



Short Term Active Response (STAR)

An Interruptible Load Service

Application Information Pack

April 2009

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High Level Overview

STAR Service

- Short Term Active Response (STAR): a contracted load shedding scheme.
- Customer's load is interrupted when the system frequency drops to a pre defined level.
- No notice is given of interruptions and interruptions are instantaneous.
- Customer's load can be restored after the system frequency has recovered to a stable level.
- Interruptions are of the order of five minutes duration.
- STAR operates between 07:00 hrs and 24:00 hrs every day throughout the year.
- Deadline for completed applications to participate in the STAR scheme is 29th May 2009.

Payment

- Payments are made by EirGrid in its role as transmission system operator (TSO) to participants in the scheme.
- Payment is for the metered interruptible energy consumed by the interruptible load during the STAR operating period.
- Payments are made for making load available for interruption and not for interruptions themselves.

Equipment

- The full costs of equipment installation will be borne by the Applicant.
- The scheme requires the installation of suitable revenue class interval metering, telecommunications equipment and control facilities.

Introduction

EirGrid, as Transmission System Operator (TSO) for the Republic of Ireland, is seeking to reopen the Short Term Active Response (STAR) service provider base. STAR is an interruptible load type service by which electricity consumers agree to have a portion of their load disconnected, without notice, during an under-frequency incident. STAR assists in the recovery of the power system frequency to normal operating conditions following the loss of a major generation in-feed to the power system. The TSO makes payment for the service based on the level of load that an electricity consumer makes available for interruption.

This document is being issued as part of the process for the competitive procurement of STAR. It sets out an overview of how the scheme will be implemented, the technical requirements for the facilities required to provide the service, a section containing questions and answers on the STAR scheme and a guide to the completion of the application form that applicants must complete to participate in the competition process.

All interested parties, including existing STAR and Interruptible Load service providers, will be required to submit an application to provide this service as part of the competitive tender process. Applications will be assessed by EirGrid on the basis of the applicant's technical ability to provide the service, the applicant's bid price and the applicant's load characteristics. Successful participants in the procurement process will be offered the opportunity to provide a STAR service for a defined period in return for payment based on the energy that is consumed by the load made available for STAR.

Any queries relating to the overall scheme should be directed to Colm mac Oireachtaigh of EirGrid at star@eirgrid.com or on 01-2370459.

An applicant may return the completed application form to the TSO at the following address:

Martin Treacy
EirGrid,
Block 2, The Oval,
160 Shelbourne Road,
Ballsbridge,
Dublin 4.

Completed application forms may be submitted via email in the first instance but a completed hard copy of the application form must be received by the TSO by the 29th May 2009.

Email: tenders@eirgrid.com

Scheme Overview

The tripping (disconnection) of interruptible load under the STAR scheme is initiated by the system frequency, which normally operates at 50 Hz, dropping to a defined trip setting. Such frequency deviations are initiated by the loss of a large generation in-feed on the system which could be due to a fault at a generating station or on the transmission system. As such events are largely unpredictable, the type of load typically offered as interruptible under the STAR scheme tends to be of a non critical nature and would not suit all processes. Loads that might fall into this category could include, but would not be limited to, pumping, heating, crushing and refrigeration processes.

A STAR applicant may define a portion of their load as interruptible under the scheme or they may disconnect their entire facility – the applicant decides what portion of their load is defined as interruptible and therefore appropriate for the STAR scheme. It is vital to the scheme that the interruptible load is disconnected within 2 seconds of the frequency dropping. No advance warning of interruption will be available. The STAR scheme will allow for up to 20 such interruptions per annum at the basic payment rate. Such interruptions would only occur during the defined day operating period of 07:00 to 24:00 on both business and non-business days.

Reconnection of the interrupted load may only occur once the frequency has recovered to a defined reconnection frequency for a defined period. The typical duration of the disconnection would be of the order of 5 minutes. However, this is dependant on system conditions.

STAR trip and restoration frequency settings and a frequency recovery period will be set by the TSO. Changes may be made to these settings within the parameters of the scheme. Figure 1 below shows a frequency trace following the tripping of a power generator leading to the tripping of STAR customers at f_{Trip} and their reconnection at $f_{\text{Reconnect}}$.

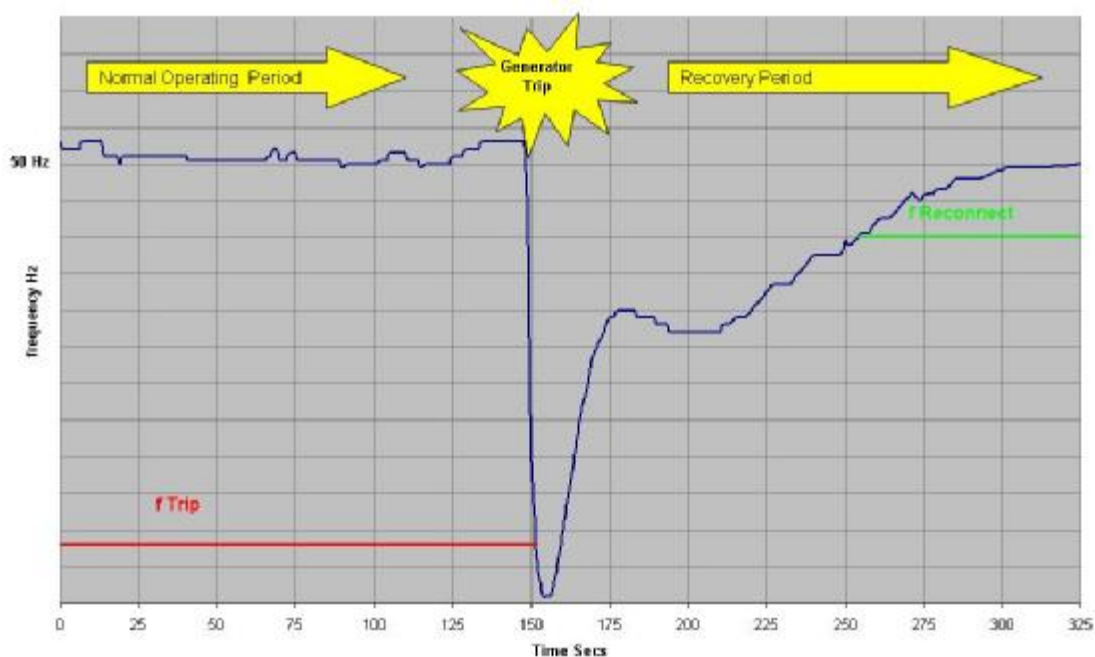


Figure 1: Frequency trace of generator trip and STAR activation.

Payments to Service Providers

Providers of the STAR service will receive a payment for the metered interruptible energy consumed by the interruptible load contracted for the STAR scheme during the defined day operating period of 07:00 to 24:00 for both business and non-business days. Payment is made for making load available for interruption and is not related to actual interruptions for up to 20 interruptions per year. It is thought likely that the number of interruptions would be of the order of 10 to 20 per annum. In the unlikely event that the number of interruptions exceeds 20, a supplemental rate will apply in addition to the basic payment. Settlement is made every two months in arrears.

STAR applicants are invited to bid a price for the provision of interruptible load under the STAR scheme. The final price for the STAR scheme will be set using a clearing mechanism. Greater detail about pricing and the clearing mechanism can be found in Appendix 5. Given the current level of interest in the scheme and the anticipated level of applications for the new procurement, it is recommended that applicants bid a price reflective of the cost of providing this service.

Current payment rates for providing the STAR service can be found in the “Ancillary Services Statement of Charges and Payments for 2009” document on the EirGrid website¹ and are shown in the table below.

Basic Payment for 20 interruptions per annum:
€8.20/MWh

Supplemental Rate	Interruptions in excess of 20 per annum
€1.74/MWh	1 – 5 Interruptions
€3.48/MWh	6 – 10 Interruptions
€5.23/MWh	11 – 15 Interruptions
€6.97/MWh	16 – 20 Interruptions

¹ <http://www.eirgrid.com>

Some sample payment calculations for the scheme are provided in the table below for illustrative purposes.

Provider	Monthly Energy Consumed by STAR Load* (kWh)	Current STAR Rate (cent/kWh)**	Monthly STAR Payment (€)	Annual STAR Payment (€)
A	10,000,000	0.820	82,000	984,000
B	7,000,000	0.820	57,400	688,800
C	4,000,000	0.820	32,800	393,600
D	1,800,000	0.820	14,760	177,120
E	700,000	0.820	5,740	68,880
F	200,000	0.820	1,640	19,680

* During applicable hours i.e. from 07:00 to 24:00

** This rate is indicative only and will be subject to change following the results of the procurement process.

Again it should be noted that payment for the service is made for making load available for interruption whether the load is actually interrupted or not.

Facility Requirements

In order for an applicant to provide an interruptible load service under the STAR scheme the appropriate facilities will need to be installed at the provider's site. These facilities will include revenue class interval metering, telecommunications equipment and control facilities. Appendix 1 provides an overview of the different components of an installation. ESB Meter Asset Management will supply and install the metering and control facilities required to provide the service. The installation and maintenance of all appropriate facilities will be at the service providers cost.

Applicants with existing revenue class interval metering installations may be able to utilise their existing facilities. For example, an applicant wishing to interrupt their entire facility may already have this metering installed on their incoming supply.

In addition to the above facilities, an applicant will need to ensure that their electrical feeding arrangement is such that the interruptible load portion of their load can be disconnected in accordance with the requirements of the scheme. Appendix 2 outlines switchgear requirements in more detail.

A block diagram of a typical scheme layout for a single interruptible point is shown in Appendix 3.

A budget estimate of costs for the metering, relay and communications aspects of the scheme has been obtained by the TSO and is provided in Appendix 4. Applicants may use these costs to produce an overall estimate of the cost to set up the metering and control facilities at their premises. This estimate does not include any allowance for switchgear additions or modifications that may have to be made to the provider's facility. A switchgear contractor should be engaged to provide an estimate of any such work.

The STAR service provider will fund the provision and installation of all equipment required to facilitate the STAR scheme.

It should be noted that the installation of metering and control equipment is likely to require an outage (disconnection) of the STAR provider's electrical facilities. The extent and duration of this outage will be dependant on the electrical and physical layout of the facility, the number of interruption points and the switchgear voltage level.

Existing STAR Service Providers

Existing providers of the STAR (and legacy Interruptible Load) service must enter this competition to be considered for a new contract to provide the service.

Existing STAR service providers will not need to make any major changes to existing STAR equipment. There will, however be a requirement to install suitable telecommunications equipment for remote polling of metering. Changes may also be made to the control settings of existing service providers.

Legacy Interruptible Load service providers, including those awaiting upgrade to STAR, will be required to upgrade their equipment and settings to the required standard. Under certain circumstances existing legacy Interruptible Load service providers may have already paid for installation of part or all of equipment required. This will be offset against costs of installation.

Existing legacy Interruptible Load and STAR service providers should be aware that the installation of new equipment and the updating of scheme settings may result in a change to the number of interruptions experienced. It is thought likely that the number of interruptions under this scheme would be of the order of 10 to 20 per annum.

Contractual Arrangements

Successful applicants in this process will enter into an agreement directly with the TSO. This arrangement would be separate from the commercial arrangements between the service provider and their supplier. Payment for the service may be made directly from the TSO to the STAR service provider. However the service provider may make arrangements for payments for the STAR service to be made via their supplier with the supplier's prior consent.

The contracting period for the provision of the STAR service is intended to run from November 2009 until Quarter 4 of 2012. Provision of this service will be made under the terms and conditions of a standard agreement which will be available to applicants prior to the competition closure date.

It is a condition of the award of contract that the successful applicant provides a current tax certificate.

The contract will include a three month notice period clause. This will allow either of the contracting parties (the STAR service provider or the TSO) to terminate the contract if required.

Application Process and Contact Details

The TSO will assess applications based on the following criteria

- Technical ability to deliver the service;
- The applicant's bid price for the STAR service; and
- The applicant's load characteristics.

Further details on the assessment process can be found in Appendix 5. There are some questions and answers relating to the scheme provided in Appendix 6, two sample completed application forms are provided in Appendix 7 and a blank application form is provided in Appendix 8.

Any queries relating to the overall scheme should be directed to Colm mac Oireachtaigh of EirGrid – phone 01 23 70459 or email STAR@eirgrid.com.

An applicant must return an accurately completed application form directly to the TSO at the following address.

Martin Treacy
EirGrid,
Block 2, The Oval,
160 Shelbourne Road,
Ballsbridge,
Dublin 4.

Completed application forms may be submitted via email to tenders@eirgrid.com in the first instance but a completed hard copy of the application form must be received by the TSO by the 29th May 2009.

Appendix 1 STAR Metering & Control Facility

The following summarises the interruptible load facilities required at a STAR provider's site:

Control Relay: a control relay is required to initiate interruptible load tripping during specified frequency deviations and allow load restoration following recovery of frequency. The relay is also capable of recording and storing event parameters and has a communication facility to allow downloading of information and setting changes. Connection of the relay to metering CTs and VTs will be required for measuring frequency and recording system events. It is envisaged that the control relay would be installed on the same rack as the interruptible load meter(s).

Current transformers (CTs): located on the interruptible load feeder to measure the current flowing to the interruptible load. Three sets of CTs are required for 3 phase supplies (note that additional CTs are required for control relay purposes). The service provider should make available a suitable location and sufficient space for CTs.

Voltage transformers (VTs): located 'upstream' of the interruptible load circuit breaker to measure the operating voltage of the interruptible load supply. Three sets of VTs are required for 3 phase supplies (note that additional VTs are required for control relay purposes). The VTs also provide the power supply to the meter and so should be located in such a position that this supply is not lost in the event of the interruptible load circuit breaker opening. The service provider should make available a suitable location and sufficient space for VTs.

Metering: metering of the interruptible load should be via a revenue class metering installation(s). Each interruptible load feeder should be separately metered. The interruptible load service provider should provide a suitable indoor location for a metering cabinet with dimensions of approximately 1m x 0.6m x 0.3m.

Communication Facilities: The TSO will require the ability to communicate with the interruptible load control relay so that ad-hoc relay monitoring, setting changes and event record downloading can be performed. The communication link should be secure against accidental or malicious operation of the interruptible load trip/restoration relay. The communication facilities will be incorporated with the metering and control facilities.

ESB Meter Asset Management will supply and install all the above equipment at the STAR providers cost². For further information on such installations please contact STAR@eirgrid.com.

² Under certain circumstances existing legacy Interruptible Load service providers may have already paid for installation of part or all of equipment required. This will be offset against costs of installation.

Appendix 2 Service Provider Switchgear

The STAR service provider's electrical layout should be arranged in such a manner that the interruptible load portion of the load can be disconnected from the transmission or distribution supply by circuit breaker action.

The STAR service provider must ensure that there is no means of automatically or inadvertently feeding the interruptible load(s) from any other source than the interruptible load circuit breaker(s).

The interruptible load circuit breaker(s) should be capable of being automatically opened on receipt of a signal from the interruptible load control relay. The circuit breaker should open within 2 seconds of receipt of a trip signal from the interruptible load control relay.

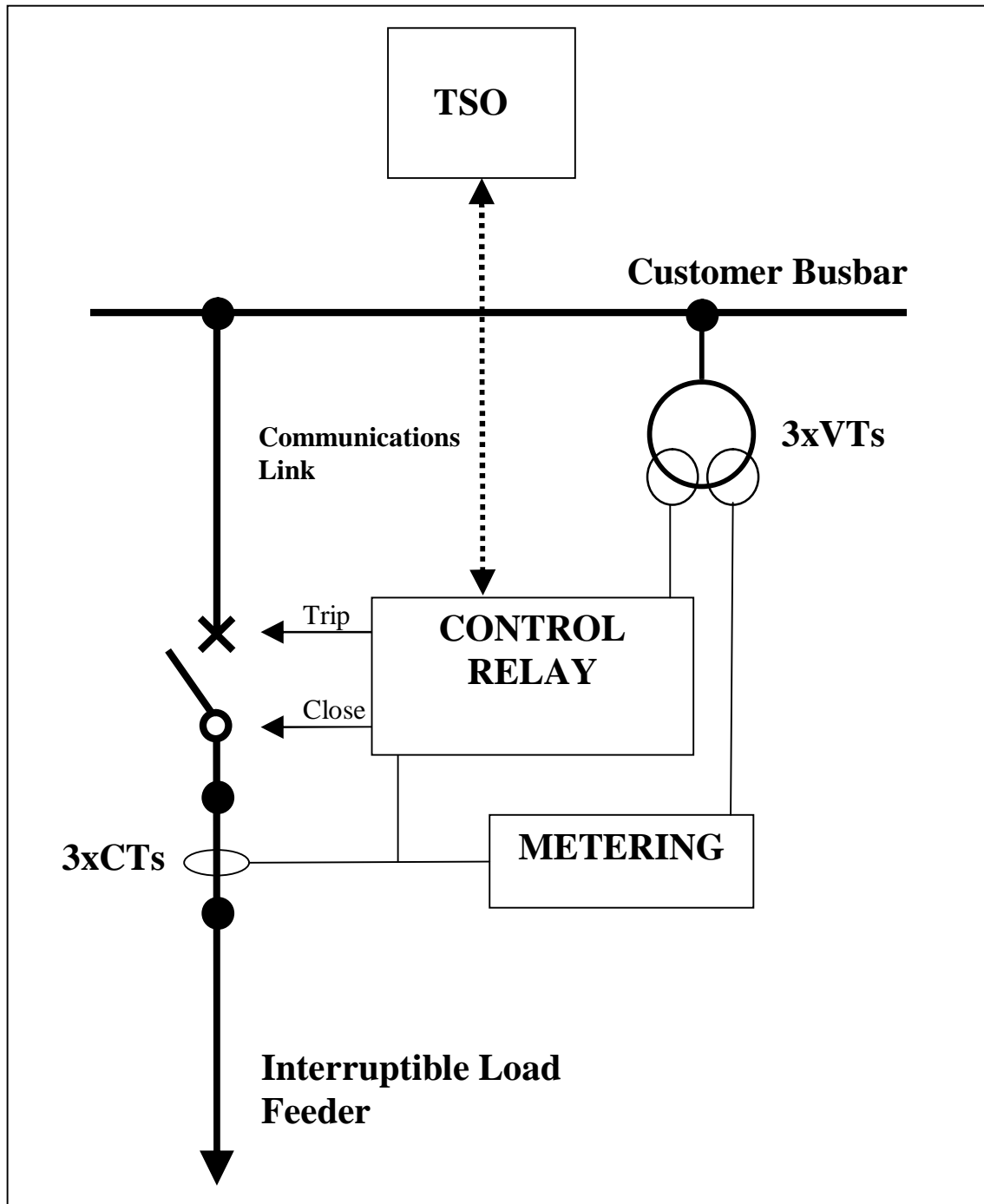
The STAR service provider will have the option of automatically closing the interruptible load circuit breaker(s) on receipt of a signal from the interruptible load control relay or manually closing the interruptible load circuit breaker(s). In either case, the interruptible load circuit breaker(s) should not close until the frequency has exceeded the specified restoration frequency for the specified frequency recovery period.

The STAR service provider should have the facility of isolating the circuit breaker(s) from the relay when performing maintenance on the circuit breaker to prevent inadvertent operation of the circuit breaker.

The STAR service provider should make available the auxiliary interruptible load circuit breaker(s) trip and close signals for the interruptible load control relay.

The STAR service provider will own and maintain the necessary switching equipment to provide the service.

Appendix 3 Sample Block Diagram of IL Facilities



Note that this sample block diagram is provided purely for illustration purposes. The actual arrangement at any facility will be subject to detailed design

Appendix 4 Budget Cost Estimates

The TSO has obtained estimated budget cost from ESB Meter Asset Management for the purchase and installation of the control and metering facilities required by a STAR service provider.

Description	Ref	Estimated Budget Cost
Site Visit	A	€1,680.00
Under-Frequency (U/F) Relay only	B	€9,020.00
U/F Relay & Meter Only	C	€10,510.00
U/F Relay & Meter & CT* Connection	D	€11,300.00
U/F Relay & Meter & Connection - Customer Supplied CTs	E	€11,080.00
Each Additional STAR Metered Circuit Using Existing U/F Relay	F	€2,060.00
Communications Equipment and Installation Costs	-	€1,000.00
*CT: Current Transformer (see Appendix 1)		

Where

- Code A: Each proposed STAR site would require a site visit to estimate the required set up and a quotation prepared.
- Code B: This includes the total cost of an U/F relay and accessories, including installation costs, provided the existing revenue metering is suitable to measure the interruptible load.
- Code C: This includes the total cost of an U/F relay, under Code B above, and the installation of a replacement meter, where the existing revenue meter is not suitable to measure the interruptible load on the site. This assumes that all work is undertaken within the one site visit.
- Code D: This includes the total cost of an U/F relay and replacement meter, under Code C above, and the extra requirement to install Low voltage CTs.
- Code E: This includes the total cost of an U/F relay and replacement meter, under Code C above, and connection to approved customer supplied CTs, in the case of medium voltage / high voltage sites etc.
- Code F: This includes the cost for each additional STAR metered circuit within the same site, as part of the same initial installation. For large sites with more than two STAR circuits, extra labour costs may need to be added accordingly.

Each interruptible load feeder will require individual metering.

These estimates represent the costs for new installations. Account will be taken of existing revenue class interval metering facilities that may already be installed.

It is envisaged that each facility would require one control relay that would operate all interruptible load circuit breakers. This will be subject to the physical layout of a customer's plant and the ability of obtaining auxiliary controls from all circuit breakers.

Any existing legacy Interruptible Load facilities may require new control relays.

The costs assume that the STAR service provider will make available a suitable indoor area for housing control and metering cabinets as well as space for CTs and VTs associated with the scheme.

The actual cost of an installation will require detailed design following an on-site assessment of facilities. The TSO does not accept liability for any loss or damage arising from the use of these budget cost estimates.

These estimates are intended to provide an approximate indication of costs only. Actual costs will vary on the nature of an applicant's site and are subject to change. The requirement for more than one site visit will result in additional costs to the applicant. They do not include any costs associated with electrical switchgear works that may have to be carried out by the STAR service provider.

Appendix 5 Application Assessment

Provided the applicant has the technical ability to provide the service, the TSO will assess applications based on the applicant's bid price and the applicant's load characteristics. Applicants will be ranked in a system on the basis of

- The applicant's bid price for the STAR service; and
- The load factor of the interruptible load being offered.

Price

Applicants will be required to bid a price at which they can provide the STAR service. It is recommended that applicants should perform a cost benefit analysis to determine this bid price taking into account any potential installation and site costs, their energy consumption and load profile, the costs associated with interruptions and any other relevant factors. The price for the STAR service shall be set using a clearing scheme. All applicants will be paid the same clearing price.

Rates for 2010 and subsequent years will be adjusted by the TSO to reflect the clearing price set during this procurement process. Whilst STAR provides an important portion of EirGrid's total reserve portfolio, its provision must be economical in comparison with other reserve sources and this will be considered by the TSO when assessing applications for the STAR scheme.

Previous years' rates may be used as a guideline when evaluating bid rates. However, given the anticipated level of interest in participating in the scheme, the TSO recommends submission of a competitive rate for the service.

Example: Consider the following bids of applicants (note that for simplicity these applicants are assumed to have already demonstrated their technical ability to provide the STAR service and applicants are all assumed to operate with the same load factor):

Applicant 'A' bids in at 0.4cent/kWh

Applicant 'B' bids in at 0.5cent/kWh

Applicant 'C' bids in at 0.6cent/kWh

Applicant 'D' bids in at 0.65cent/kWh

Applicant 'E' bids in at 0.7cent/kWh

Applicant 'F' bids in at 0.85cent/kWh

Applicants are ranked in order of price; the quantity of interruptible load required for the STAR scheme is met by the sum of individual contributions from Applicants 'A', 'B', 'C' and 'D'. Applicant 'D' therefore sets the scheme clearing price at its bid of 0.65 cent/kWh. Applicants 'A', 'B', 'C' and 'D', who bid at or under the clearing price, are successful in the competition and all get paid the clearing price of 0.65 cent/kWh. The bids of Applicants 'E' and 'F' are above the clearing price and these applicants are therefore unsuccessful in the competition.

Note that this simplified example is purely for illustration purposes only – it does not necessarily reflect the number of applicants in the process or the rates at which applicants may offer.

(2) Load Factor

Applications will also be assessed based on load factor. Load factor is an indicator of the utilisation of load. It is a ratio of the actual energy consumed by the load against the theoretical maximum energy that could be consumed by the load. A high load factor indicates a continuous process running at a constant load level. A low load factor indicates an intermittent process.

Load Factor is expressed as a percentage and is calculated as follows:

$$\frac{\text{Annual Energy Consumption}^3 \text{ of interruptible load (kWh)}}{\text{Load}^4 \text{ Made Available For Interruption (kW) x Number of Hours in STAR Period}^4} \times 100\%$$

The load factor will never be greater than 100%.

Examples of some load factor calculations are given in the table below.

Provider	Peak IL Level* (kW)	Annual Energy Consumed by IL* (kWh)	IL Load Factor
A	25,000	120,450,000	77.6%
B	15,000	84,300,200	90.6%
C	11,000	48,000,600	70.3%
D	5,500	21,160,200	62.0%
E	2,000	10,500,670	84.6%
F	450	2,400,500	86.0%

* During Day hours of 07:00 to 24:00

The applicant should consider contacting their supplier to obtain historical metering readings and/or load factor calculations. Note, however, that the required load factor calculation is purely related to the interruptible portion of the applicants load for the interruptible load service period of 07:00 to 24:00.

³ Note: Figures should be for the STAR period which is 07:00 to 24:00 daily.

⁴ Note: The number of hours in the STAR period is the sum of the hours during the 07:00 to 24:00 period throughout the year = 17 hours x 365 days = 6205 hours.

Facilities

The Applicant must provide evidence of the configuration, or planned configuration, of their facility to provide the service. This should include provision of a single line diagram indicating the interruptible load feeder(s), circuit breaker(s), meter(s) and control facility(ies).

The applicant must state that they will be able to automatically disconnect their interruptible load at any time during the STAR service period within 2 seconds *without* advance notice.

Failure to meet the above criteria will result in disqualification from the selection process.

Appendix 6 STAR Questions and Answers

What is STAR?

STAR is Short Term Active Response, an interruptible load service provided by customers to EirGrid.

What is interruptible load?

Interruptible load is the load that a customer makes available under the STAR scheme for immediate interruption without notice. Up to 20 interruptions per annum are allowable under the STAR scheme; the duration of each interruption would be of the order of 5 minutes.

Why should a customer allow their load to be interrupted?

EirGrid will make payments to a customer who provides this service. Payments are made for making load available for interruption and not for interruptions themselves. Even if a customer's load is not interrupted they will still receive payments for being available to provide the service.

What must I do to participate in this scheme?

The attached application form must be completed and returned to EirGrid by the 29th May 2009. This is a competitive tender process and success is based on assessment by EirGrid against assessment criteria. Successful applicants will be notified in due course by EirGrid. As part of the application process the customer must consider the facilities required to provide the service such as any switchgear modification required, metering and control facilities.

I am an existing provider of STAR or legacy Interruptible Load, do I need to participate in this procurement process?

