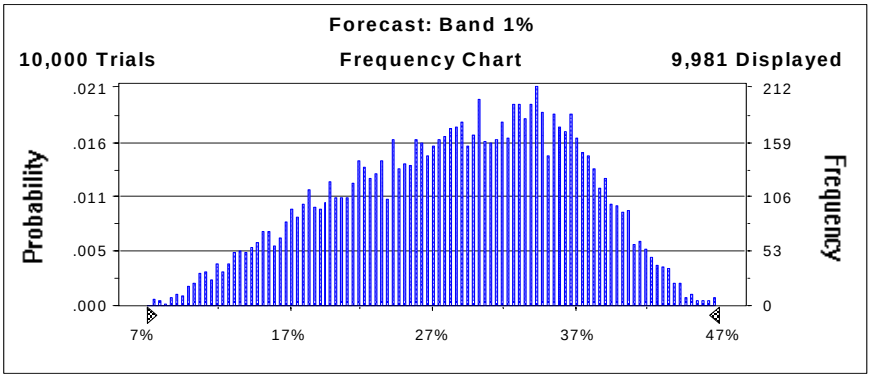

SPD Domestic Heating: LV IDNO
Band 4 Tariff
Cost Difference £/customer
£40
£30
£20
£10
£0
25%
20%
15%
10%
5%
0%
Cost Difference %
1 5 10 50 80 100 200 300 400 500 600 700
Number of houses
Cost Difference per End Customer
Cost Difference %

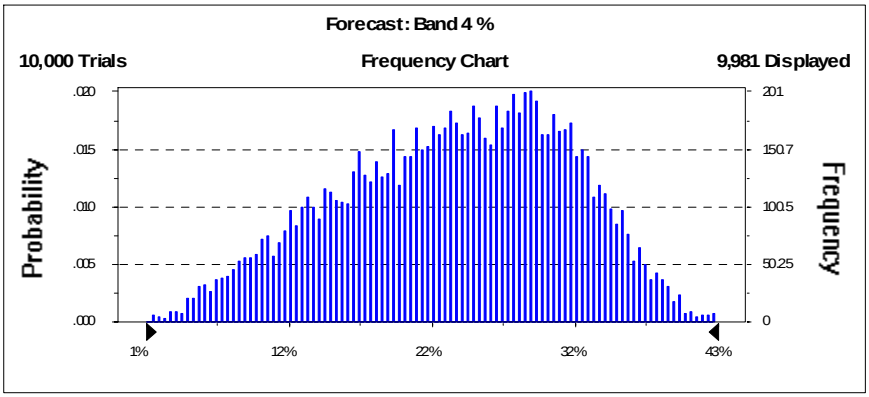


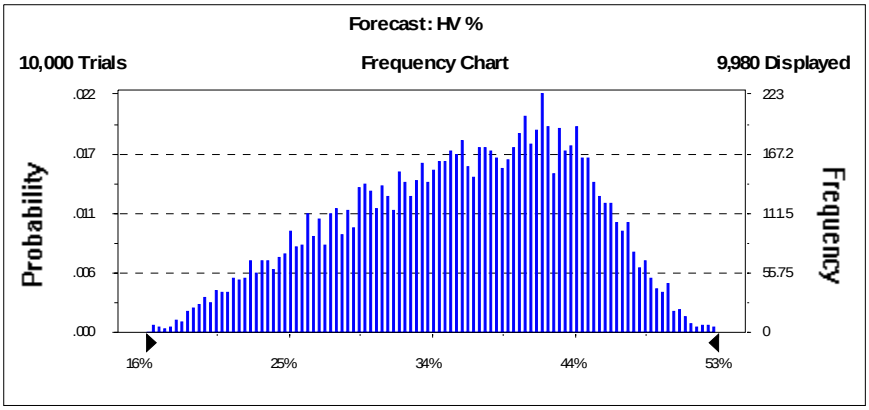
Simulation

The simulation is under assumptions of varying overall consumption and day/night split. These input distributions are shown on the following page.

Simulation: SP Distribution





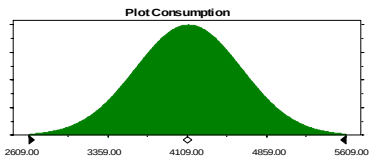


Assumption: Plot Consumption **Cell: C21**

Normal distribution with parameters:

Mean	4109.00
Standard Dev.	500.00

Selected range is from -Infinity to +Infinity

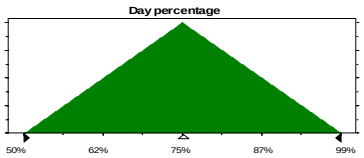


Assumption: Day percentage **Cell: C23**

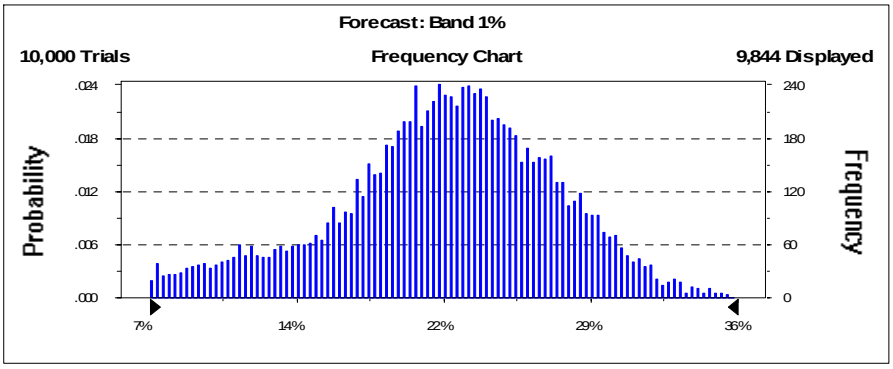
Triangular distribution with parameters:

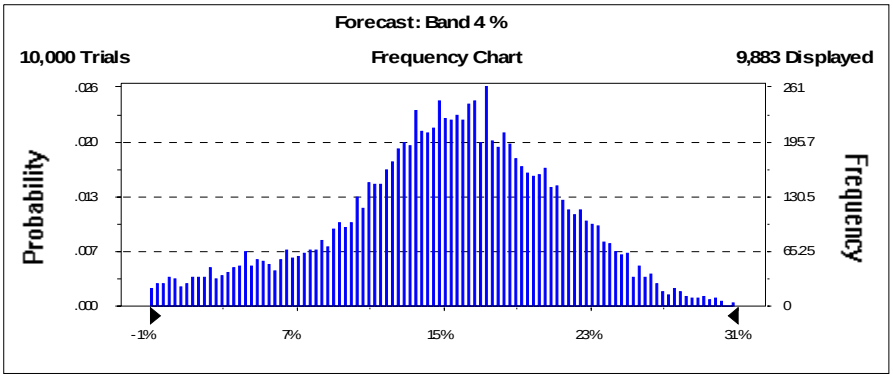
Minimum	50%
Likeliest	75%
Maximum	99%

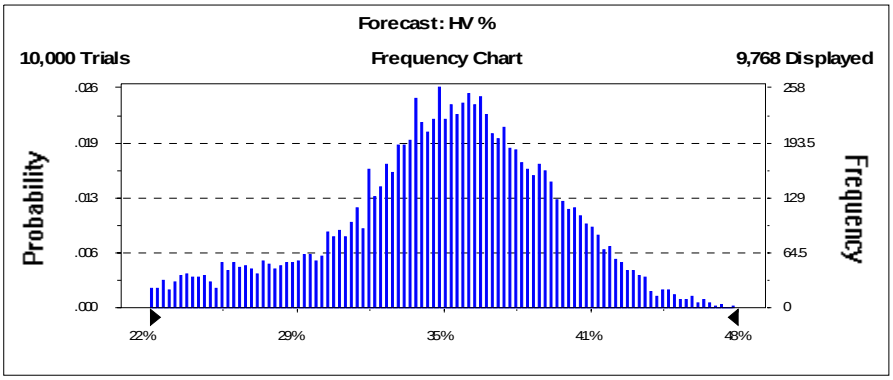
Selected range is from 1% to 99%



Simulation: SP Manweb





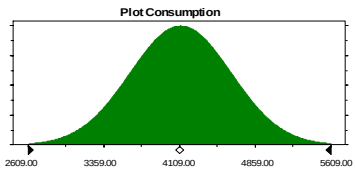


Assumption: Plot Consumption **Cell: C21**

Normal distribution with parameters:

Mean	4109.00
Standard Dev.	500.00

Selected range is from -Infinity to +Infinity

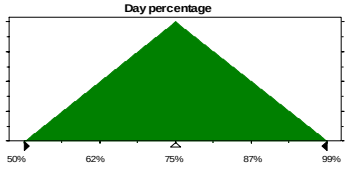


Assumption: Day percentage **Cell: C23**

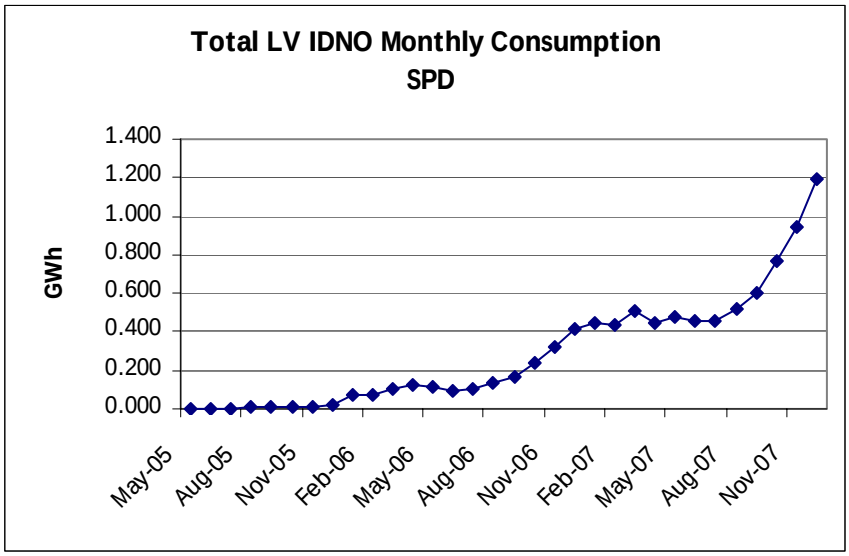
Triangular distribution with parameters:

