European Organization for Nuclear Research
Organisation européenne pour la recherche nucléaire

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Market Survey

Technical Description
Supply of electrical energy

Abstract

This market survey concerns the supply of electrical energy.
It will be followed by the issue of an invitation to tender to qualified and selected firms and combination of firms in the first quarter 2015 for a contract to be awarded in the third quarter 2015.
The supply shall be delivered to CERN as of 1 January 2016. The contract will be established for a duration of up to three years.

December 2014

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1. INTRODUCTION

1.1 Introduction to CERN

CERN, the European Organization for Nuclear Research, is an intergovernmental organization with 21 Member States[1].

Its seat is in Geneva but its premises are located on both sides of the French-Swiss border (http://cern.ch/fplinks/map.html).

CERN's mission is to enable international collaboration in the field of high-energy particle physics research and to this end it designs, builds and operates particle accelerators and the associated experimental areas. At present more than 11 000 scientific users from research institutes all over the world are using CERN's installations for their experiments.

The accelerator complex at CERN is a succession of machines with increasingly higher energies. Each machine injects the beam into the next one, which takes over to bring the beam to an even higher energy, and so on. The flagship of this complex is the Large Hadron Collider (LHC) as presented below:

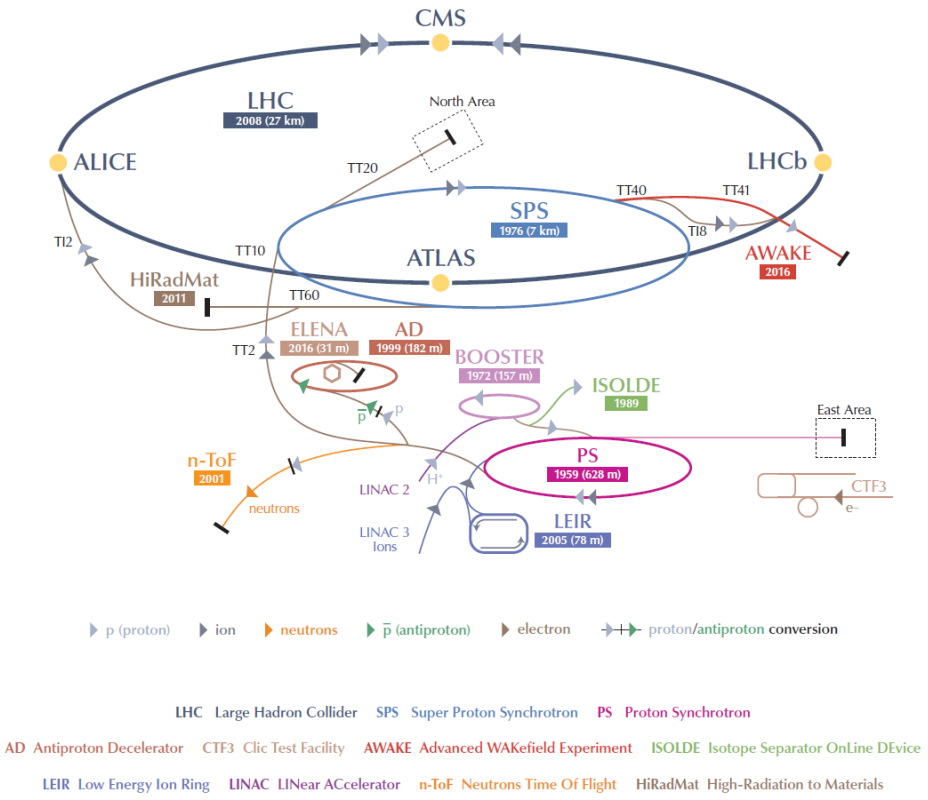

Figure 1: CERN Accelerator Complex

Further information is available on the CERN website: http://cern.ch

[1] The CERN Member States are currently Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom. In addition: Serbia is Associate Member State in the pre-stage to Membership and Romania is Candidate for Accession.

1.2 Introduction to CERN's electrical energy supply

CERN's electrical network is powered from the French electrical grid, via a 400 kV line operated by RTE (Réseau de Transport d'Electricité). The connection is at the Bois-Tollot substation, located near CERN Prévessin site in France, see Figure 2.

An additional 130 kV connection from the Swiss electrical grid (Meyrin site, Switzerland) is used as a back-up supply, in case of emergency or during maintenance operations of the 400 kV line. This 130 kV line is operated by SIG (Services Industriels de Genève).

Downstream of these two connections to the public grid, CERN operates its own interconnected high-voltage distribution network, at the 66 kV and 18 kV levels.

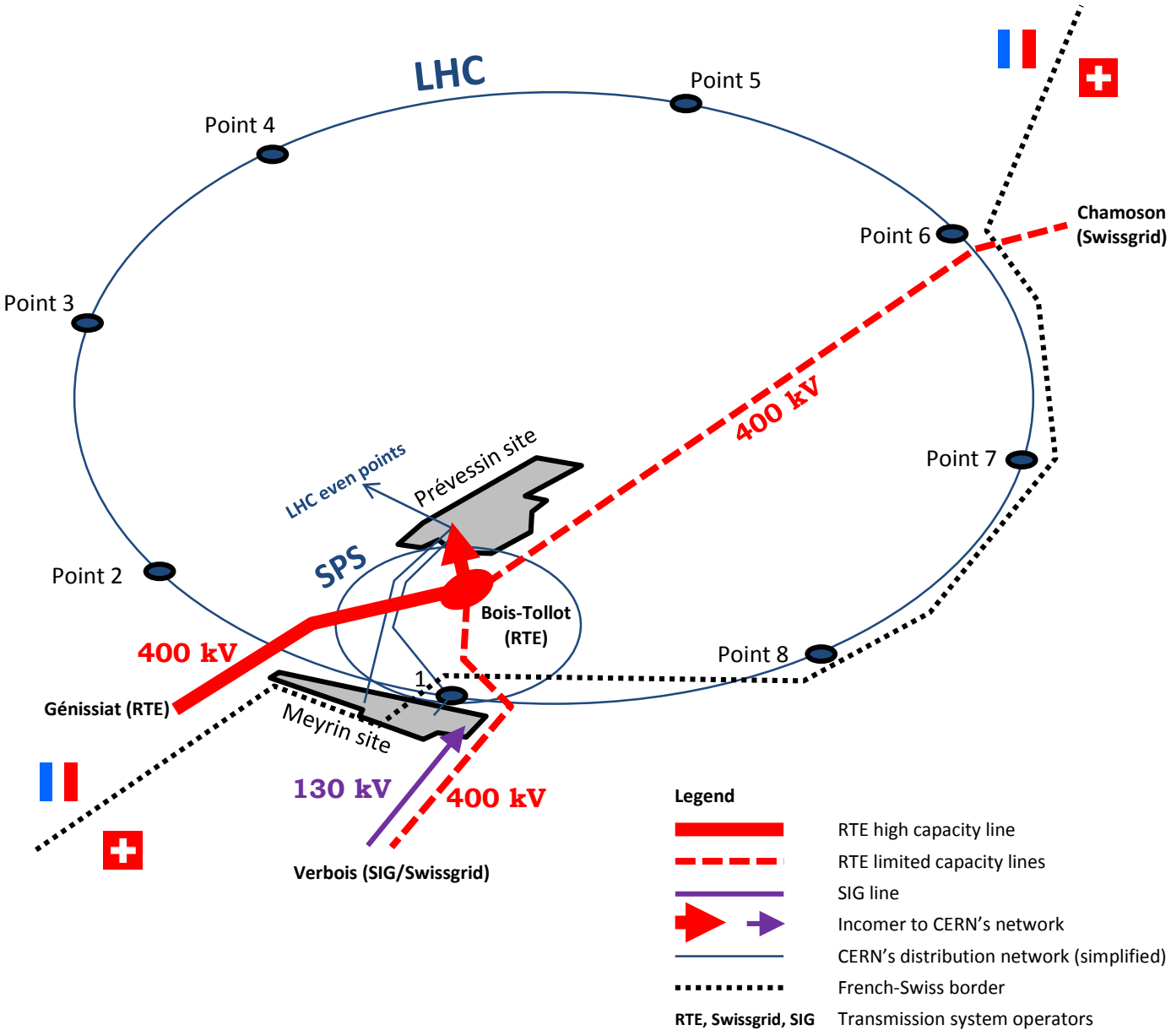

Figure 2: Overview of CERN's electrical supply

1.3 Typical annual consumption and distribution per major system

CERN's electrical energy consumption is mostly used in the powering of the equipment and infrastructure of the accelerators, namely the LHC and its experiments, SPS and PS. Only 6% of the annual consumption is used by the administrative buildings on the CERN sites in Switzerland and France. Figure 3 below provides an overview of the annual consumption in 2012.

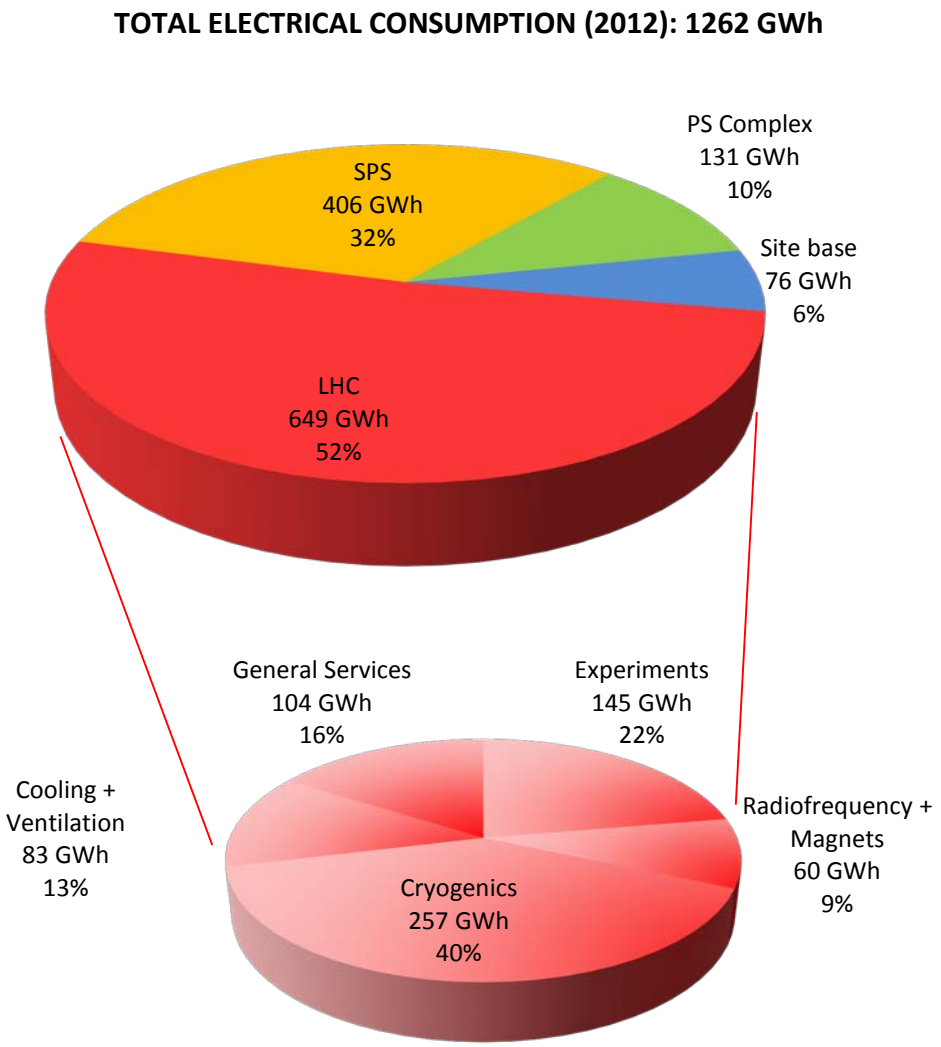

Figure 3: Indicative annual consumption distribution

2. SCOPE OF THIS MARKET SURVEY

The purpose of this market survey is to identify potential bidders for the supply of electrical energy through CERN's French grid connection (hereinafter referred to as the "supply"), for a contract duration of up to three years.

The contract is scheduled to be awarded in the third quarter of 2015 following the invitation to tender which is planned to be issued in the first quarter of 2015.

Only firms qualified and selected by CERN after analysis of their reply to this market survey will be included in the forthcoming invitation to tender. The supply shall originate from the CERN Member States, and under certain conditions as stipulated in the Qualification Criteria, from Associate Member States or Candidates for Accession.

The supply concerns Electrical Energy from 1 January 2016 onwards, for approximately 1.4 TWh per year, with up to 230 MW peak power (power averaged over 10 minute periods).

In addition, CERN will require the contractor to act as the balancing responsible entity, duly recognized by RTE.

3. TECHNICAL REQUIREMENTS

The supply shall include and be compliant with the following parameters and conditions:

- The maximum load corresponding to the full run of CERN's facilities is estimated at 230 MW (power averaged over 10 minute periods);
- Figure 4 below shows CERN's indicative electrical energy consumption schedule for the 2016-2020 period. It must be noted that the actual load may be subject to considerable changes, depending on modifications to the operation of the accelerators. The Year-End Technical Stops ("YETS") are planned maintenance periods, requiring the powering down of the accelerators. The Long Shutdown 2 (LS2) is a planned major upgrade requiring a full shutdown of all the accelerators and supporting infrastructure.

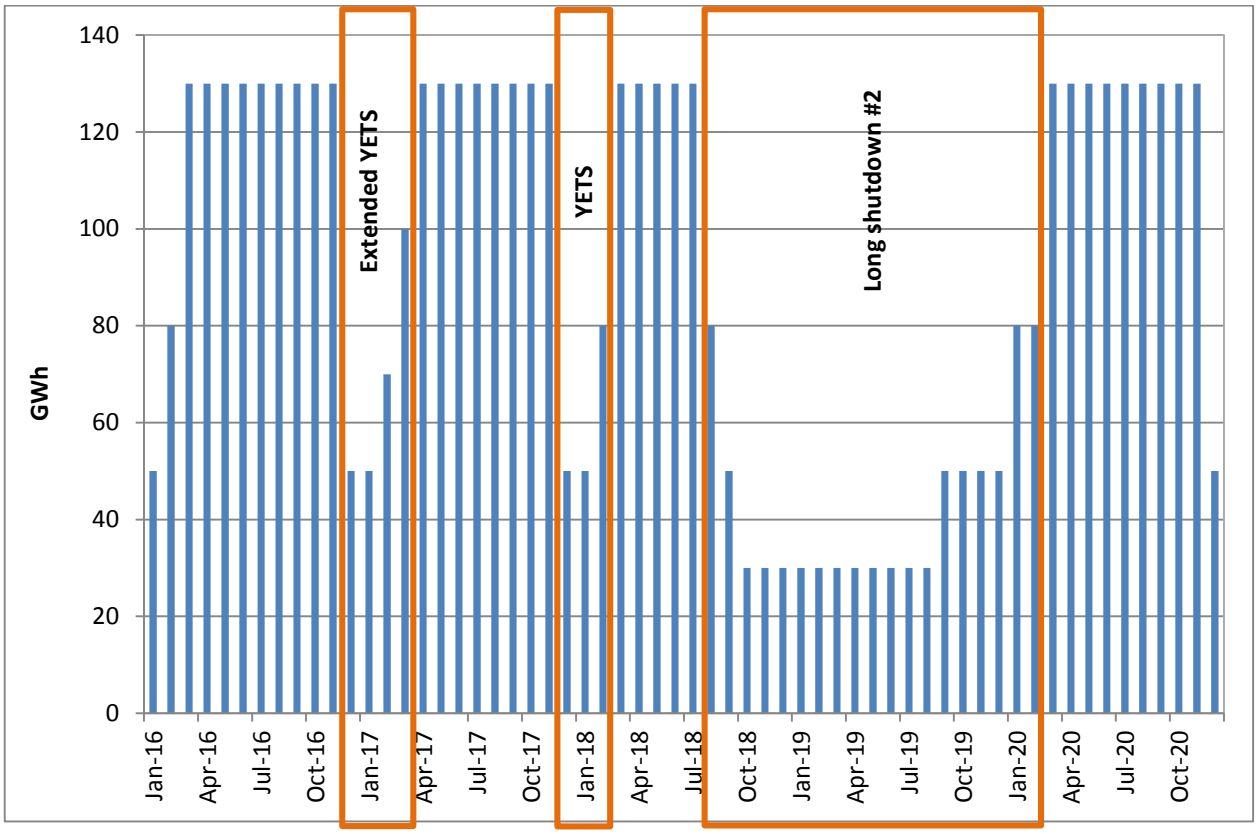

Figure 4 : CERN's indicative energy consumption schedule for the 2016-2020 period

4. PERFORMANCE OF THE CONTRACT

4.1 Delivery Schedule

Further to notification of the award of contract, the supply shall be continuously delivered to CERN as of 1 January 2016.

4.2 Contract Follow-up and Progress Monitoring

The contractor shall assign a person responsible for the technical execution of the contract and its follow-up, as well as a person responsible for the commercial follow-up, throughout the duration of the contract. They shall be able to communicate in one of the official languages of CERN (English or French).

5. CERN CONTACT PERSONS

Persons to be contacted for technical matters:

Name/Department/Group	Tel	Email
Mr Bruno Mouche/EN	Tel: +41 22 767 7559	bruno.mouche@cern.ch
In case of absence: Mr Serge Claudet /TE	Tel: +41 22 767 8009	serge.claudet@cern.ch

Persons to be contacted for commercial matters:

Name/Department/Group	Tel	Email
Mrs Boi-Lan Lemoine/FP	Tel: +41 22 766 2532	boi-lan.nguyen.lemoine@cern.ch
In case of absence: Mr Anders Unnervik/FP	Tel: +41 22 767 3245	anders.unnervik@cern.ch