Yes, should an existing provider wish to be considered for provision of the service under the terms of this new procurement then they must participate in this procurement process. Should the existing provider have a current STAR or IL contract that has yet to expire, they may elect to continue to be bound by the terms and rates of that agreement. However when that agreement expires they will not be eligible to continue participating in the scheme.

Are there any changes to the STAR scheme since the last procurement?

Changes will be made to the settings of the control equipment. It will be necessary to install telecommunications equipment to enable remote polling of the metering installed at the interruptible load sites.

Existing and new service providers can expect regular tests to take place to determine whether the interruptible load equipment is functioning correctly.

Are there any changes to the STAR contract since the last procurement?

The contract offered to successful STAR applicants is intended to expire in Quarter 4 of 2012. In addition, the contract will include a three month notice period. This will allow either contracting party the right to terminate the contract with three months notice.

Who can participate in the STAR scheme?

The STAR scheme is open to all non-residential electricity consumers. There is no lower limit of size of customer who can participate in the process. However, given the costs associated with installation of equipment, a detailed cost benefit analysis should be carried out by any potential service providers. Potential providers with low energy consumption may not be able to recoup the installation and operating costs of the scheme and should carefully consider whether they should take part in the scheme.

What is the difference between STAR and the Winter Peak Demand Reduction Scheme?

STAR forms part of the TSO's portfolio of system reserve which is carried to cater for the loss of power infeeds to the electricity system. The requirement for STAR is ongoing everyday from 07:00 to 24:00. STAR interruptions occur without notice and must be automatic.

Winter Peak Demand Reduction is required to assist in reducing the peak system demands which occur during the winter months. It is purely related to planned reductions in power consumption during the period of 17:00 to 19:00 from November to February.

Can I participate in the Winter Peak Demand Reduction scheme as well as the STAR scheme?

Yes, both schemes are open to customers. A customer may make the same load available to both schemes or they may distinguish between load that is interruptible and load that participates in the Winter Peak Demand Reduction Scheme. Customers who participate in the Winter Peak Demand Reduction Scheme would see reduced STAR energy payments if the portion of their load that is interruptible forms part of their load reduced during the winter period.

Is my electricity supplier involved in this process?

Electricity suppliers have been informed of the STAR procurement process and may be able to assist interested parties in their application.

Appendix 7 Sample Completed Application Forms.

1. Contact Details

An applicant with more than one site (location) should complete one application form per site. These application forms may be submitted together.

Applicant Name:	Pump Co.
Contact Person:	
Address:	
Telephone Number:	
Fax Number:	
Email address:	

2. General Information

Are you an existing provider of the STAR service? (Yes/No)	No
If you answered no to the above, are you an existing provider of the Legacy Interruptible Load Service? (Yes/No)	No
Who is your supplier?	Supply Co.

3. Description of the interruptible load

Please provide an outline of the nature of the load being offered as interruptible (for example: type of load, process involved, peak load level, feeding arrangement)

Description of Interruptible Load:

Pump Co. has a total of 1,500kW of load available for interruption under this scheme. This load comprises of two 750kW pumps used for pumping water for drainage purposes. An interruption of the order of 5 minutes would result in manageable build-up of water levels but this can be cleared in a relatively short period when the pumps return to service. These pumps are used almost continually 24 hours a day, 365 days a year. Each pump is fed from a separate 10kV circuit off a main 10kV switchboard. There are other processes within the facility that will not be interruptible.

4. Interruptible load data

An applicant planning to interrupt part of their load should answer the following questions purely in relation to the load being made available for interruption. An applicant planning to interrupt their entire facility should answer in relation to their entire load.

Is it proposed to interrupt the entire facility or only part? (Part/Entire)	Part
What is the peak daytime (between 07:00 and 24:00) level of interruptible load being offered? (A kW)	1,500kW
What is the estimated daytime (between 07:00 and 24:00) annual energy consumption of the interruptible load being offered? (B kWh)	8,100,000kWh
The corresponding annual load factor (%) for the interruptible load should be calculated as follows: Load Factor = $\frac{\text{B}}{\text{A} \times 6205 \text{ hours}} \times 100\%$	87%

5. Facilities

In order to provide the STAR service the applicant must have configured their facility in a manner that can provide the interruptible load service. The interruptible portion of the load must be metered via revenue class interval metering and control and communications facilities must be installed to operate the scheme as outlined in the information pack. The following section seeks details on the facilities required by the applicant to provide the service.

For any queries relating to metering and relay installations the applicant should contact the Ancillary Services team in EirGrid (star@eirgrid.com) who will direct queries to the relevant party in ESB Meter Asset Management.

<p>How many interruption points will be made available under this scheme (i.e. how many circuit breakers will be tripped to disconnect the interruptible load)? Note that the number of interruption points will correspond to the number of interruptible load metering installations required.</p>	<p>2</p>
<p>What is (are) the voltage level(s) (in kV) of the interruptible load feeder(s).</p>	<p>Both 10kV</p>
<p>How many interruptible load control relays are required to provide the service? Note that it is envisaged that one control relay would be capable of controlling multiple circuit breakers within a facility.</p>	<p>1</p>

It is a condition of providing this service that the applicant's facility be configured in such a manner that the interruptible load circuit breaker(s) can be opened within 2 seconds of the frequency reaching a defined trip setting. The applicant must also ensure that the interrupted load cannot be back-fed from another distribution/transmission source.

The applicant should provide details of any switchgear works required at their facility to provide an interruptible load service (such as the installation of circuit breakers or reconfiguration of electrical circuits). Note that an electrical switchgear contractor should be contacted to obtain such an estimate and not the TSO.

Details of Switchgear Works:

The existing facility is configured in manner that each of the 750kW pumps has a dedicated 10kV feed from a 10kV switchboard. Existing circuit breakers are installed on these feeders. No additional Pump Co. switchgear works are required at this facility to provide the interruptible load service.

The applicant should provide details of the interruptible load metering and control facility works required at their facility to provide an interruptible load service (such as the installation of revenue class interval meters, CTs/VTs, control facility).

Details of Metering & Control Facilities:

In order to provide the service it is planned to install a revenue class interval metering facility on each of the two interruptible load feeders. Space is available for metering CTs and VTs. Both of the feeder circuit breakers are in close proximity so the same interruptible load control relay will be able to issue trip/close signals to both circuit breakers. Space is available for installation of the metering and control rack in close proximity to the 10kV switchboard.

An electrical single line diagram of the proposed arrangement must be provided.

(A single line diagram is attached.)

6. Payment Rate

STAR applicants are invited to bid a price for the provision of interruptible load under the STAR scheme. The final price for the STAR scheme will be set using a clearing mechanism. Given the current level of interest in the scheme and the anticipated level of applications for the new procurement, it is recommended that customers bid a price reflective of the cost of providing this service.

The TSO will assess applications based on the following criteria

- Technical ability to deliver the service;
- The applicant's bid price for the STAR service; and
- The load factor and load profile.

All successful applicants will be paid the same clearing rate which will be determined based on the above criteria.

Applicants offered rate:

0.500

cent/kWh

7. Applicants with Combined Heat and Power (CHP) Facilities

Customers with a CHP facility may participate in this STAR procurement process, however, the potential interaction between the CHP facility and the interruptible load as well as the configuration of the facility will need to be assessed by the TSO as part of the evaluation process.

Applicants should provide data on their CHP facility so that the TSO can make an assessment of the interaction between the interruptible load and CHP facilities. The following information should be supplied:

- The maximum electrical output of the CHP facility.
- The CHP facility should be included on the electrical single line diagram provided with the application form.
- A description of the response of the CHP facility when the interruptible load is interrupted (such as tripping of CHP plant, ramping down of CHP output, operation in island mode or exporting of excess power).



8. Additional Information

Please provide any additional information that supports this application.

Note that provision of incorrect or misleading data in this application form will result in disqualification from this procurement process.

Payment for this service is based on the actual metered energy (kWh) consumed by the interruptible load and not energy figures quoted by the applicant in this questionnaire.

This application form should be returned to:

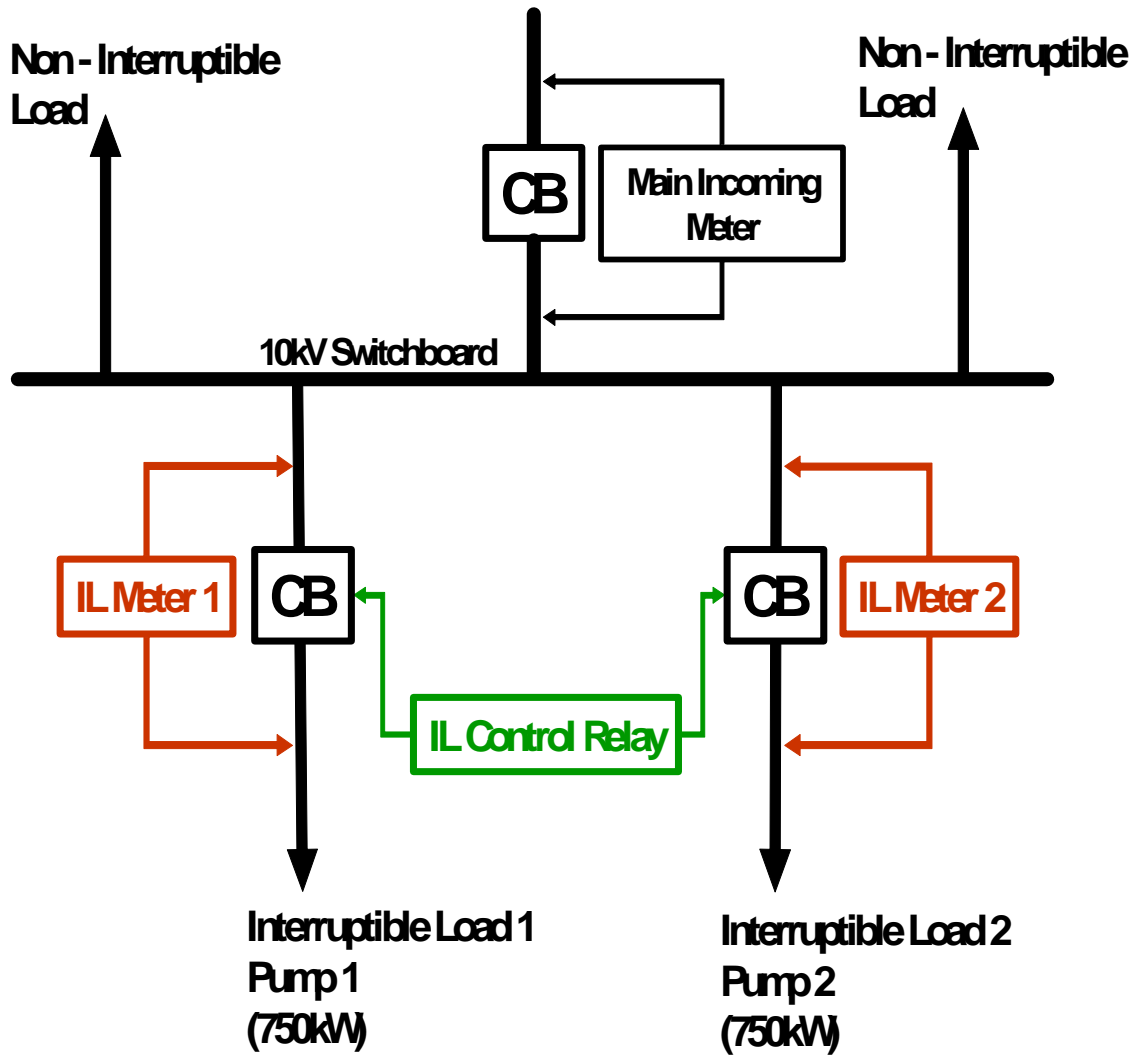
Email: tenders@eirgrid.com

Martin Treacy
EirGrid,
Block 2 the Oval,
160 Shelbourne Road,
Ballsbridge,
Dublin 4.

Completed application forms may be submitted via email in the first instance but a completed hard copy of the application form must be received by the TSO by the 29th May 2009.

Signed by:	
Position in Company:	
Date of Signature:	

Pump Co. Interruptible Load Single Line Diagram



1. Contact Details

An applicant with more than one site (location) should complete one application form per site. These application forms may be submitted together.

Applicant Name:	Chill Co.
Contact Person:	
Address:	
Telephone Number:	
Fax Number:	
Email address:	

2. General Information

Are you an existing provider of the STAR service? (Yes/No)	Yes
If you answered no to the above, are you an existing provider of the Legacy interruptible load Service? (Yes/No)	NA
Who is your supplier?	Electric Co.

3. Description of the interruptible load

Please provide an outline of the nature of the load being offered as interruptible (for example: type of load, process involved, peak load level, feeding arrangement)

Description of Interruptible Load:

Chill Co. is an existing STAR provider. The load consists of freezer load totalling 500kW. The entire load is available for interruption. A short duration interruption of the order of 5 minutes would not cause any problems for the facility. The freezers run continually 24 hours a day, 365 days a year, although night time energy consumption is much higher to avail of night time energy rates. The load is tripped at the main incoming circuit breaker.

4. Interruptible load Data

An applicant planning to interrupt part of their load should answer the following questions purely in relation to the load being made available for interruption. An applicant planning to interrupt their entire facility should answer in relation to their entire load.

Is it proposed to interrupt the entire facility or only part? (Part/Entire)	Entire
What is the peak daytime (between 07:00 and 24:00) level of Interruptible Load being offered? (A kW)	500kW
What is the estimated daytime (between 07:00 and 24:00) annual energy consumption of the Interruptible Load being offered? (B kWh)	1,914,000kWh
The corresponding annual load factor (%) for the Interruptible Load should be calculated as follows: Load Factor = $\frac{\text{B}}{\text{A} \times 6205 \text{ hours}} \times 100\%$	61.7%

5. Facilities

In order to provide the STAR service the applicant must have configured their facility in a manner that can provide the interruptible load service. The interruptible portion of the load must be metered via revenue class interval metering and control and communication facilities must be installed to operate the scheme as outlined in the information pack. The following section seeks details on the facilities required by the applicant to provide the service.

