

English version of Memo – dated 2021, Jan 14

Bjørnafjorden municipality aims for the location of the battery factory to Lyseparken. In a meeting with the municipality, BKK is asked to make its comments regarding the need of sufficient electrical power, as well as a few of other points.

The memorandum is based on input from the commercial part of BKK. The status of available power supply in the region, is clarified and discussed with the grid operator, BKK Nett.

Regarding the need for up to 300 MW power (Source: BKK Nett)

Lyseparken is located in a part of BKK's grid area where the grid is characterized as «strained». Both in the short and medium term, there are challenges on the capacity side, both locally and regionally. Statnett and BKK Nett therefore have plans to increase capacity gradually. This applies both in to BKK Nett's area, but also within the area. The goal for BKK is to facilitate for the planned and increasing industrial growth and electrification in general.

The grid company will, as a first step, increase capacity in several transformer stations. Among other things, capacity between Little Sotra and Kollsnes will have a double cable connection. These planned projects is estimated to take 3-6 years.

A recently prepared concept analysis (KVU) describes what measures must be in place to meet the various scenarios of consumption growth in the BKK area in the longer / long term. The document must be handled by the government in a public process. The largest projects must go through extensive approval processes before construction can begin. Local support and anchoring is crucial for how quickly projects will be implemented.

Possible actions to provide enough effect

The current situation for available power in Lyseparken is limited to the presented 2 x 10 MW cables. The battery factory needs a grid capacity of 100 MW and subsequently 200 MW in future addition. In order to manage this as quickly as possible, the battery factory itself can take responsibility and ownership in a transmission line. This means that the factory establishes a direct line from a central point in the central grid, alternatively selected points in the regional grid, and up to the established factory in Lyseparken. If the power requirement of 100 MW is to be possible by 2025, this is the most likely way to achieve 100 MW. At the same time, arrangements must be made for an expansion of the additional 200 MW, which will be needed later. The commercial part of BKK (for example BKK Enotek AS), can assist in such processes.

This method of own power transmission lines, is commonly used, especially for large and power-intensive industries. Larger data centers also normally arrange their businesses according to these procedures. By being close to central points in the grid, they gain access to high capacity at the lowest possible cost for the energy supply. For the battery factory, which in addition to power, has a number of other location requirements, the latter strategy is impossible. It is therefore to be expected that the consortium behind the factory is prepared to invest in power transmission.

Fana is a close and larger connection point in the main grid - and is only 10 km away. But even here it is demanding to ensure capacity in the size 100 + 200 MW. This can probably be resolved, but must be seen together with forecasts of future expanded capacity. BKK can, together with the governing authorities (Statnett), investigate whether it is possible to reserve larger amounts of power by 2025 for a transmission line further on to Lyseparken.

Other relevant connection points will be Samnanger (35 km) and Mauranger (50 km). These points are in the main grid. When connected to a higher grid level, the factory will have access to a different tariff and therefore lower grid costs for using power.

A pre-study for a possible application for a license to build a transmission line, will clarify both what is possible and the realism of a project that will provide the needed electricity power. It is very ambitious to procure up to 300 MW during a five-year period. All processes must be optimally done and work must be done quickly in all parts of the project.

In order to provide access to electrical capacity, larger investments and private ownership of the infrastructure, are necessary. This means that one must as soon as possible apply for a license for the construction and operation of the transmission lines, cables and station facilities so that they can be connected to the nearest, existing power transformer with sufficient available capacity. In addition, there will be costs for the measures to be taken in the existing infrastructure in the BKK Nett area.

Lyseparken's location means that it can be relatively far to the point where the desired effect is available. The necessary investments will be relatively high. Roughly estimated, the need will be NOK 0.5 to 2 billion, depending on the length of the transmission lines (probably a 300 kV transmission line).

Location of a possible battery factory in Lyseparken

The BKK Group sees batteries as crucial to electrify society and to rig the future energy systems and solutions. It is positive that more battery operations are being established in the region. It may be that cluster thinking and new alliances in which BKK will naturally participate, can contribute to multiple effects, also in the form of innovations and business development in the BKK group.

How an indoor a ski resort will affect the energy situation

An indoor ski resort will require an electric power for the production of snow / cold, which in turn will generate excess heat. Depending on the temperature level of the thermal loss, this can be reused in a district heating solution. It will be possible to extract more detailed experience figures from SNØ's plant in Lørenskog. As BKK understand, the resort is open all year through, and the waste heat is reused in a district heating.

For Lyseparken, a ski resort will mean an increase in the need for power throughout the year - but at the same time provide access to surplus heat. Surplus heat will have different values depending on the temperatures of the water. Temperatures below 40 degrees usually have less value.

If power is extracted from the power grid through a separate private line to the battery factory, the increased power requirement for an indoor ski resort will not conflict with the establishment of a battery factory. The ski resort will be supplied from the regular distribution network that has been submitted to the Lyseparken area (2 x 10 MW).

General considerations

There are few areas in our country with easy access to 100MW + 200MW power. If the outlined estimates of costs presented are acceptable to the battery factory, then location in Lyseparken has several advantages from an "energy perspective" as the concept analysis for the area describes.

The original basic idea for area development of Lyseparken, where the "green" should be the "red thread", will be complied with. If waste heat from the battery production line has a high enough quality to have cost / utility value in a common heating solution for future homes / possible other activities in the area, this will be a good example of circular energy planning in the area.

The battery factory will also have the possibility of locally produced electricity via solar cells, as Lyseparken has good solar resources. In terms of effect, this will have the greatest impact during the months from May to August. The concept study for Lyseparken (2018), outlines the potential for local solar production of between 22 - 28 MW. In volume, this amounts to 14.7 - 18.8 GWh over the year (solar cells on both roofs and suitable facades).

BKK is positive to large industrial establishments in Western Norway. The battery factory will contribute to the region's position as a leading player in the green shift. With an increasing number of important players in renewable energy, the region will be even more attractive in the future with green competence jobs and a strong university and R & D environment with synergies across.