

# The Tallaght District Heating Scheme (TDHS)

A Guide to Connecting for Developers



***The South Dublin District Heating Company will be fully-owned by South Dublin County Council and will be the first not-for-profit energy utility in Ireland.***

## Introduction

There is more onus these days on developers to integrate heating technologies that comply with new building regulations and national planning policies. There is also a strategic objective at a national level to decarbonise the heating sector in Ireland, driven by international climate change obligations, European directives and mandatory targets for increased renewable energy and decreased greenhouse gas emissions. All of these factors result in a more challenging environment for developers looking for innovative, cost-effective ways to comply with such regulations.

South Dublin County Council (SDCC), working with the Dublin Energy Agency Codema as its energy adviser, has identified district heating as a key technology to supply low-carbon heat to urban centres in the South Dublin region. This brochure outlines the proposed district heating scheme in Tallaght, how it will connect to buildings in the area and the benefits of developers connecting to this network.





# The Tallaght District Heating Scheme

The **South Dublin District Heating Company** will be **fully-owned by South Dublin County Council** and will be the **first not-for-profit energy utility in Ireland**.

The pilot project, the Tallaght District Heating Scheme (TDHS), will begin first-phase construction in the Town Centre area in early 2020. This area has been identified as having a **high heat demand density**, which is a key indicator for district heating viability. There are different types of **heat customers in this area with high heat loads**, located in close proximity to a **large, commercial waste heat source**. This is the **ideal scenario** for implementing a successful, low-carbon district heating system.

The first phase of the TDHS has the benefit of **guaranteed customers** in the form of existing Council buildings. The scheme also plans to connect to the Technological University Dublin-Tallaght Campus, along with a planned new **high-density residential development**, which is in close proximity to the Council buildings and can be directly connected during the construction phase. The system is **ideally placed to connect to other big users in the area** such as The Square shopping centre and Tallaght Hospital in future phases.

This innovative district heating scheme will utilise **waste heat from a local data centre to provide low-carbon, low-cost hot water and space**

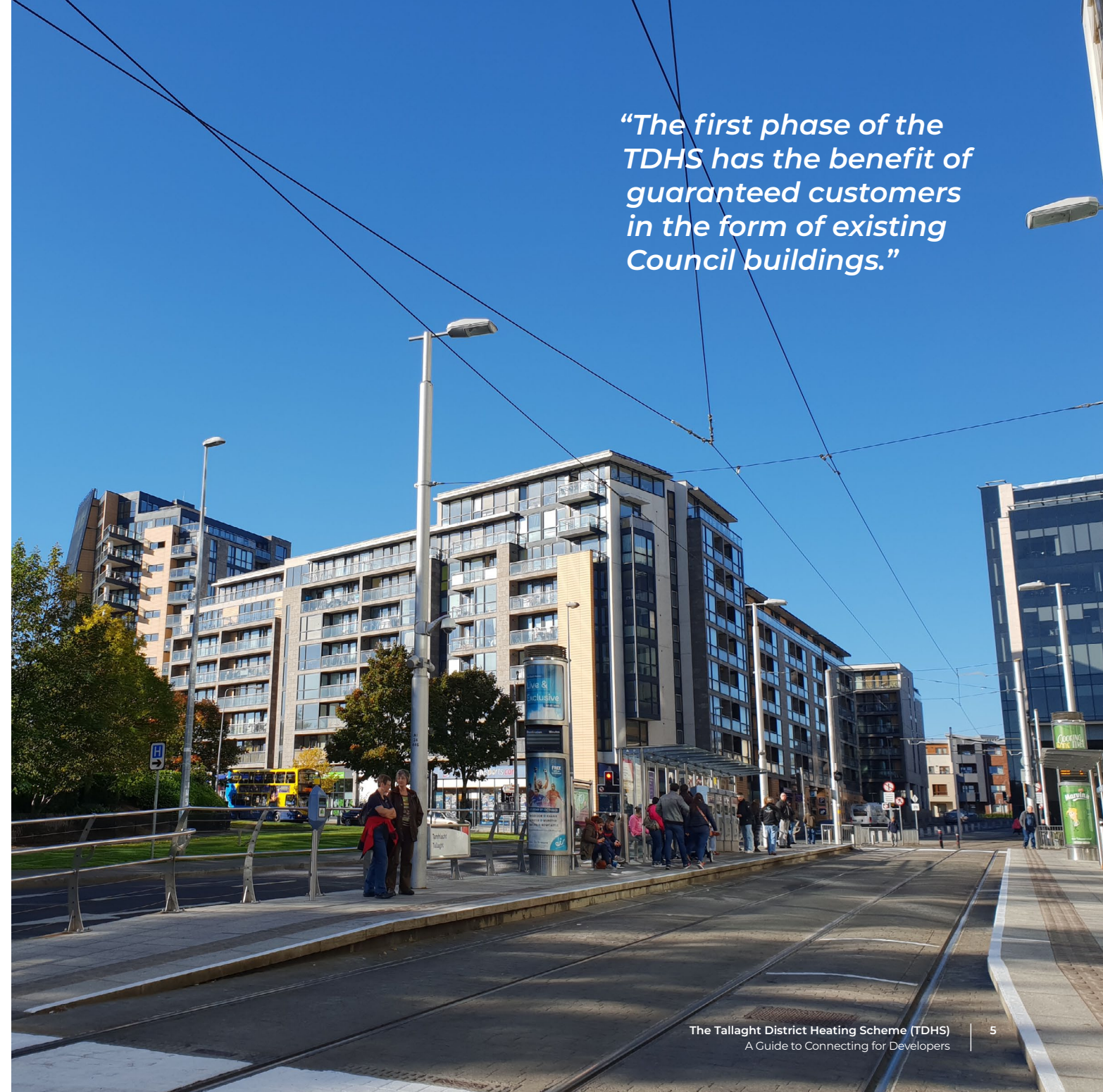
**heating** to buildings in the Tallaght area. It will be the **first project of its kind** in Ireland and the only not-for-profit energy utility in the country.

By harnessing the waste heat and passing it through a large-scale heat pump, it can achieve far greater efficiencies than air-source heat pumps, even when supplying at high temperatures. Supplying hot water up to 85°C through the district heating network makes the system fully-compatible with existing building heating systems. Centralised, high-efficiency boilers can also be used to raise this temperature further during peak demand periods, if required. All of this means that **the TDHS can supply customers with low-carbon, renewable heat resulting in significant reductions in CO<sub>2</sub> emissions**.

The large-scale heat pump and thermal storage vessel can work together to balance the electricity grid when excess renewable energy is being generated, at a fraction of the cost of battery storage. The thermal store also enables night-time electricity rates to be utilised to keep the cost of heat to customers low.

The successful roll-out of the Tallaght system will enable the South Dublin District Heating Company to **expand district heating to other areas of the County** that also have significant potential, such as matching the heat surplus in Grangecastle to the future new heat demands in Clonburris.

*“The first phase of the TDHS has the benefit of guaranteed customers in the form of existing Council buildings.”*



# Benefits of the Tallaght District Heating Scheme for Developers

The Tallaght District Heating Scheme has many advantages for developers and their customers over traditional heating systems.

Firstly, it is supported at national government level and satisfies planning and building regulations in a cost-effective, innovative way. Financially, the upfront capital costs and the costs associated with space loss are much lower with a district heating system. Maintenance costs and costs to the consumer are typically lower as well.

From an environmental point of view, district heating is far more efficient as it can increase the use of renewables, which reduces carbon emissions and positively impacts local air quality. It is also much quieter than traditional heating systems, with no carbon monoxide risk.

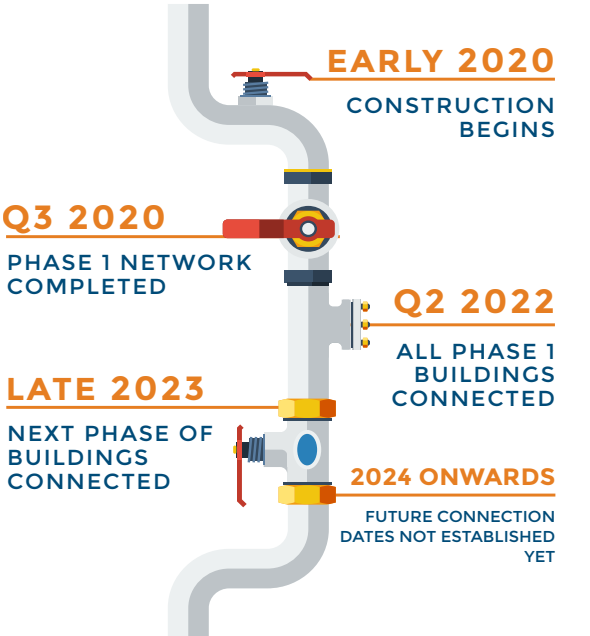
Connecting to a district heating system can also help to improve developer profiles and strengthen customer relationships as it is an extremely reliable technology, providing a steady, constant supply of heat 24 hours a day.



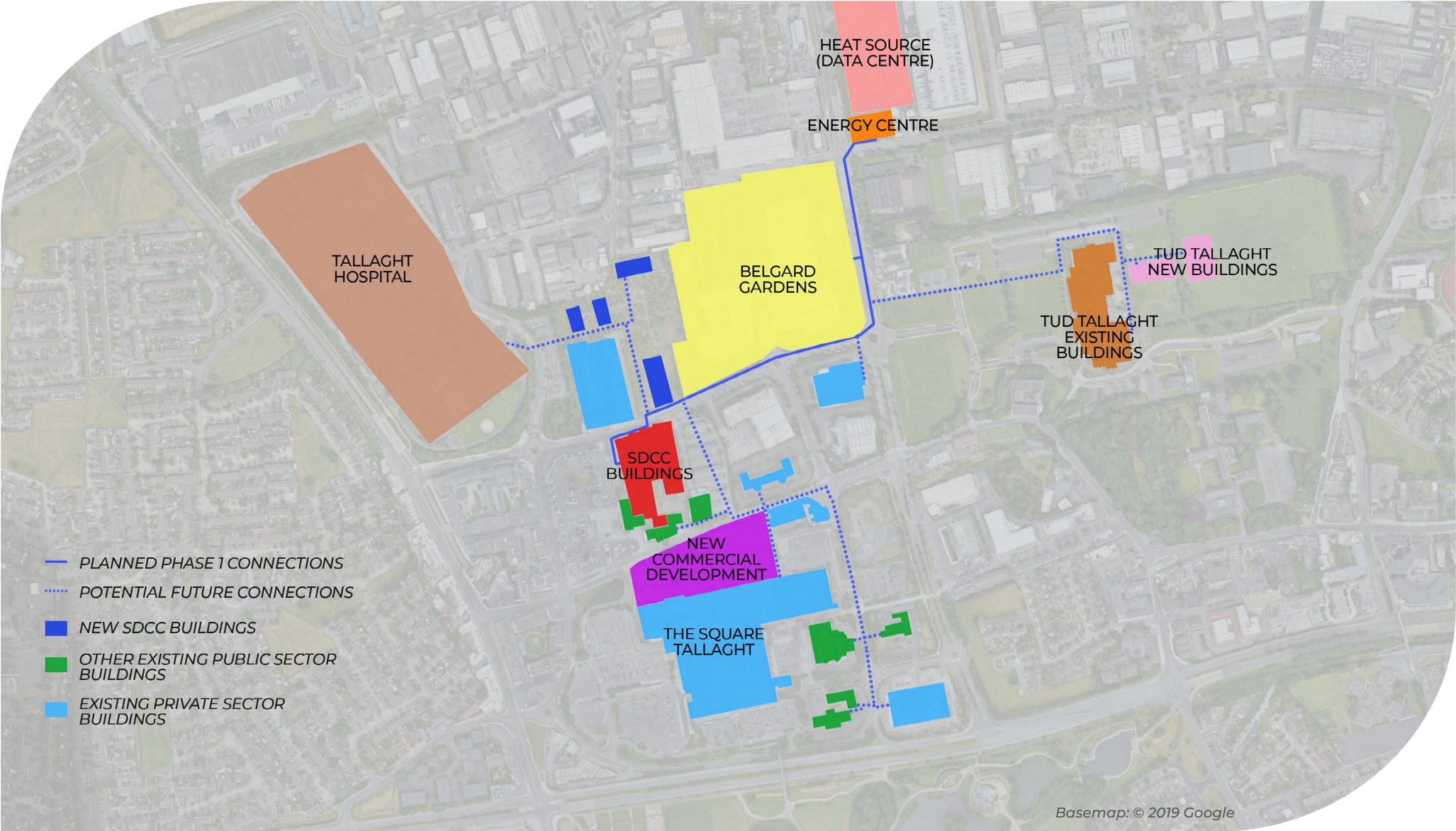


# Proposed Network

The map shows the proposed main distribution network in Tallaght, with the planned Phase 1 connections marked by solid blue lines and the potential future connections marked by dashed blue lines.



TDHS Timeline



Potential Pipe Route Map

# Financial Benefits

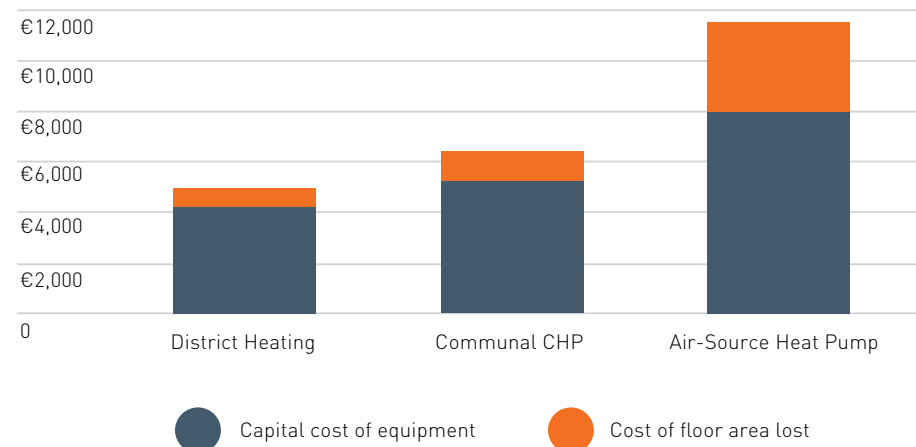
Connecting to the Tallaght District Heating Scheme presents many financial benefits to developers:



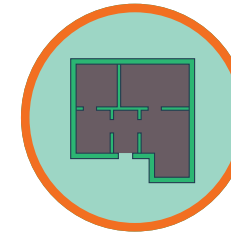
## 1. Savings on capital costs

There are significant savings on capital costs when compared to other heating systems, as can be seen in the graph below. For example, the capital cost of connecting a housing development to the district heating network is approximately **53% cheaper than installing an air-source heat pump**<sup>1</sup>. This saving increases to almost 60% when the cost associated with the loss of floor area for hot water cylinders is included.

<sup>1</sup> Based on an assumed block of 500 apartments



Capital Cost Comparison (per Apartment)



## 2. Lower costs through space saving

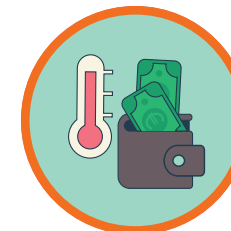
The cost associated with lost floor area in the apartments is also significantly lower in the district heating scenario, **costing approximately 80% less than the electrical air-source heat pump heating option**<sup>2</sup>.

<sup>2</sup> Using the average building costs per m<sup>2</sup> for build-to-rent apartments from the "Buildcost Construction Cost Guide", for 1st half of 2019 (<http://buildcost.ie/Buildcost-Construction-Cost-Guide-1st-Half-2019.pdf>)



## 3. Lower maintenance costs for customers

Maintenance costs to the customer **will typically be much lower with a district heating supply**, as the heating substations used have no moving parts and the heat production units are centralised, allowing all units to be more easily monitored and maintained. This ease of maintenance also allows system efficiencies to be maintained throughout the plant's lifespan.



## 4. Lower price of heat for customers

Given the higher efficiencies that can be achieved in a district heating system, **the price of heat to the customer is typically 5% - 10% cheaper than alternative heating options**. As the South Dublin District Heating Company is a not-for-profit organisation, any annual profits that are made will be reinvested back into the network to ensure its efficiency and associated low heat price are maintained.



# Building Regulations Part L Compliance

Codema carried out a high-level DEAP assessment (using DEAP 4.1) for each heat supply scenario, assuming an apartment with a typical floor area based on proposed developments in the Tallaght area<sup>3</sup>, to check the compliance of each technology.

The results of this analysis can be seen in the table below. Figures that do not comply with Part L limits are highlighted in red.

<sup>3</sup> Typical floor area assumed to be 85m<sup>2</sup>

Solution	Tallaght District Heating Scheme	Communal CHP	Air-Source Heat Pump
Capital cost of equipment	€4,215	€5,238	€8,000
Cost of floor area lost	€692	€1,217	€3,525
BER rating	A2	A2	A2
kWh/m <sup>2</sup> per year	33	48	38
Energy Performance Coefficient	0.241	0.335	0.277
Carbon Performance Coefficient	0.210	0.358	0.234
Renewable Energy Ratio	0.440	0.260	0.390
Compliant?	Yes	No	Yes





## Further Information

We are happy to discuss any questions you might have about connecting to the Tallaght District Heating Scheme. For further information or to arrange a future site visit, please contact the Energy Systems Planning team in Codema:



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