For any queries relating to metering and relay installations the applicant should contact the Ancillary services team in EirGrid (star@eirgrid.com) who will direct queries to the relevant party in ESB Meter Asset Management.

<p>How many interruption points will be made available under this scheme (i.e. how many circuit breakers will be tripped to disconnect the interruptible load)? Note that the number of interruption points will correspond to the number of interruptible load metering installations required.</p>	<p>1</p>
<p>What is (are) the voltage level(s) (in kV) of the interruptible load feeder(s).</p>	<p>10kV</p>
<p>How many interruptible load control relays are required to provide the service? Note that it is envisaged that one control relay would be capable of controlling multiple circuit breakers within a facility.</p>	<p>1</p>

It is a condition of providing this service that the applicant's facility be configured in such a manner that the interruptible load circuit breaker(s) can be opened within 2 seconds of the frequency reaching a defined trip setting. The applicant must also ensure that the interrupted load cannot be back-fed from another distribution/transmission source.

The applicant should provide details of any switchgear works required at their facility to provide an interruptible load service (such as the installation of circuit breakers or reconfiguration of electrical circuits). What is the estimated installation period for such switchgear works (note that an electrical switchgear contractor should be contacted to obtain such an estimate and not the TSO)?

Details of Switchgear Works:

The entire facility is already configured to provide the interruptible load service. The existing circuit breaker on the main supply feed is used to trip the load within the required time. No additional Chill Co. switchgear works are required at this facility to provide the interruptible load service.

The applicant should provide details of the interruptible load metering and control facility works required at their facility to provide an interruptible load service (such as the installation of revenue class interval meters, CTs/VTs, control facility).

Details of Metering & Control Facilities:

The existing metering on the main incoming supply is revenue standard but is not interval metering. In order to provide the service it is planned to install a revenue class interval metering facility on this main incoming supply. The existing metering CTs and VTs are revenue standard and may be used in conjunction with the new metering installation. The existing frequency control relay will be removed and the new control facilities added.

An electrical single line diagram of the proposed arrangement must be provided.

(A single line diagram is attached.)

6. Payment Rate

STAR applicants are invited to bid a price for the provision of interruptible load under the STAR scheme. The final price for the STAR scheme will be set using a clearing mechanism. Given the current level of interest in the scheme and the anticipated level of applications for the new procurement, it is recommended that customers bid a price reflective of the cost of providing this service.

The TSO will assess applications based on the following criteria

- Technical ability to deliver the service;
- The applicant's bid price for the STAR service; and
- The load factor and load profile.

All successful applicants will be paid the same clearing rate which will be determined based on the above criteria.

Applicants offered rate:

0.65

cent/kWh

7. Applicants with Combined Heat and Power (CHP) Facilities

Customers with a CHP facility may participate in this STAR procurement process, however, the potential interaction between the CHP facility and the interruptible load as well as the configuration of the facility will need to be assessed by the TSO as part of the evaluation process.

Applicants should provide data on their CHP facility so that the TSO can make an assessment of the interaction between the interruptible load and CHP facilities. The following information should be supplied:

- The maximum electrical output of the CHP facility.
- The CHP facility should be included on the electrical single line diagram provided with the application form.
- A description of the response of the CHP facility when the interruptible load is interrupted (such as tripping of CHP plant, ramping down of CHP output, operation in island mode or exporting of excess power).



8. Additional Information

Please provide any additional information that supports this application.

Note that provision of incorrect or misleading data in this application form will result in disqualification from this procurement process.

Payment for this service is based on the actual metered energy (kWh) consumed by the interruptible load and not energy figures quoted by the applicant in this questionnaire.

This application form should be returned to:

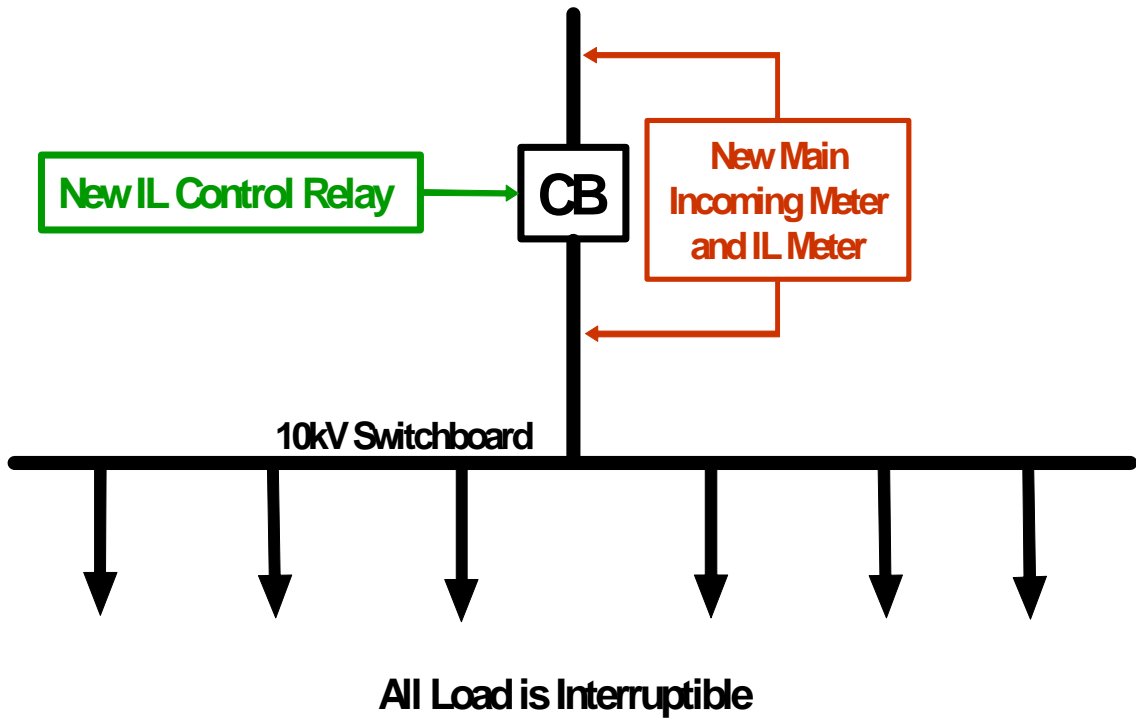
Email: tenders@eirgrid.com

Martin Treacy
EirGrid,
Block 2, The Oval,
160 Shelbourne Road,
Ballsbridge,
Dublin 4.

Completed application forms may be submitted via email in the first instance but a completed hard copy of the application form must be received by the TSO by the 29th May 2009.

Signed by:	
Position in Company:	
Date of Signature:	

Chill Co. Interruptible Load Single Line Diagram





Short Term Active Response (STAR)

An Interruptible Load Service

Application Form

Conditions

- A hard copy of the application form must be received at the following address by close of business on the 29th May 2009
EirGrid
The Oval – Block 2
160 Shelbourne Road
Ballsbridge
Dublin 4
- Details on the application form must be filled in electronically and signed by the customer.
- Faxed, electronically scanned or photocopied versions of the application will not be accepted.
- To ensure that the application form is received in EirGrid, applicants are advised to send the application by registered post.
- No responsibility can be accepted by EirGrid by applications lost or delayed in the post.

1. Contact Details

An applicant with more than one site (location) should complete one application form per site. These application forms may be submitted together.

Applicant Name:	
Contact Person:	
Address:	
Telephone Number:	
Fax Number:	
Email address:	

2. General Information

Are you an existing provider of the STAR service? (Yes/No)	
If you answered no to the above, are you an existing provider of the Legacy Interruptible Load Service? (Yes/No)	
Who is your supplier?	

3. Description of the interruptible load

Please provide an outline of the nature of the load being offered as interruptible (for example: type of load, process involved, peak load level, feeding arrangement)

Description of Interruptible Load:

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4. Interruptible load data

An applicant planning to interrupt part of their load should answer the following questions purely in relation to the load being made available for interruption. An applicant planning to interrupt their entire facility should answer in relation to their entire load.

Is it proposed to interrupt the entire facility or only part? (Part/Entire)	
What is the peak daytime (between 07:00 and 24:00) level of interruptible load being offered? (A kW)	
What is the estimated daytime (between 07:00 and 24:00) annual energy consumption of the interruptible load being offered? (B kWh)	
The corresponding annual load factor (%) for the interruptible load should be calculated as follows: Load Factor = $\frac{B}{A \times 6205 \text{ hours}} \times 100\%$	

5. Facilities

In order to provide the STAR service the applicant must have configured their facility in a manner that can provide the interruptible load service. The interruptible portion of the load must be metered via revenue class interval metering and control and communications facilities must be installed to operate the scheme as outlined in the information pack. The following section seeks details on the facilities required by the applicant to provide the service.

For any queries relating to metering and relay installations the applicant should contact the Ancillary Services team in EirGrid (star@eirgrid.com) who will direct queries to the relevant party in ESB Meter Asset Management.

<p>How many interruption points will be made available under this scheme (i.e. how many circuit breakers will be tripped to disconnect the interruptible load)? Note that the number of interruption points will correspond to the number of interruptible load metering installations required.</p>	
<p>What is (are) the voltage level(s) (in kV) of the interruptible load feeder(s).</p>	
<p>How many interruptible load control relays are required to provide the service? Note that it is envisaged that one control relay would be capable of controlling multiple circuit breakers within a facility.</p>	

It is a condition of providing this service that the applicant's facility be configured in such a manner that the interruptible load circuit breaker(s) can be opened within 2 seconds of the frequency reaching a defined trip setting. The applicant must also ensure that the interrupted load cannot be back-fed from another distribution/transmission source.

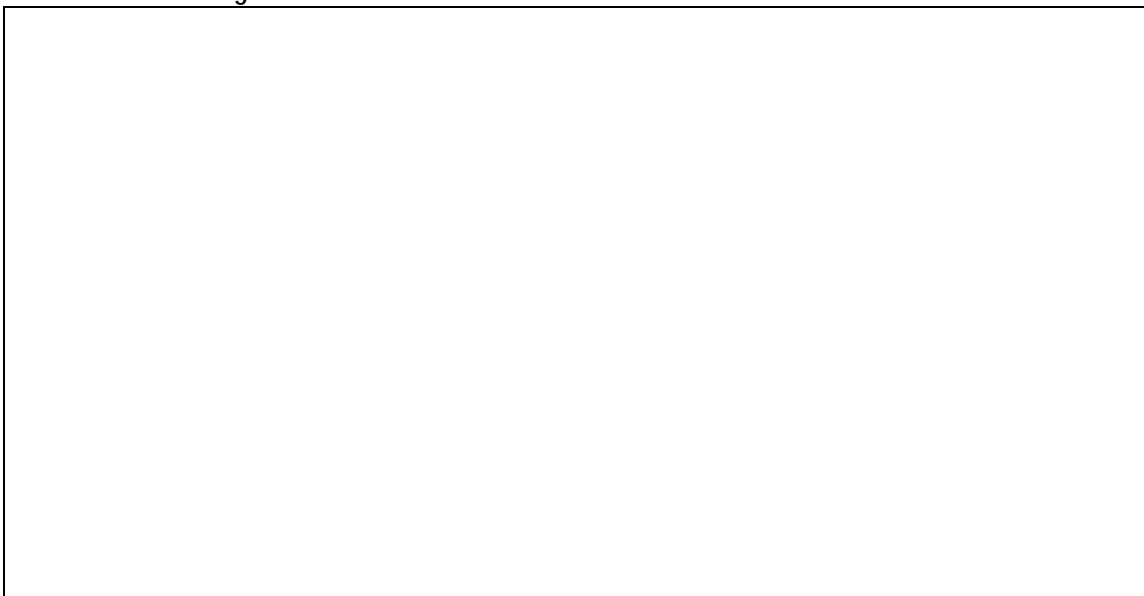
The applicant should provide details of any switchgear works required at their facility to provide an interruptible load service (such as the installation of circuit breakers or reconfiguration of electrical circuits). Note that an electrical switchgear contractor should be contacted to obtain such an estimate and not the TSO.

Details of Switchgear Works:



The applicant should provide details of the interruptible load metering and control facility works required at their facility to provide an interruptible load service (such as the installation of revenue class interval meters, CTs/VTs, control facility).

Details of Metering & Control Facilities:



An electrical single line diagram of the proposed arrangement must be provided.

6. Payment Rate

STAR applicants are invited to bid a price for the provision of interruptible load under the STAR scheme. The final price for the STAR scheme will be set using a clearing mechanism. Given the current level of interest in the scheme and the anticipated level of applications for the new procurement, it is recommended that customers bid a price reflective of the cost of providing this service.

The TSO will assess applications based on the following criteria

- Technical ability to deliver the service;
- The applicant's bid price for the STAR service; and
- The load factor and load profile.

All successful applicants will be paid the same clearing rate which will be determined based on the above criteria.

Applicants offered rate:

cent/kWh

7. Applicants with Combined Heat and Power (CHP) Facilities

Customers with a CHP facility may participate in this STAR procurement process, however, the potential interaction between the CHP facility and the interruptible load as well as the configuration of the facility will need to be assessed by the TSO as part of the evaluation process.

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Please provide any additional information that supports this application.

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Payment for this service is based on the actual metered energy (kWh) consumed by the interruptible load and not energy figures quoted by the applicant in this questionnaire.

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Signed by:	
Position in Company:	
Date of Signature:	