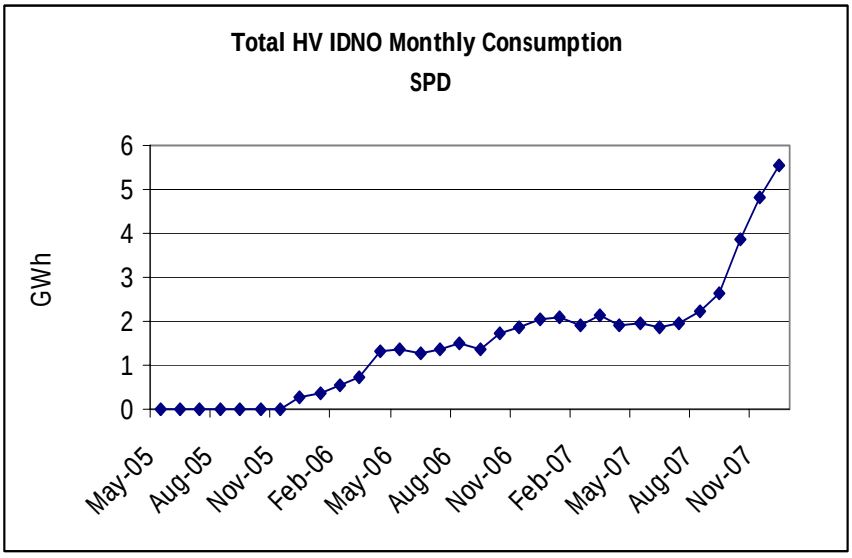
Minimum	50%
Likeliest	75%
Maximum	99%

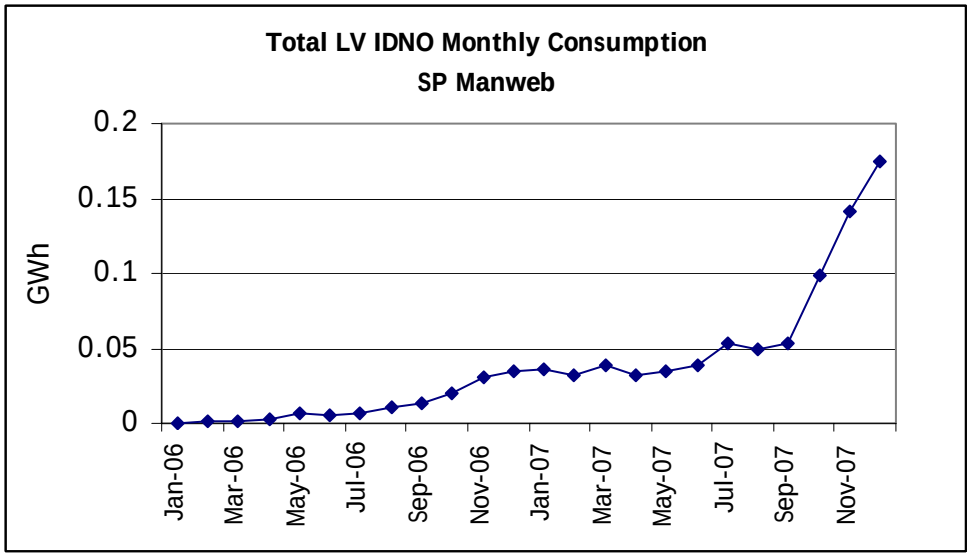
Selected range is from 1% to 99%

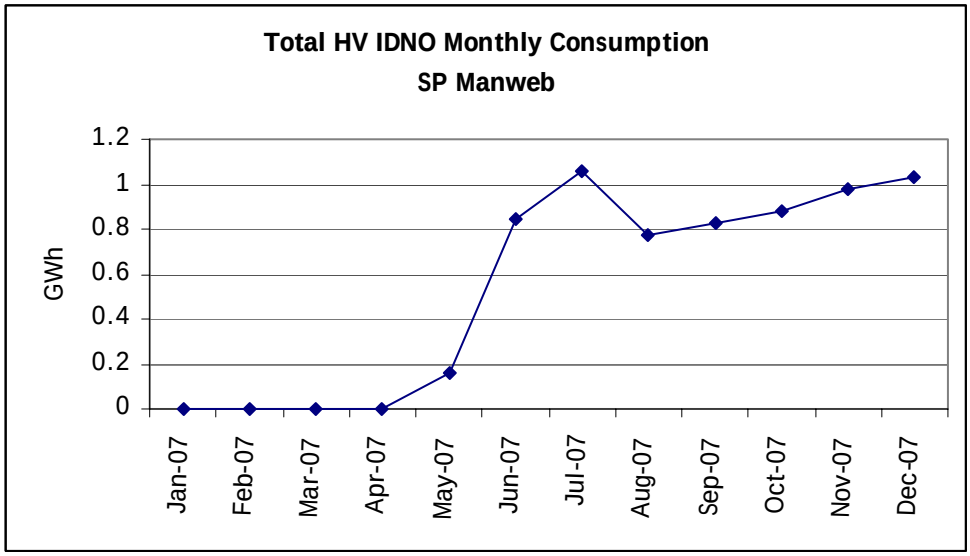


Total Consumption



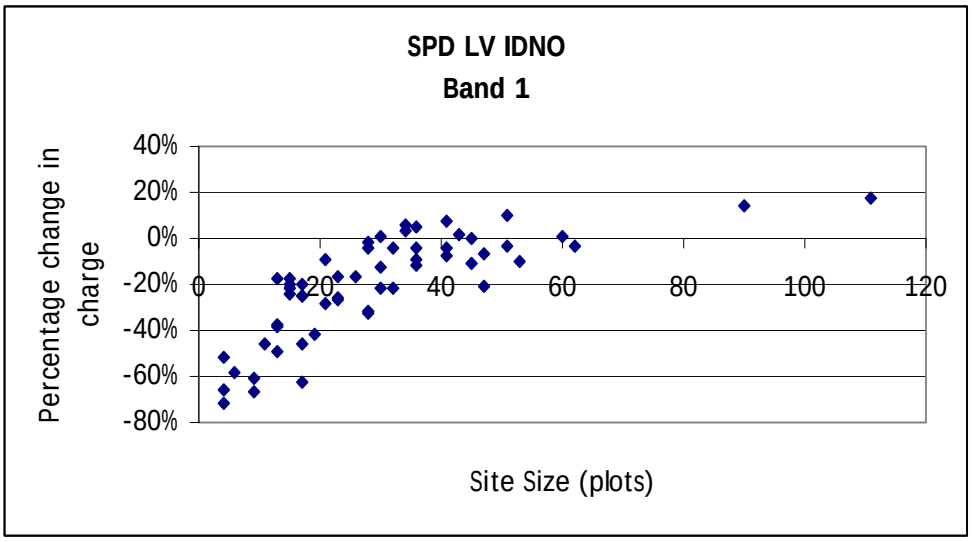


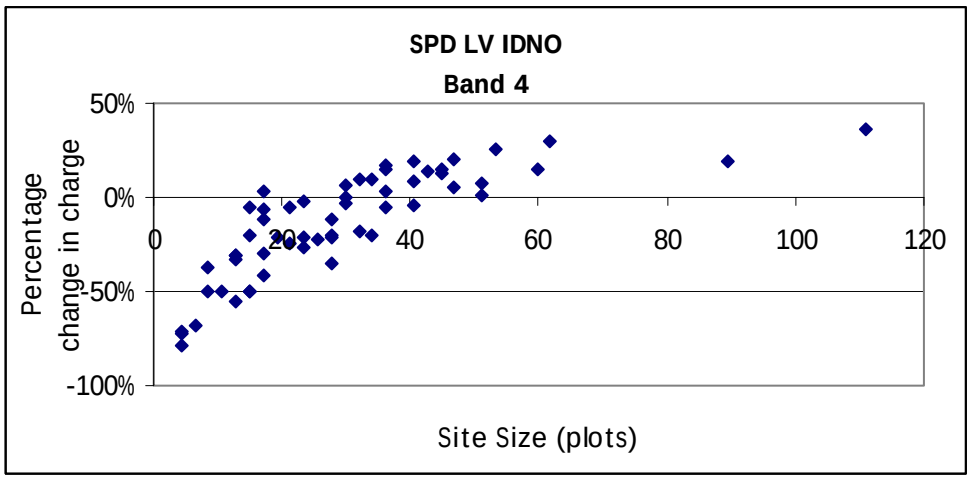

Total LV IDNO Monthly Consumption
SP Manweb
GWh
0.2
0.15
0.1
0.05
0
Jan-06
Mar-06
May-06
Jul-06
Sep-06
Nov-06
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07

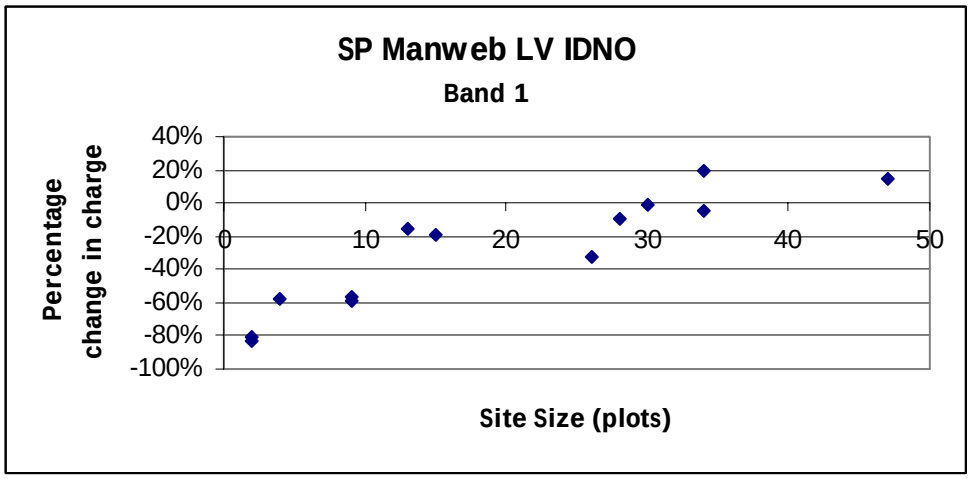

Total HV IDNO Monthly Consumption
SP Manweb
GWh
1.2
1
0.8
0.6
0.4
0.2
0
Jan-07
Feb-07
Mar-07
Apr-07
May-07
Jun-07
Jul-07
Aug-07
Sep-07
Oct-07
Nov-07
Dec-07

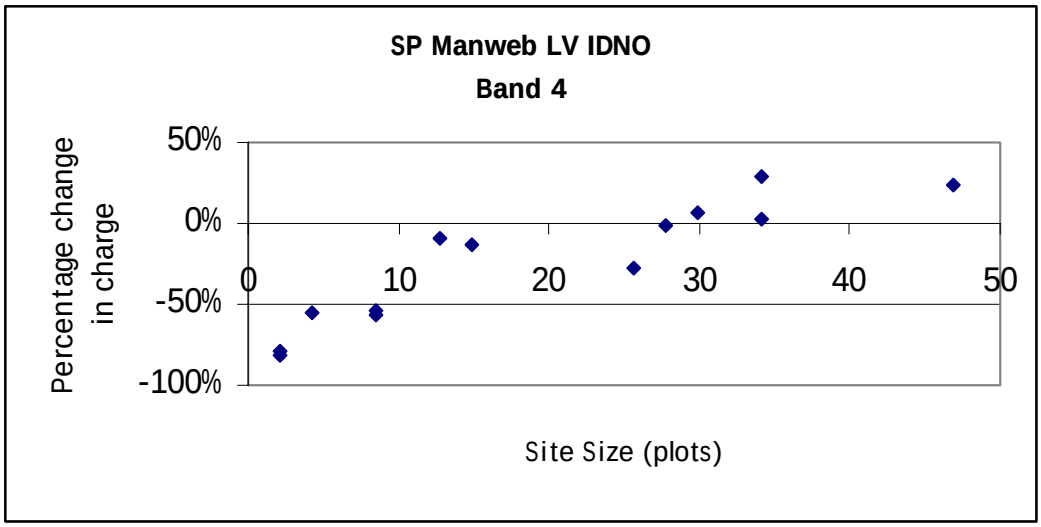
Difference in Charges for Existing Sites

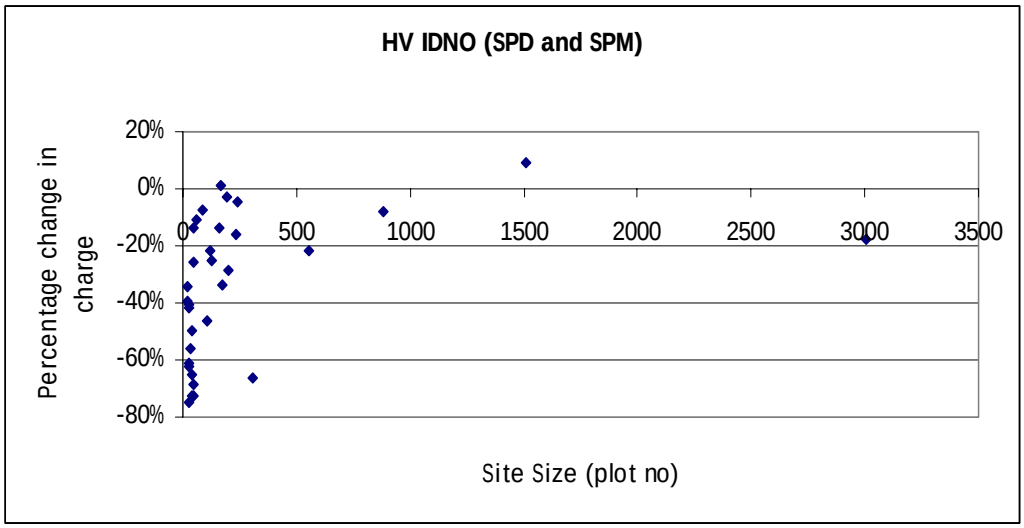
Proposed and existing charges applied to consumption data for real sites.








SP Manweb LV IDNO
Band 4
Percentage change in charge
50%
0%
-50%
-100%
0
10
20
30
40
50
Site Size (plots)


HV IDNO (SPD and SPM)
Percentage change in charge
20%
0%
-20%
-40%
-60%
-80%
0
500
1000
1500
2000
2500
3000
3500
Site Size (plot no)

Profiles

Profiles are aggregation of data for all sites. Individual site profiles (not shown for clarity) are overwhelmingly (>>80%) similar.