KNOWLEDGE PROPOSAL

Proposer Name and Organisation: Austin Williamson – CIBSE Data Centre Special Interest Group

Topic/ Title: “**Power Distribution and Embedded Generation to Provide Grid Support as a Holistic Network”**

Date received:

1. Justification: Why is this guidance needed?

There have been various sector reviews and white paper publications on the subject over recent years. Although they all have their merits, many data centres have differing and varying power densities and cooling demands that can lead to inaccuracies’ when estimating demand and predicting load growth relative to power distribution losses and the number of network components provided within the power “steams” to afford resilience across the overall power infrastructure, whilst trying to maintain plant optimisation, complying with ASHRAE standards and IEEE recommendations.

Scalability and modulisation of electrical networks are a very important consideration in the reduction of capital expenditure over the life cycle of the data centres’ power infrastructure no matter what the size the data centre is. However, we need to understand the nuances of system specification and load growth in relation to resilient and efficient designs and associated operational costs.

1. Format: What format will the guidance take?

|  |  |
| --- | --- |
|  | a traditional publication with words and diagrams to be produced for CIBSE’s Knowledge Delivery Platform, and in PDF |
|  | a data set |
|  | a digital tool or software application |
|  | something else (please elaborate) Technical guidance and collaboration |

1. Content: If guidance, please list proposed chapter and section headings. If a data set, digital tool, software application, or something else, please detail your proposed plan.

Development of CIBSE Guides and Recommendations

1. Readership: Who is likely to read this guidance?

Data centre Special Interest Group members and the wider membership. Also, the Data Centre community.

1. Authoring: Are authors in place? If so, please list them below.

No authors are currently in place. The CIBSE Technical Committee and wider members to contribute, based on this proposal. The CIBSE DCSIG Executive Committee are seeking authors and contributors, based on the content of this proposal.

1. Timescale: When would you expect to complete the project? Please provide a rough timeline.

Six to twelve months.

Fees: Will authors require funding? If so, how much?

Potentially yes, budget £2000.00

1. Landscape: Does any similar or complementary guidance exist, published by CIBSE or elsewhere?

Not known.

1. **Collaboration**: Are there any organisations that may wish to be involved in the production of this guidance? (For example: membership organisations, trade associations, contractors, consultants, government departments).

Yes, from initial feedback, there will be several organisations from all sectors and specialist disciplines.

1. Are there any organisations that may wish to sponsor the production financially?

To be confirmed, possibly the CIBSE Patrons.

1. Categorisation: CIBSE has created a taxonomy of building services, the Knowledge Matrix. On the following pages, please tick the topics and sub-topics that will be covered in this project.

**Topic:**

Mechanical

Heating

Ventilation

Refrigeration and air conditioning

Extract/ exhaust systems

Smoke control

Pipeline distribution systems (natural gas, liquid fuels, medical gas, compressed air & vacuum)

Electrical

Extra low voltage

Low voltage

Medium voltage

High voltage

Local power generation & standby power

Earthing & bonding/ Lightning protection

Communications

Audio-visual

Electric vehicle charging

Public Health

Water

Drainage

Gas

Lighting

Daylight/ sunlight

Electric lighting

Lighting energy

Fire safety

Fire life safety

Fire protection

Fire detection

Fire notification

Building fabric

Façades

Access & maintenance

Transportation systems in buildings

Lifts

Escalators

Moving walks

Stairlifts and lifting platforms

Building intelligence

Controls

Smart buildings

Security

Physical security

Security systems (access control, surveillance, intruder alarm)

Cyber security

Digital

Building information modelling (BIM)

Digital engineering

Digital construction

Sustainability & ESG

Climate change mitigation

Climate change adaptation

Circular economy

Biodiversity & natural capital

Diversity & inclusion

Social value

Health, wellbeing and safety

Structure:

Introduction of project

Purpose (strategic/design context)

Project management (inc. info requirements)

Drivers

Commercial

Contracts

BIM

Digital information management

Fundamentals

Physics

Design conditions/ data

Calculations and methods

Sustainability (key considerations)

Health, wellbeing and safety

Retrofit and refurbishment

Condition surveying

Modification/ adaptation

System selection

Selection (regulations, best practice, finance, operational energy, whole-life carbon)

Systems, plant, equipment (terminal equipment)

Systems, plant, equipment (network level, central plant, distribution)

System design principles

System sizing

System design conditions/ data

System sizing calculations

Health, wellbeing and safety

Modern methods of construction

Access and maintenance

Construction

Installation

Modern methods of construction

Health, wellbeing and safety

Records (drawings, operation and maintenance)

Controls

Strategy

Controls as specified, installed and commissioned

Commissioning

Plans

Procedures

Operation

Facilities management

Training

Maintenance

Health, wellbeing and safety

Performance (energy, carbon, water)

Performance (IEQ)

End of life

Reuse

Repurpose

Recycle

Demolition

Building Type:

**Residential**

Single dwelling

Multiple dwelling

Non-residential

Office

Education

Higher education

Healthcare

Retail

Leisure

Aviation

Road and rail

Government

Industrial

Logistics

Data centre

Heritage

Defence

Infrastructure

Utilities

Other

Intended Reader:

Owner

Occupier

Designer

Developer

Constructor

Installer

Commissioning engineer

Operator/ Facilities manager

Manufacturer

Apprentice

Student

Researcher

Expert witness

Other - please specify: