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?

|  |  |
| --- | --- |
| [x]  | a traditional publication with words and diagrams to be produced for CIBSE’s Knowledge Delivery Platform, and in PDF |
| [x]  | a data set |
| [x]  | a digital tool or software application |
| [x]  | 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)

[x]  Electrical

[x]  Extra low voltage

[x]  Low voltage

[x]  Medium voltage

[x]  High voltage

[x]  Local power generation & standby power

[x]  Earthing & bonding/ Lightning protection

[ ]  Communications

[ ]  Audio-visual

[ ]  Electric vehicle charging

[ ]  Public Health

[ ]  Water

[ ]  Drainage

[ ]  Gas

[x]  Lighting

[ ]  Daylight/ sunlight

[ ]  Electric lighting

[ ]  Lighting energy

[x]  Fire safety

[ ]  Fire life safety

[ ]  Fire protection

[ ]  Fire detection

[ ]  Fire notification

[ ]  Building fabric

[ ]  Façades

[ ]  Access & maintenance

[x]  Transportation systems in buildings

[ ]  Lifts

[ ]  Escalators

[ ]  Moving walks

[ ]  Stairlifts and lifting platforms

[x]  Building intelligence

[x]  Controls

[x]  Smart buildings

[x]  Security

[ ]  Physical security

[ ]  Security systems (access control, surveillance, intruder alarm)

[ ]  Cyber security

[x]  Digital

[ ]  Building information modelling (BIM)

[ ]  Digital engineering

[ ]  Digital construction

[x]  Sustainability & ESG

[x]  Climate change mitigation

[x]  Climate change adaptation

[x]  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

[x]  Fundamentals

[x]  Physics

[x]  Design conditions/ data

[x]  Calculations and methods

[x]  Sustainability (key considerations)

[ ]  Health, wellbeing and safety

[x]  Retrofit and refurbishment

[x]  Condition surveying

[ ]  Modification/ adaptation

[x]  System selection

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

[x]  Systems, plant, equipment (terminal equipment)

[x]  Systems, plant, equipment (network level, central plant, distribution)

[x]  System design principles

[x]  System sizing

[x]  System design conditions/ data

[x]  System sizing calculations

[ ]  Health, wellbeing and safety

[ ]  Modern methods of construction

[x]  Access and maintenance

[x]  Construction

[x]  Installation

[x]  Modern methods of construction

[x]  Health, wellbeing and safety

[x]  Records (drawings, operation and maintenance)

[x]  Controls

[x]  Strategy

[x]  Controls as specified, installed and commissioned

[x]  Commissioning

[x]  Plans

[x]  Procedures

[x]  Operation

[x]  Facilities management

[x]  Training

[x]  Maintenance

[x]  Health, wellbeing and safety

[x]  Performance (energy, carbon, water)

[x]  Performance (IEQ)

[x]  End of life

[x]  Reuse

[ ]  Repurpose

[x]  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

[x]  Data centre

[ ]  Heritage

[ ]  Defence

[x]  Infrastructure

[ ]  Utilities

[ ]  Other

Intended Reader:

[x]  Owner

[x]  Occupier

[x]  Designer

[x]  Developer

[x]  Constructor

[x]  Installer

[x]  Commissioning engineer

[x]  Operator/ Facilities manager

[x]  Manufacturer

[x]  Apprentice

[x]  Student

[x]  Researcher

[x]  Expert witness

[ ]  Other - please specify: