



SmartSPIN

Smart energy services to solve the **SPlitIN**centive problem in the commercial rented sector.

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D5.5 – VALIDATION OF THE SMARTSPIN SERVICE

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List of Abbreviations

Abbreviation	Meaning
AHU	Air Handling Unit
BMS	Building Management System
ESCO	Energy Service Company
EV	Electric Vehicle
IERC	International Energy Research Center
I4G	Incubation for Growth
LPHW	Low Pressure Hot Water
O&M	Operation & Maintenance
PPM	Part Per Million
PV	Photovoltaic
SES	Smart Energy Service





EXECUTIVE SUMMARY

This deliverable includes the results of the independent evaluation of the SmartSPIN service performed by the IERC, considering the feedback received by each pilot site during the demonstration activities as well as their impacts.

This report analyses the data collected during the pilot activities for evaluation of the proposed business model in terms of the impact on each of the key stakeholders (landlords, tenants and ESCOs).

This validation of the SmartSPIN service builds on the outcomes of Task 1.6 (Evaluation and monitoring of the performance indicators) and Task 5.4 (Impact of gamification on tenant engagement) in terms of primary energy savings, investments in sustainable energy and reduction in greenhouse gas emissions and elaborates on the extent to which the SmartSPIN solution can resolve the split incentive problem for the commercial rented sector.

Moreover, the changes to the contractual templates and tariff structures that were designed in WP3 (Contractual Service Definition) required by stakeholders have been identified and reported in this deliverable.

Finally, the user experience in relation to the use of the energy monitoring data platform developed in Task 4.5 (User engagement through data-platform integration and visualisation (Front-end) and the smartphone app developed in Task 5.4 (Impact of gamification on tenant engagement) is analysed and their effectiveness assessed.





1 INTRODUCTION

The SmartSPIN project designed a smart energy service (SES) suitable for the commercial rented sector and implemented it in three pilot sites in Ireland, Spain and Greece. Such SES is based on an innovative version of the “Energy Efficiency-as-a-Service” business model which accounts for the specific requirements of the commercial rented buildings.

The SmartSPIN business model enables to overcome the split incentive issue, which occurs when the benefits of an investment in energy efficiency do not accrue to the same party who performed the investment (i.e., the benefits of an investment in energy efficiency performed by the landlord would accrue only to the tenants, who occupy the building).

During the project, the SmartSPIN SES has been deployed and tested at the three pilot sites in Ireland, Greece and Spain. The feedback collected from landlords and tenants during the demonstration activities has been used to assess and validate the various aspects of the SES, i.e., the business model, contractual templates, energy monitoring data platform, the gamification app, and eventually to judge how the proposed SES can contribute to solve the split incentive issue in the commercial rented buildings in Ireland, Spain and Greece.

This report is organized as follows. Section 2 reviews the updates and the feedback received from the SmartSPIN pilot sites that are relevant to the service validation task. Section 3 summarises the outcome of evaluation and monitoring of the performance indicators, i.e., the primary energy savings, investments in sustainable energy and reduction in greenhouse gas emissions achieved, which are reported in detail in D1.5. Section 4 reviews the business model and explains the changes that were applied to the version included in D6.1 after its validation considering the feedback from the pilot sites. Section 5 analyses the changes that were applied to the contractual templates in D3.5 considering the feedback which was received from the pilot sites. In section 6, the energy monitoring data platform developed in Task 4.5 is assessed considering the feedback received from occupants, building or O&M managers, ESCOs, building owners at the three pilot sites. Section 7 presents the assessment of the smartphone app for gamification developed in Task 5.4 considering the feedback received by the tenants at the three pilot sites in Ireland, Spain and Greece. Section 8 presents a discussion about the effectiveness of the SmartSPIN SES with respect to solving the split incentive issue in the commercial rented sector. Section 9 concludes the report summarising its findings.

2 UPDATES AND FEEDBACK RECEIVED FROM THE PILOT SITES

2.1 IRELAND

2.1.1 Description of pilot site

The pilot site in Ireland is a building located at 30 Herbert St. in Dublin which has six floors with a classical façade constructed in reconstituted stone precast concrete panels (Figure 1). The total lettable floor area of the building is ~4,400 m² (47,349 sq. ft) with the total floor area covering approximately 7,100 m² and includes approximately fifty car parking spaces. The building was originally built in 1996 and underwent a refurbishment in 2014 after a long period





of being unoccupied. New tenants moved into the building in 2015 after the refurbishment works. The landlord occupies 1,809 m² (29.14% of the total floor area). Tenant 1 (an investment service company) occupies 2,714.36 m² (43.72% of the total floor area), whereas tenant 2 (a private banking and asset management company) and tenant 3 (hedge fund) occupy respectively 805.20 m² (12.97% of the total floor area) and 880.44 m² (14.18% of the total floor area).



Figure 1: Office building in 30 Herbert Street in Dublin

The upgrades deployed at the pilot site in 30 Herbert Street in Dublin, consisted of an upgrade of the BMS. The installation of the new BMS has been completed in November 2024. The BMS upgrade will deliver benefits to both landlord and tenants in 30 Herbert Street, Dublin with estimated total energy cost savings of about €21,000/year and CO₂ reduction of 43.65 tCO₂/year. The project will also cover the harmonisation of competing heating/cooling systems in tenancies with landlord systems. Such system harmonisation aims to ensure that radiators, mechanical fresh air systems and tenant air-conditioning systems all act in a coordinated way. It will also deploy energy submetering and environmental sensing in tenancies to allow better coordinated energy management and visibility of the internal comfort conditions of tenancies. The current BMS control system is depicted in Figure 2. All the tenanted floors have their own Air Handling Unit (AHU) supplying tempered air to the floor space. Moreover, on each floor there are Mitsubishi Electric City Multi Air Conditioning units which are used to maintain comfort levels. The distribution boards on each floor feed the Mitsubishi equipment for that floor and its associated AHU. The control points for the AHU's connect back to the existing BMS, whereas the Mitsubishi units are not connected with this system. Each AHU has an LPHW coil which is fed from a constant temperature circuit in the boiler house. The boiler house has two boilers and three circuits: a constant temperature circuit, a variable temperature circuit, and a DHW system for toilets. The variable temperature circuit is weather compensated



and has mixing valves which are two zone valves on each floor for background heat. Wireless sensors have been installed, which communicate via an internal radio network (LoRaWAN) with the BMS.

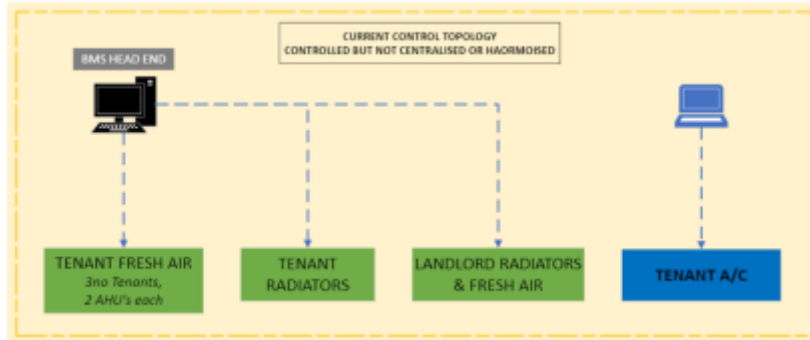


Figure 2: Existing BMS control system in 30 Herbert Street building

The upgraded system is illustrated in Figure 3. It can be noted that tenants’ energy consumption and comfort will be monitored through the installation of electrical and heat meters, occupancy controls, air quality sensors and wastewater monitoring system. This information will provide the energy efficiency provider with the information that will enable to quantify the energy and non-energy benefits for the tenants in 30 Herbert Street, Dublin. Moreover, the connection of the Mitsubishi Electric City Multi Air Conditioning units to the BMS will allow to operate the AHU systems, radiators and air conditioning in a more coordinated manner reducing energy consumption.

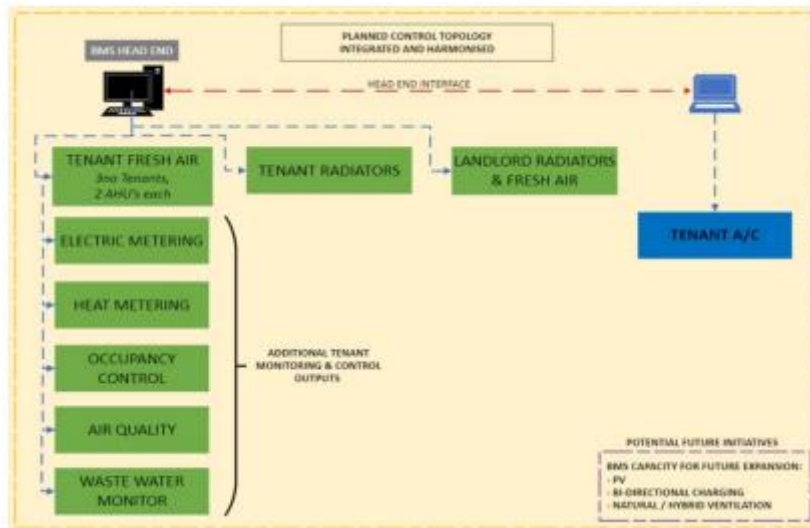


Figure 3: Upgraded BMS control system in 30 Herbert Street building

2.1.2 Feedback received from pilot site

The agreements between landlord and energy efficiency provider (Lawler Sustainability) for the first two years following the completion of the upgrade project are illustrated in Figure 4. The energy efficiency provider will monitor the system, measure the energy savings, and





optimise the system if necessary. The building owner will pay a monitoring and optimisation fee to the energy efficiency provider. This fee is performance based, and it will be about €1,000/month if the contractual guaranteed energy savings are met and will be lowered to €500/month in case the energy savings are not met. During the first two years after the installation of the BMS upgrade there will be no payment from tenants to energy efficiency provider. The reason is that the decision to invest in the BMS upgrade project was taken by the landlord mainly because the existing equipment is at its end of the life. Moreover, the building owner will reap energy savings because the upgrade will increase energy efficiency of the building owner too. The building owner sees the business case in harmonising tenant and landlord different systems and the upgrade project will contribute to improve the relationships with the four parties by promoting their common sustainability agenda. The participation and interest in the BMS upgrade project from senior management within building owner, their management agent and all tenants also support this view. SmartSPIN has generated awareness within the building owner and their management agent regarding the proposed business model and how it can help to overcome the split incentive issue. In particular it has been made clear that the tenants may support the investment in energy efficiency by the building owner through the payment of a service fee to the energy efficiency provider, whose value is eventually shared (in part) with the building owner. However, given the fact that the business model proposed by SmartSPIN is new and has never been deployed on the market in Ireland, it has been decided to begin with a 2 years monitoring & optimisation project that will allow to measure and verify the energy savings accrued by the tenants along with other non-energy benefits (such as improved indoor thermal comfort). Following this initial assessment of the energy efficiency gains for the tenants, the building owner in 30 Herbert Street may decide to request the tenants to pay a service charge for their improved energy efficiency. Moreover, the building owner may decide to deploy the SmartSPIN business model in other buildings they own as well. On the other hand, the energy efficiency provider prefers that the building owner establishes an agreement directly with the tenants, because the building owner has a stronger balance sheet and a revenue stream coming from the tenants.

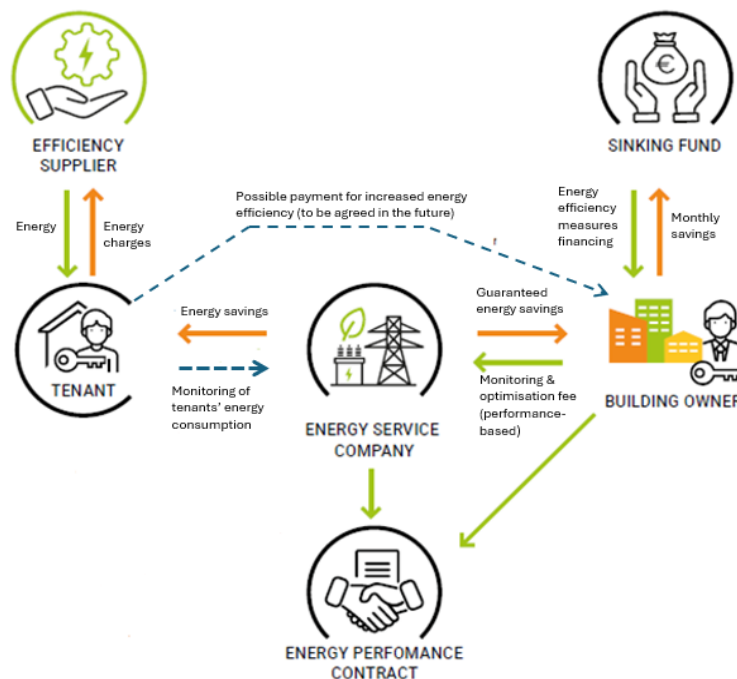


Figure 4: Agreements between landlord and energy efficiency provider for the building Dublin





The facility management company JLL signed a performance agreement with Lawler Sustainability. The contractual agreement is included in the appendix of this report. Following the installation of the new BMS system, which was completed in November 2024, a series of BMS checks were outlined along with a plan to test how the optimised system operation would lead to energy saving in several relevant operating scenarios. A demonstration of the upgraded system was scheduled on 10th December. Lawler Sustainability agreed with its client a plan to test several optimisation strategies to improve energy efficiency and air quality. Lawler Sustainability proposed different optimisation strategies for each season. The first strategy that will be tested in the one for winter, followed by the strategies for spring, summer and autumn. Lawler Sustainability is currently reviewing and studying the data available from the building, such as the floorplate temperature profiles from the Mitsubishi controller interface, document patterns based on outside conditions and time of day. Possible anomalies concerning overnight temperature drop when equipment is closed off are being studied and possibly resolved. Thermographic or air permeability testing to identify floor place leakage and leakage from the floor place through the ventilation system may be necessary.

The energy consumption optimisation strategies are based on the harmonisation of the HVAC systems of landlord and tenants to minimize energy wastes. The first strategy that will be tested this winter consists of adjusting the landlord air supply system to ensure that it is properly synchronised with tenants' systems. This means, for example, that when tenant is trying to cool, the landlord system will not be providing heat. Moreover, the air delivered by the landlord's system will be supplied at a temperature no higher than required tenant's room temperature. Furthermore, scenarios where tenant perimeter is calling for heat and internal areas for cooling will be analysed and temperature set points optimised to minimise energy consumption. Air quality will be maintained below 800 PPM CO₂ and the landlord air handling unit will ramp up as CO₂ levels reach this threshold. In summer, two additional optimisation strategies will be tested. They are the night-time purge and the use of the landlord air system to cool the tenants' floorplate. Night-time purging uses the thermal mass of a building to absorb heat gains during the day, then uses external air to cool the thermal mass at night so that its temperature is lowered again by the next day. Moreover, during summertime landlord's fresh air can be used to support the cooling of the floor plates when there is cooling demand. Spring and autumn are shoulder seasons that have some similarities with both winter and summer and therefore the control strategy and optimisation may combine elements of the winter and summer optimisation strategies.

Smarkia provided the site with credentials to access both the **gamification app** and the **visualisation dashboard**, respectively developed in Tasks 5.4 and 4.5. However, feedback regarding the gamification app has not been received at the time of writing this deliverable, because enough tenants' energy consumption data is still to be collected. As for the visualisation dashboard, a dedicated dashboard is being developed at the pilot site with the involvement of LS, but the development work is still on-going, therefore users' feedback is not available yet.

2.2 GREECE

2.2.1 Description of pilot site





The pilot site in Greece is a large office building complex located 10 kilometres off the city centre of Thessaloniki, the second largest city of Greece. The complex is named i4G (Incubation for Growth) and comprises two inter-connected buildings of four floors each, hosting 15 tenants in a total operational surface of 1,600m² and 1,800m² respectively. The tenants are mainly start-up companies as well as mature and well-known technology and innovation companies.

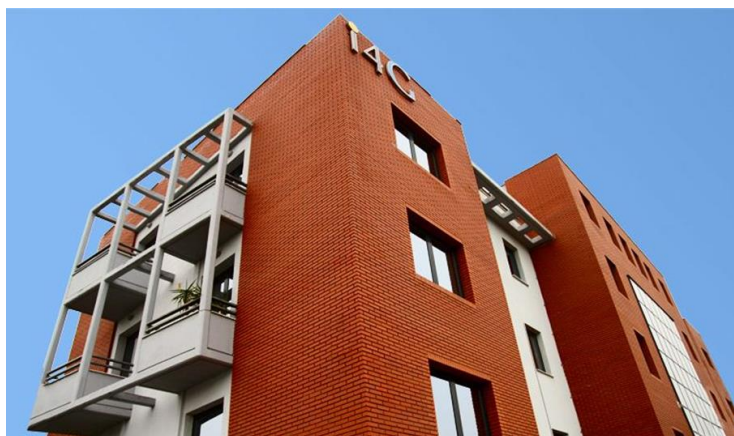


Figure 5: i4G building complex in the Thessaloniki City Centre, Greece.

The baseline electricity consumption of the i4G buildings is 0.40GWh/year; natural gas is not used in the buildings. SmartSPIN has deployed smart equipment in the i4G buildings enabling tangible energy efficiency gains. Furthermore, the method for energy costs sharing between tenants which consisted in the owner to share the energy costs with the tenants based on the rented area (i.e., considering the square meters of each office) has been upgraded by means of submetering, thereby allowing the tenants to pay for their actual consumption. This upgrade enables a fairer and accurate sharing of energy costs.

During SmartSPIN, the i4G Company proceeded with investing a total of EUR €160k on additional insulation projects (advanced insulation materials and methods), an energy efficiency project which is currently ongoing and expected to be completed by the end of 2024. These efficiency improvements concern both building complexes (Euroconsultants SA & i4G) transforming the buildings' energy rating from D to a B Energy Efficiency Class. Currently they are also examining the installation of Solar-PV Canopies, including EV Chargers and Batteries for storage, within the private parking area of the buildings.

2.2.1 Feedback received from pilot site

The feedback received by the pilot site about the proposed SmartSPIN business model, is that it can solve the split incentive issue within their premises because it makes the share of energy costs among the various tenants fairer. The business model is considered effective especially for commercial buildings offering offices that may regularly change their size and occupancy over time. Landlord and tenants stated that they would be happy to divide the energy cost savings between them as suggested in the factsheet included in D6.5.





The feedback received by the i4G Company regarding the tripartite agreement proposed in the SmartSPIN contractual template included in Appendix 1 is that it seems the right step towards solving the split-incentive issue, in relation to energy efficiency improvements of commercial buildings. However, a concern was expressed about the low level of maturity of the Greek Market of ESCO Services. According to the i4G Company, commercial landlords in Greece are waiting for the Ministry of Energy to clarify and improve the physical environment for ESCO Services. ESCOs in general prefer to work only with public buildings.

The i4G Company has referred the SmartSPIN business model to major business and multi-tenant office building developers in Greece, as well as the developer of a new and under construction hotel & shops facility in Thessaloniki, with an approximate usable surface area of 14,000 m².

Smarkia provided the site with credentials to access both the **gamification app** and the **visualisation dashboard**, respectively developed in Tasks 5.4 and 4.5. However, feedback regarding these tools has not been received at the time of writing this deliverable, most likely because the users at the pilot site have not had sufficient time to use them yet.

2.3 SPAIN

2.3.1 Description of pilot site

2.3.1.1 La Gavia shopping centre

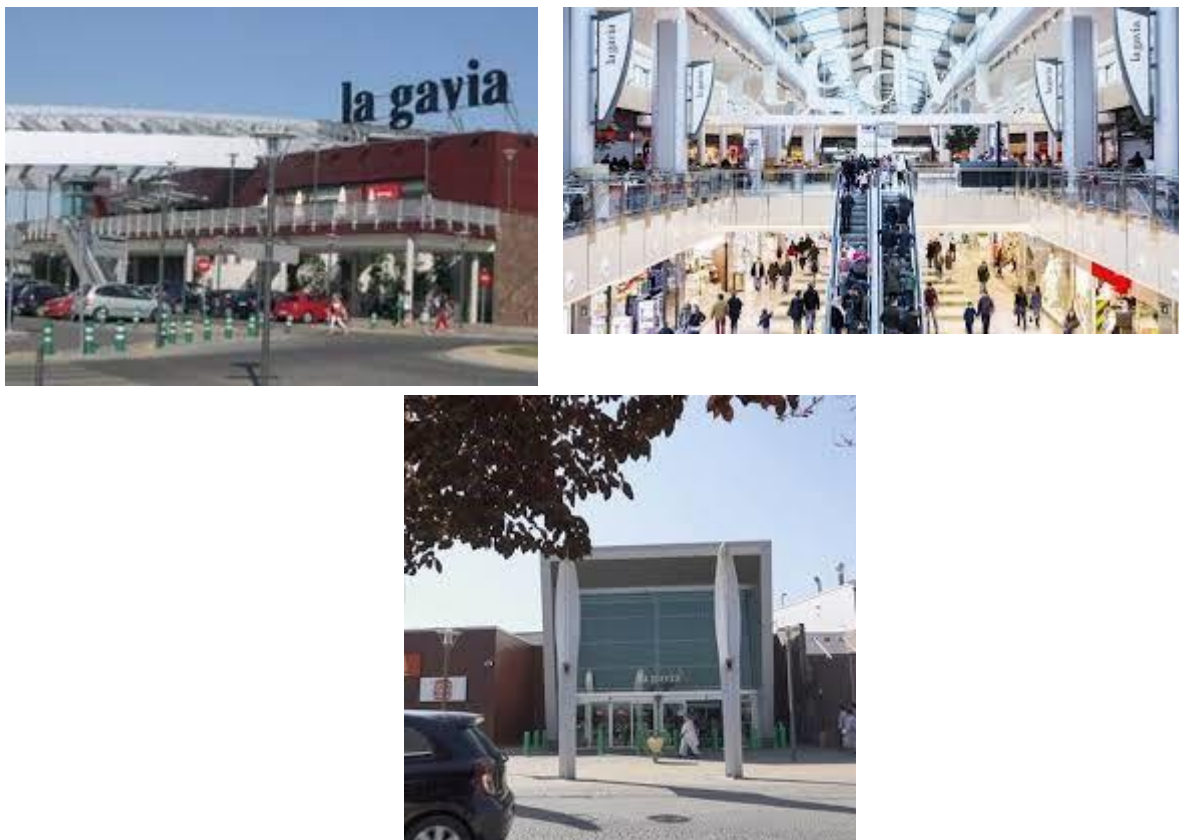


Figure 6: La Gavia shopping centre in Madrid





La Gavia shopping centre is located in the booming Ensanche de Vallecas district, 11 kilometers from Madrid city centre. The mall extends over 85,382 sqm and has 139 tenancies. La Gavia's energy consumption is 3.28 GWh/year of electricity and 0.6 GWh/year of natural gas.

2.3.1.2 Plenilunio shopping centre



Figure 7: Plenilunio shopping centre in Madrid.

2.3.2 Feedback received from pilot site

The main feedback received from the pilot-site owner Klepierre is that the proposed SmartSPIN business model can effectively help to mitigate the split incentive issue. The model promotes the engagement of all the stakeholders such as landlords, tenants, facility management companies, energy efficiency providers, which is required for the successful deployment of a smart energy service, providing clarity and fairness in relation to how the energy savings are divided by the parties.

The measurement and verification method developed by SmartSPIN as well as the SmartSPIN data analytics tools have been considered effective toward building trust of the stakeholders and delivering them real benefits.

The deployment of the SmartSPIN smart energy service at Plenilunio and La Gavia shopping centres can be conveniently enhanced by implementing an effective tenant transition management strategy, consisting in provisions that allow to maintain the energy savings during tenant changes, ensuring continuity and transparency.





The SmartSPIN contractual template has been considered effective with respect addressing the key challenges in delivering a smart energy service that can increase energy efficiency of the commercial buildings. The tripartite agreement with the landlord and ESCO was considered a practical approach, ensuring comprehensive stakeholder alignment. However, in all the cases where the split incentive issue is not a very high barrier, the landlord will independently implement energy efficiency measures, and a bilateral contractual agreement between landlord and energy efficiency provider might be preferred to reduce complexity of the procurement process.

The pilot-site owner Klepierre thinks that simplification of data sharing, incorporating data access agreements into rental contracts with tenants is a key aspect to be addressed. This approach aims to avoid the need for requesting individual approvals, and it is very well suited for shopping centres with high tenant turnover, like La Gavia and Plenilunio.

Moreover, the interaction with the pilot site highlighted that the re-billing electricity savings in cases where tenants hold individual utility contracts is a complex process which needs to be standardised and streamlined managing it in a centralised manner.

The division of energy cost savings that was suggested in the factsheet included in D6.5 has been considered appropriate and helpful to incentivize cooperation ensuring tangible benefits for all parties involved.

Klepierre would recommend the SmartSPIN smart energy service to peers in the commercial rented building sector because its innovative approach to addressing energy efficiency, benefit sharing, and trust-building is valuable, especially for large-scale operations like shopping centres.

The pilot site in Spain also provided positive feedback regarding the effectiveness of the visualisation dashboard and the gamification app and, which are discussed in sections 6 and 7 respectively.

3 PRIMARY ENERGY SAVINGS, INVESTMENTS IN SUSTAINABLE ENERGY AND REDUCTION IN GREENHOUSE GAS EMISSIONS ACHIEVED

The primary energy savings, investments in sustainable energy and reduction in greenhouse gas emissions achieved are reported in D1.5. The analysis of the key performance indicators revealed that the project has achieved higher primary energy savings and reduction in greenhouse gas emission than planned with lower investments across the three pilot sites.

Key Performance Indicator	Planned	Achieved
Renewable electricity generation (GWh/year)	1.36	2.08





Primary Energy Saving triggered by the project (GWh/year)	4.72	6.516
Reduction in GHG emission triggered by the project (tonnes CO₂eq/year)	812	1708.9
Investment in sustainable energy triggered by the project (€M)	7.38	1.977
Number of jobs created	126	32
Number of contracts signed	3	3 (planned)

Table 1 – Overall project's impacts

4 REVISED BUSINESS MODEL CONSIDERING FEEDBACK FROM PILOT SITES

The SmartSPIN Business Model has been developed using the Canvas template, which is a comprehensive visual chart proposed by Osterwalder and Pigneur, that covers all the aspects of the Business Model. Such template is a strategic management and entrepreneurial tool which allows to describe, design, validate a Business Model, highlighting its value proposition, infrastructure, customers and financial aspects. The revised business model is depicted in Table 1.

The CANVAS business model included in D6.1 has been revised in T5.5 to make it more compact and easier to read, and to ensure that it focuses on the perspective of an ESCO wishing to implement the SmartSPIN SES, considering only the aspects which are relevant with the SES implementation by an ESCO. The customer segments have been revised considering that the SmartSPIN concept has potentially an even wider applicability than in office buildings and shopping malls.

Feedback from one of the pilot sites (Ireland) led to the identification of a further key activity, which is related to the collection of energy production and consumption data for system monitoring purposes. This monitoring activity allows the ESCO to optimise the controls and operation of the energy efficiency measures and to provide the best performance to the customer at the end of the optimisation period. Such key activity highlights that in some cases both the ESCO and the building owner want to have a trial period to evaluate the system performance, before entering into an energy performance contract with guaranteed savings.





SmartSPIN Business Model		<i>Designed for:</i> Energy Service Companies	<i>Designed by:</i> SmartSPIN project	<i>Version:</i> 2.0
<p>Key Partners</p> <p>Materials and components suppliers and installers (smart devices, renewable energy sources, energy storage components and infrastructure, e-mobility infrastructure, smart monitoring & management platform).</p> <p>Building automation and technology installers.</p> <p>Building services engineering companies.</p> <p>Project financiers.</p> <p>Energy Performance Contracting Facilitators.</p> <p>Building services engineers and designers.</p> <p>Energy efficiency consultants.</p>	<p>Key Activities</p> <p>Recommend energy efficiency measures. Elaborate an implementation plan for energy efficiency measures.</p> <p>Define the energy efficiency service price (service fee paid by clients) and plan of payments.</p> <p>Implement agreed energy efficiency measures.</p> <p>Collect energy consumption data (system monitoring) and optimise the installed measures.</p> <p>Implement the energy performance contract. Measure and verify energy savings and determine recurring payments of clients.</p> <p>Perform system maintenance regularly.</p> <p>Train clients on how to use of their equipment and appliances to reduce energy consumption.</p> <p>Key Resources</p> <p>Capital from project financiers and government grants for the installation of energy efficiency measures.</p> <p>Contractual templates to implement the smart energy service in commercial rented properties.</p> <p>Energy efficient equipment and measures. Technologies for smart controls. Building Management Systems. Meters, sensors, data loggers.</p> <p>Gamification app, building performance diagnostic app, measurement and verification app.</p>	<p>Value Propositions</p> <p>Increased value and greener image of the property after installation of energy efficiency measures and BMS upgrades.</p> <p>Renovated property and non-energy benefits such as increased indoor comfort (e.g. thermal comfort and air quality).</p> <p>Monthly service fee paid by the renters to the ESCO for the energy efficiency service.</p> <p>Monthly payment by ESCO to the building owner to share the value of the energy savings achieved by renters.</p> <p>The service fee paid by the building owner to the ESCO (optional, applicable only if the building owner occupies part of the building).</p> <p>The responsibility taken by the ESCO for the installation, commissioning, monitoring and regular maintenance of equipment, devices and systems and the provision of guaranteed/shared energy savings to their clients.</p>	<p>Customer Relationships</p> <p>Agreement/SmartSPIN Contract between ESCO and clients about energy efficiency measures to be installed and the subject responsible for project financing (ESCO or building owner).</p> <p>Negotiation about the recurring service fee payment performed by each client to the ESCO.</p> <p>Invoice for the energy efficiency service sent by ESCO to clients.</p> <p>Receipt for the recurring payment received by the building owner from the ESCO.</p> <p>Channels</p> <p>Website and blog.</p> <p>Printed posters displayed at strategic locations.</p> <p>Printed or digital flyers or brochures.</p> <p>Social media channels.</p> <p>Printed or emailed newsletters.</p> <p>Press releases.</p> <p>TV or radio advertisements.</p> <p>Outreach at trade shows and sectoral events.</p> <p>Outreach via building owners and managers associations.</p> <p>Business referral.</p>	<p>Customer Segments</p> <p>Building owners and renters of different typologies of rented commercial properties, such as:</p> <ul style="list-style-type: none"> - Industrial buildings (e.g. manufacturing facilities, warehouses, etc.) - Retail (e.g. clothing stores, commercial banks, restaurants, etc.) - Offices - Healthcare facilities - Hotels and hospitality buildings - Special or mixed purpose buildings (e.g., airports, shopping centres, recreational centres etc.)
<p>Cost Structure</p> <p>Purchase, installation and financing cost of energy efficient equipment. Operation and Maintenance costs of installed equipment. Fees of consultants, contractors and ESCO personal. Costs associated with the measurement and verification of energy savings = Recurrent monetary reward to the building owner. Marketing and advertisement costs.</p>		<p>Revenue Streams</p> <p>Main revenue stream associated with the share of energy cost savings obtained by the clients, i.e., renters and building owner (the latter only if they occupy part of the building). Revenue stream for the operation and maintenance service. Additional revenue stream for equipment rent, in case the ESCO owns the equipment and rents it to the client for a fixed monthly fee. All the revenue streams are collected through the service fee.</p>		

Table 2: Business model for the implementation of the smart energy service in commercial rented buildings



5 REVISED CONTRACTUAL TEMPLATE CONSIDERING FEEDBACK FROM PILOT SITES

The contractual template for the smart energy service developed in D3.5 has been revised considering the feedback received from the pilot sites. The revised version is included in the Appendix 1 of this report. The changes applied to the contractual template concern:

- Inclusion of tenants in the contract has been made optional as it is not always possible, convenient or required.
- The clause about contract termination has been revised.

No changes have been identified for the flexible tariff template, which is included in Appendix 2 of this report.

5.1 INCLUSION OF TENANTS IN CONTRACTUAL AGREEMENT

Feedback received from the pilot site in Ireland is that the tenants do not need to be included in the ESCO contract. Their inclusion would complicate the negotiations and the achievement of the final agreements. Therefore, the contractual template of D3.5 has been modified removing all the clauses that apply to tenants. These clauses have been made “optional” and highlighted in yellow in the contract included in the appendix of this report.

5.2 CONTRACT TERMINATION

Feedback received from one of the pilot sites (Ireland) identified as a barrier with respect to landlord's decision making in energy efficiency measures, the fact that tenants sometimes are not planning to extend their lease. Moreover, they see an ESCO contract as good but have some concerns because if the landlord is going to sell the building, the contract may stay linked to that building, thereby complicating a sale. To address such concern, the clauses related to contract termination have been reviewed. The contract is obviously terminated if the ESCO does not meet the guaranteed savings for a certain period or provided a flawed system design or is not meeting any other contractual obligations, and it is also terminated if the client does not pay the fee to the ESCO. These clauses do not need to be modified. One additional clause (b.i) says that if the ESCO is delivering a good service (no conditions for termination due to poor performance of the ESCO apply) and the client wants to terminate the contract (that could be the case if one or more tenants are leaving), they must pay 12 additional months of monthly payments based on an average of the performance to the date that the termination notice was issued, in addition to any outstanding invoices and costs the ESCO has incurred in. This clause is relaxed instead of requiring 12 months payments, enabling more flexibility in the SmartSPIN template assuming that the parties can negotiate this amount. Twelve months payments may be a too high penalty and that can be the reason for a client to reject an ESCO contract.





6 ASSESSMENT OF USER EXPERIENCE ABOUT THE ENERGY MONITORING DATA PLATFORM DEVELOPED IN TASK 4.5

Task 4.5 User engagement through data - platform integration and visualisation (Front-end) developed the front-end of the Energy Monitoring Data Platform. This Platform fully supports the implementation of the processes and smart-contract characteristics previously developed within WP3. The assessment conducted highlighted the effectiveness of the Platform with respect to the visualisation and presentation of the outcomes generated by the data-driven algorithms developed in Tasks 4.2-4.4.

The front-end for energy monitoring and data visualisation developed by SMARKIA has been successfully used in the demonstration WP5 with the project pilot buildings. The Platform successfully delivered personalised dashboards to the different stakeholders involved: Occupants, Building or O&M manager, ESCO, Building Owner.

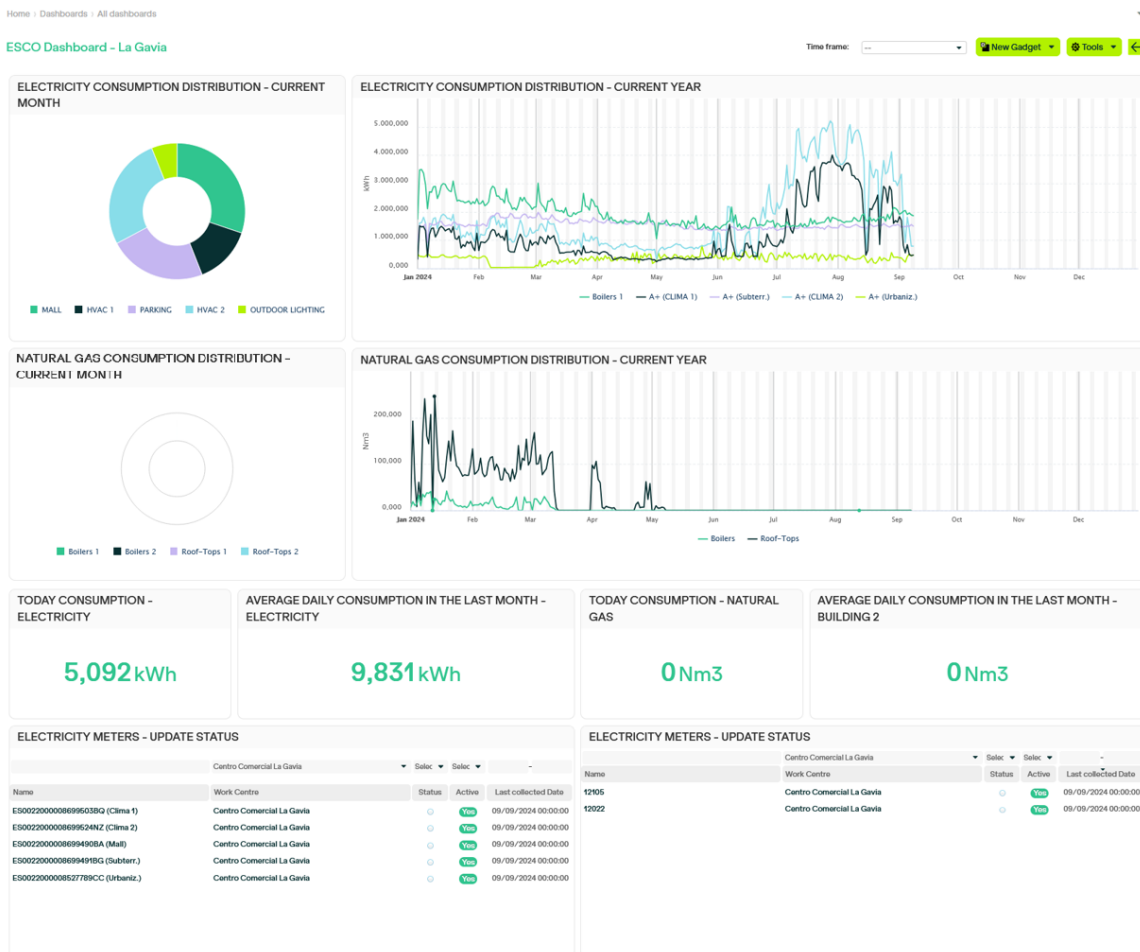


Figure 8: Energy Monitoring Data Platform Dashboard



Feedback was received from a building and O&M manager of the pilot site in Spain. The manager answered a questionnaire which was developed as part of the service validation task (T5.5). The questions and answers (highlighted in bold) received are listed below.

1. How useful is the Energy Monitoring Data Platform Dashboard to you? (10 very useful, 1 not useful) **9**
2. How would you rate the user-friendliness of the Energy Monitoring Data Platform Dashboard interface? (10 very user-friendly, 1 not user-friendly) **9**
3. What is your opinion about the organization of information on the screen? (10 very well organized, 1 not well organized) **9**
4. How often do you access the Energy Monitoring Data Platform Dashboard? **Every week**
5. How would you rate the reliability of the Energy Monitoring Data Platform Dashboard? (10 very reliable, 1 not reliable) **8**
6. How would you rate the quality of the content provided on the screen? (10 high quality, 1 low quality) **8**
7. Is it easy to find what you're looking for in the dashboard? **9**
8. If you could improve one thing about the Energy Monitoring Data Platform Dashboard, what would it be? **For owners and building management, it would also be highly beneficial to include a feature in the dashboard to track energy costs.**
9. What do you like best about the Energy Monitoring Data Platform Dashboard? **The information displayed is very intuitive and straightforward.**
10. What information do you use the most on the Energy Monitoring Data Platform Dashboard? **The comparison with baselines and the distribution of energy consumption within shopping centres**
11. What are the tasks you do frequently while using the Energy Monitoring Data Platform Dashboard? **Identify trends, anomalies, and opportunities for improvements.**

7 ASSESSMENT OF SMARTPHONE APP DEVELOPED IN TASK 5.4.

Task 5.4 has successfully delivered a gamification app to engage tenants to take actions that will further reduce building energy consumption, rewarding them for doing that. The smartphone app developed by Smarkia (Figure 2) can be used to compare the performance of tenants within the same building. It uses the principles of gamification, introducing a competitive element with respect to energy saving opportunities. During the demonstrations, the app has been used to help encouraging tenants to take energy saving actions that are within their control, and in that way, it contributed to the maximisation of energy savings. The assessment of the features of the gamification app reveals that it delivers a new mechanism providing added value from energy efficiency measures to landlords and tenants.

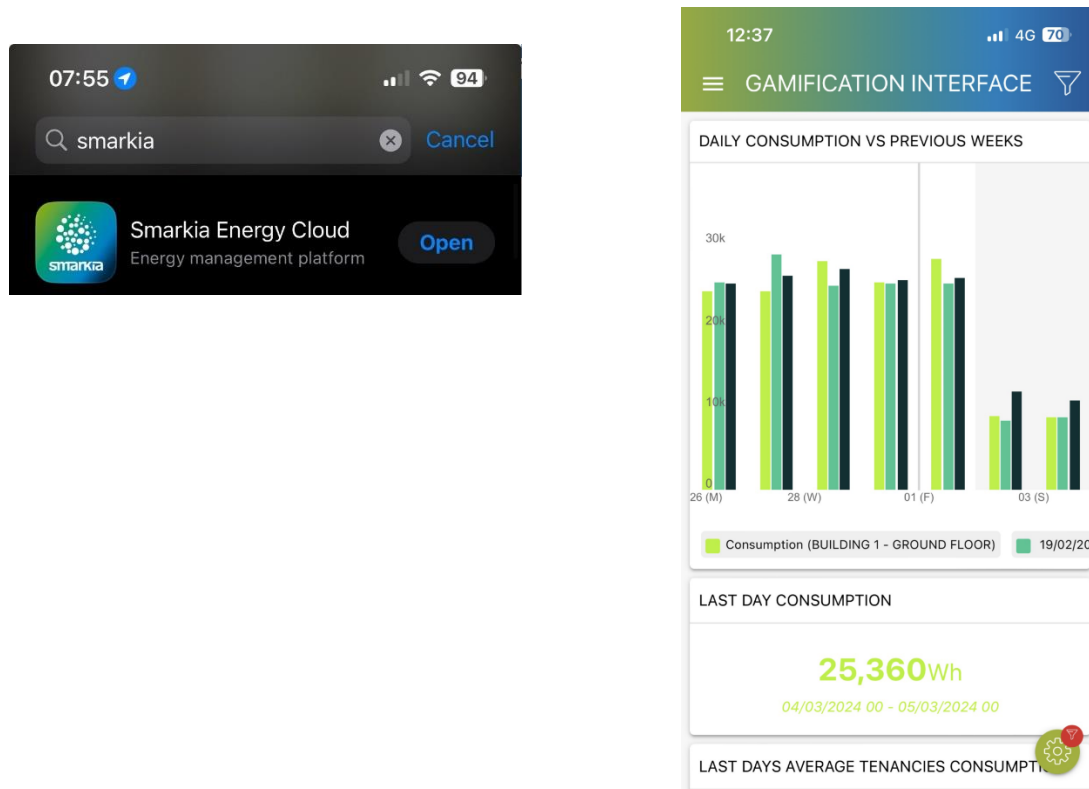


Figure 9: Gamification App

The gamification app has been reviewed by the pilot site owner in Spain. The feedback received highlights that the app's content and format are well-designed, and that it can effectively encourage tenants to take further actions to save energy.

8 THE EFFECTIVENESS OF SMARTSPIN SERVICE IN SOLVING THE SPLIT INCENTIVE ISSUE IN THE COMMERCIAL RENTED SECTOR

The feedback received from the pilot-sites supports the evidence that the SmartSPIN service can effectively solve the split incentive issue in the commercial rented sector in Spain, Greece and Ireland. SmartSPIN has developed a flexible service and contractual templates that can be adapted to the requirements of different commercial properties such as office buildings and shopping centres, with a minimal effort. The flexibility in the manner the parties can develop contractual agreements is key to achieve timely such agreements

SmartSPIN has demonstrated the effectiveness of a more holistic approach to the design of energy efficiency retrofits in commercial rented buildings, fostering the collaboration between landlords and tenants, improving the relationships between them and promoting their sustainability agenda, which is key to overcome the split incentive issue and unlock investments in energy efficiency measures. The project has promoted the ESCO services



in Spain, Ireland and Greece contributing with the demonstration of its service to the development of such markets.

The Irish pilot site elaborated a business case covering the harmonisation of tenant and landlord systems to achieve better performances. This feature significantly contributed toward overcoming the split incentive issue delivering an innovative service which would have not been delivered by the traditional approaches and design practices.

The ESCO approach proposed by SmartSPIN provided both the technical and financial solution to upgrades and fostered transparency about avoided cost within tenancies through metering and monitoring, which allows the recovery of a significant part of the investment costs incurred by landlord.

9 FEEDBACK RECEIVED FROM WP7 SURVEY ABOUT CONTRACTUAL AGREEMENTS BETWEEN ESCO, LANDLORD AND TENANTS

Results of the Stakeholders survey analysed in Section 4.5 of D7.5 Final Value Chain & Stakeholder Analysis confirmed that the most important clause to be included in a contractual agreement for a smart energy service for commercial rented properties, involving ESCO, landlord and tenants, is related to the sharing of energy savings between the parties (25% of the respondents). Such a clause was included in the contractual template developed in Appendix 1, i.e. clause "c" in subsection Energy Savings Calculation & Payment (Section A1.4, subsection "MEASUREMENT, VERIFICATION, GUARANTEE & PAYMENT").

Another important clause identified by the survey is related to performance guarantee (15% of the respondents). This clause defines a financial compensation to the ESCO's client when the actual energy cost savings are lower than an agreed Guaranteed Savings Threshold. This clause was also included in the contractual template developed in Appendix 1, i.e., clause "j" in subsection Energy Savings Calculation & Payment (Section A1.4, subsection "MEASUREMENT, VERIFICATION, GUARANTEE & PAYMENT").

Explanations about sharing of energy savings between ESCO, landlord and tenants, and performance guarantee (Guaranteed Savings Threshold) are provided in section A1.3 DEFINITIONS & INTERPRETATION.

10 CONCLUSIONS

This deliverable has presented a validation of the SES developed by SmartSPIN considering the feedback received by the pilot sites during the demonstration activities. The discussions with stakeholders occurred during the project enabled to identify the changes to the business model and contractual template enabling an effective delivery of the SES. With these changes and with the contribution of the energy monitoring data platform developed in T4.5 and the Gamification app developed in T5.4, the proposed



SES has shown that building owners have performed the necessary investments to achieve their sustainability goals (which were also reflected in the targets of SmartSPIN), successfully involving their tenants in the decision-making process. In conclusion, the approach proposed by SmartSPIN has demonstrated its effectiveness toward solving the split incentive issue in the commercial rented sectors in Ireland, Spain and Greece.

APPENDIX 1: CONTRACTUAL TEMPLATE

A1.1 CONTRACT OVERVIEW

This Energy Performance Contract (the “**Contract**”) is made and entered into as of the day of [] between:

- (1) [INSERT Landlord] having its registered office at [] (the “**Client 1**”); and
- (2) [INSERT Tenant] having its registered office at [] (the “**Client 2**”)¹; and
- (3) ABC (the “**ESCO**”);

each a “**Party**” and collectively the “**Parties**”) for the purpose of installing certain energy and operating cost saving equipment and provision of other services, as detailed in the accompanying Service Level Agreement, to save energy and costs for the Client’s property and buildings, known as [INSERT SITE NAME], located at [INSERT ADDRESS] (the “**Project Site(s)**”), and improve the overall sustainability of the Client’s business.

A1.2 RECITALS

WHEREAS, this Contract sets out to provide a workable framework between the Clients and the ESCO in providing energy & sustainability advice over the contract period;

WHEREAS, the ESCO has outlined to the Clients an estimated energy cost savings opportunity of €x1/annum for Client 1 and €x2/annum for Client 2 and a CO2 reduction of Y1 ton CO2eq/annum for Client 1 and Y2 ton CO2eq/annum for Client 2², which is to be unlocked through a combination of building assessment, engineering redesign, integration of smart technologies and a rigorous regime of monitoring and verification in addition to delivering new technologies and improved engineering efficiency over the course of the Contract period (as outlined in the accompanying Service Level Agreement);

WHEREAS, the Client 1 and Client 2 operate the Premises 1 and Premises 2 respectively, Client 1 is the owner of both the Premises 1 and 2, and requires energy and operating cost saving equipment and other sustainability related services; and

WHEREAS, the ESCO, in a first stage, will conduct an Investment Grade Audit (IGA), that will refine the initial proposal in order to reduce risks for all Parties, and will include comprehensive coverage of the Energy Conservation Measures (ECMs) to be installed, capital costs, savings (including financial and tonnes of CO2), payback period and the measurement & verification (M&V)

¹ More Clients (tenants) may be included for a multitenant building.

² Add more Clients if applicable (tenants).



plan separately for the premises operated by Client 1 and Client 2; and

WHEREAS, the Clients wishes to engage the ESCO to procure, install, operate and maintain certain energy-saving equipment and to provide other services described in accompanying Service Level Agreement (in the appendix). This agreement states all the services, in detail, that the ESCO commits to provide to the Clients.

interventions harvesting easy win savings, the second in more capital-intensive interventions that will yield greater savings and carbon reductions but with longer payback. This template may be used for Phase 1 and Phase 2 or for Phase 2 alone.

As Client 2 represents the Tenant there are likely to be many cases where contracts attempt to aggregate or have multiple Client 2 type profiles.

The ESCO will ideally deliver this service in two distinct phases – the first with low-cost

A1.3 DEFINITIONS & INTERPRETATION

The following words and expressions shall have the following meanings respectively:

Actual Energy Cost Savings	means the reduction in the monthly energy costs at the Premises saved as a result of the Works determined by comparing the actual energy costs after the Works for the relevant Guarantee Month to the previously established Baseline energy costs. They are evaluated for each Client involved in this EPC.
Baseline	means the monthly energy consumption (day electricity, night electricity and natural gas) of the baseline year, against which energy savings will be measured.
Budgeted Energy Savings	means the expected monthly energy saving at the Premises as a result of the Works determined by comparing the expected energy costs after the Works to the previously established Baseline energy costs. The Budgeted Energy Savings will not be constant since this project involves a phased implementation of works (over 3 years). See schedule A (subject to IGA).
Commencement Date	means the date from which the Energy Savings shall be calculated under this Agreement, being the first day of the next month after the commissioning of the first stage of works (this project involves a phasing of implementation works). Clients 1 and 2 may have different commencement dates for the energy efficiency service that they receive from the ESCO.
Energy Type	means night electricity, day electricity and natural gas.
Equipment	means the goods, materials and equipment to be installed at the Premises operated by each Client by the ESCO, as part of the Works together with any and all additions and modifications made thereto during the Term. The equipment is normally purchased by Client 1 that is the owner of all the premises including those operated by Client 2. Alternatively, the ESCO may purchase the equipment and lease it to the Clients.
Existing Equipment	means the energy related equipment owned by each Client and installed at the Project Site(s) prior to the execution of this Contract
IGA	means Investment Grade Audit. The accompanying Service Level Agreement to this Contract details the scope of works carried out under the Investment Grade Audit.
Service Level Agreement	means the document that details all services the ESCO must provide to the Client in the context of this Contract and can be found in the appendix of this document.
Guaranteed Savings Threshold	means the level of guaranteed savings to the Client. The ESCO will apply different guaranteed savings thresholds to the Clients defined in this EPC depending on the equipment that installed at the premises that they operate. If the actual annual savings are lower than the Guaranteed Savings Threshold, the ESCO must financially compensate the Clients in the difference between actual savings and the corresponding Guaranteed Savings Thresholds. Savings higher than this threshold are shared between ESCO and Clients in a proportion defined in Clause 8.c.
Energy Cost Savings of Client 2 (tenant) paid to Client 1 (landlord)	means the fixed fraction of the monthly energy cost savings that Client 2 (tenant) obtains which is paid to Client 1 (landlord) by the ESCO to incentivize the energy efficiency project (that requires equipment purchase and installation of energy efficiency measures paid by Client 1 in the premises operated by Client 2). This fraction will be agreed by the parties, and it is up to 100% of the energy cost savings of Client 2.
Performance Period	means the period that extends from the Commencement Date until 8 years after (96 months). There are 3 Performance Periods that start at different points. Performance Period 1 starts upon commissioning of main building works and applies to Client 1 only (landlord),

D5.5 – Validation of the SmartSPIN Service



	Performance Period 2 ³ starts upon commissioning of tenant and applies to Client1 and Client2 ⁴ and Performance Period 3 starts upon commissioning of PV project. Each Performance Period lasts normally for 96 months. See Schedule A for clarification.
Works	means the management, procurement, construction, installation, testing and commissioning works to be carried out by the ESCO as more particularly described in the IGA at the premises operated by Client 1 and Client 2.

³ This period may be divided into two subperiods, where only low-cost measures are installed in the first subperiod and any measures are installed in the second subperiod.

⁴ Consider more performance periods in case of multitenant building.



A1.4 SPECIFIC DETAIL

PHASE 1 – DESIGN AND DELIVERY OF OPTIMUM SOLUTION

Project Planning / Investment Grade Audit

- a. The ESCO will build on a proposal already developed and presented (as per Schedule A) to work up a detailed and fully engineered and costed upgrade scope. This will yield the following key information:
 - i. Scope of works / ECMs to be implemented,
 - ii. Capital costs,
 - iii. Energy savings, cost savings and CO2 savings,
 - iv. Energy Baselines (Monthly)
 - v. Routine adjustments to Baseline (accordingly to Heating Degree Days and occupancy)
 - vi. Total Budgeted Energy Savings
- b. The Clients agree to work diligently to provide full and accurate information.
- c. The ESCO agrees to work diligently to assess the validity of the information provided and to confirm or correct the information as needed.
- d. The Parties contemplate that this will be an interactive process and that the Client will have a reasonable amount of time to review the IGA, at different development stages.
- e. Once the IGA is completed, it will be presented to the Client a full suite of opportunities, actionable scope and details of the Measurement and Verification Plan that shall be agreed with the Client. The Client must issue a Notice of Acceptance of Investment Grade Audit which is an indication to proceed to the implementation stage.

Project Design/Implementation Stage

- a. The Scope of Works will be detailed in the IGA and will be approved upon issue of Notice of Acceptance of Investment Grade Audit. The accompanying SLA and Schedule A provides an overview of implementation timelines.
- b. As per the accompanying Service Level Agreement, the ESCO shall provide the design services for the systems that are part of the optimum solution identified in the IGA, project management and supervision of all sub-contractors, equipment and sub-contractor procurement, energy procurement and bills analysis, accessing government grants and an initial assessment of the Client's carbon footprint.
- c. The ESCO shall supervise and direct the Works and shall ensure that the completed Works are fit for their intended purpose and shall be responsible for all construction and installation means, methods, techniques, sequences and procedures and for coordinating all elements of the Works.
- d. All equipment and installation costs are borne by the Client.

PHASE 2 – DELIVERY OF ENERGY SAVINGS

Services for Delivery of Energy Savings

- a. The Services to be provided during the duration of this Contract are detailed in the contracts Service Level Agreement (Phase 2 services).
- b. Phase 2 services shall be initiated upon commissioning of works and start of Performance Period 1 and last until the end of Performance Period 3.
- c. The ESCO shall perform the Services with all the skill, care, diligence, efficiency and professional conduct reasonably to be expected from a professional with the qualifications and experience suitable for the performance of the Services and in the appointment and monitoring of its agents, employees and Subcontractors and shall do so in accordance with the provisions of this Contract.



Equipment Service

- a. The Client may not make any changes (move, remove, alter, add accessories, etc.) to the operation and maintenance of the equipment without the prior written approval of the ESCO, unless in an emergency when the ESCO cannot be reasonably notified.
 - b. The Client commits to use only suitable qualified maintenance specialists.
 - c. The Client shall use reasonable endeavours to notify within 24 hours the ESCO of it becoming aware of the occurrence of any malfunction or emergency condition affecting the operation of the Equipment or Existing Equipment that might impact upon the Energy Savings, such as, but not limited to:
 - I. Any malfunction in the operation of the Equipment or any pre-existing energy related equipment that might materially impact upon the guaranteed energy savings;
 - II. Any interruption or alteration to the energy supply of the Project Site(s);
 - III. Any alteration or modification in any energy-related equipment or its operation.
 - d. All services the ESCO commits to provide, in relation to Equipment Maintenance Services, for the duration of this Contract are detailed in the accompanying Service Level Agreement.
 - e. The ESCO shall have no responsibility for performing maintenance, repairs or making manufacturer warranty claims relating to the Equipment, other than the services mentioned in the Service Level Agreement.
 - f. All costs related to fixing or replacing faulty equipment are borne with the Client.
- a. The Services to be provided during the duration of this Contract are detailed in the accompanying Service Level Agreement (Phase 3 services).
 - b. Phase 3 services shall be initiated upon commissioning of works and start of Performance Period.
 - c. The ESCO shall perform the Services with all the skill, care, diligence, efficiency and professional conduct reasonably to be expected from a professional with the qualifications and experience suitable for the performance of the Services and in the appointment and monitoring of its agents, employees and Subcontractors and shall do so in accordance with the provisions of this Contract.

MEASUREMENT, VERIFICATION, GUARANTEE & PAYMENT

Savings Guarantee

- a. ESCO will financially guarantee 60% (variable/contract) of the Budgeted (Estimated) Energy Cost Savings:
 - i. Annually, if the % Savings fall short of a Guaranteed 60% Savings from baseline to anticipated savings (Budgeted Energy Cost Savings to be defined after IGA), ESCO must compensate Client 1 and /or Client 2 the relevant difference.
- b. The Guaranteed Savings Threshold is a function of the Budgeted Energy Cost Savings (60% of Budgeted Energy Cost Savings), which is not constant across the Contract duration due to phasing out of implementation of works (see Schedule A).
- c. The calculation of Clause 8.a. will follow the International Performance Measurement and Verification Protocol (IPMVP) and fully respect baseline changes. The baseline changes will respect the baseline routine adjustments laid out in the IGA (according to outdoor air temperature and occupancy levels) and Clause 10 of this Contract.

PHASE 3 – CARBON REDUCTION JOURNEY

Services for Carbon Reduction Journey

Energy Savings Calculation & Payment



- a. The Client agrees to provide the ESCO direct access to utility bill information, by automated data transfer as feasible.
- b. From the Commencement Date the Clients shall pay the ESCO the Monthly Payment which shall be payable by the Client within 30 days of the end of the calendar month to which the payment relates.
- c. From the Commencement Date of the Performance period 2, the ESCO shall pay a monthly amount to Client 1 that is proportional to the energy cost savings achieved by Client 2 proportional to Client 1's investment where they are responsible for the generation of those savings. Where Client 2 achieves savings through operational changes or investments he makes then these must be separated and Client 1 cannot receive saving payments associated with these.
- d. Monthly Reporting and Reconciliation period of 3 month initially and 6 months thereon apply to both Client 1 and Client 2.
- e. The Monthly Payments will be in effect from the commencement of Performance Period 1 (commissioning of 1st Stage of works in Premises 1) until the end of Performance Period 3 (96 months after commissioning of PV project)
- f. The calculation of Actual Energy Cost Savings will follow the International Performance Measurement and Verification Protocol.
- g. The Baselines, against which Actual Energy Cost Savings will be measured, will be determined in the IGA and approved by the Clients upon issuance of Notice of Acceptance of Investment Grade Audit. Schedule A contains provisional values for the Budgeted Energy Cost Savings. These are not constant throughout the years since the implementation of this Contract is phased in time.
- h. Actual Energy Cost Savings are measured individually for each Energy Type (night electricity, day electricity and natural gas) and their respective Baselines.
- i. The Monthly Payment to the ESCO shall include the 65% of Actual Energy Cost Savings achieved above the Guaranteed Savings Threshold. Table and chart in Schedule B present this in a visual format.
- j. Where Actual Energy Cost Savings are lower than the Guaranteed Savings Threshold, the ESCO shall financially compensate the Clients and Clause 8 applies.
- k. The ESCO will calculate the above savings at the end of each month and provide the client with a copy of same and a VAT invoice.

Adjustment of Values for the Baseline Energy Consumption

- a. Routine adjustments to the Baseline will be done in accordance to Heating Degree Days, occupancy rates and meals following the methodology that will be laid out in the IGA.
- b. In the calculation of Energy Savings, the Baseline shall subject to the provisions set out in the IGA, that requires the Client's formal approval, and will remain constant for the duration of this Contract, except in circumstances where there is:
 - i. a change in the use of all or part of the Project Site(s);
 - ii. a modification to or enlargement of the Project Site(s);
 - iii. implementation of new standards and/or any kind of regulation governing lighting, temperature, relative humidity or ventilation conditions in the Project Site(s)
 - iv. additional enhancements to or reduction of the scope of the Works requested by the Client which differ from those proposed in the Investment Grade Audit and Design Documents;
 - v. replacement or repair of the Equipment and/or Existing Equipment in order to improve its efficiency or functionality;
 - vi. additional work requested in writing by the Client that results in an increase or decrease in the amount of Energy used within the Premises;



vii. other changes affecting the Baseline.

- c. After consultation with and upon prior written approval by the Client the ESCO may, if it deems it necessary, increase or decrease the Baseline as a result of any of the changes referred to in Clause 10.b. This assessment must take place across both Client 1 & Client 2 premises so that there is equity in the baseline adjustment.

Provisions for Phased Implementation of Works

- a. Where project phases occur across milestone timelines the savings calculations will adjust and increase as additional projects are executed. This will require adjustment and recalculation of savings apportionment and needs to get both Client 1 & Client 2 agreement
- b. Upon commissioning of each of the Work Stages, a new Performance Period commences that increases the Budgeted Energy Cost Savings, and consequently the Guaranteed Savings Threshold (which is always 60% of the Budgeted Energy Cost Savings). See Schedule A for clarification.
- c. In the same way, when each Performance Period ends, the Budgeted Energy Cost savings is reduced, since the payment relative to those respective energy conservation measures is completed. See Schedule A for clarification.

MISCELLANEOUS

ESCO as Works Supervisor, Project Governance, Assignment & Subcontracting

- a. The ESCO is deemed to be the prime Works supervisor under this Contract and the ESCO assumes full responsibility for the delivery of the Works and/or Services and shall assume all the duties, responsibilities and obligations associated with the position of supervisor for all Works.
- b. The ESCO shall require its employees, agents and Subcontractors to exercise due skill, care, diligence, efficiency and professional conduct in the carrying out of any obligations allocated, assigned or subcontracted by the ESCO to its employees, agents and Subcontractors

pursuant to its obligations under this Agreement.

Disruptions to Energy Cost Savings Performance

- a. In the event of any failure or delay in Energy Cost Savings performance for *force majeure* or reasons that fall outside the control and cannot be remediated by either Party (e.g. restrictions or restraints of governmental authorities whether State or local, war, revolution, civil commotion, natural disasters, vandalism, acts of civil or military authorities) the following provisions apply:
- i. If the Contract was ongoing for over one year, the Client's payments to the ESCO will be fixed based on the average of the Energy Cost Savings previously achieved. This remains until the Project Site(s) returns to normal operation.
 - ii. If the Contract was ongoing for less than a year, the Client's payments to the ESCO will be fixed based on the Budgeted Energy Savings (determined in the IGA). This remains until the Project Site(s) returns to normal operation.
- b. Dependant on agreement from the Parties, the Contract can be suspended and later extended in the same number of months for which the suspension took place. In this case, Clause 13.a. is overruled.
- c. In the case the Client fails to notify the ESCO of a change in operating conditions and equipment (e.g. increase of temperature set points, addition of new energy consuming equipment, change of activities in some spaces, etc.) and this materially impacts the Actual Energy Cost Savings in a given month, the ESCO holds the right to invoice an amount based on the average performance of the previous months.
- d. If the client fails to notify the ESCO within 24 hours of a malfunctioning equipment (Clause 6.a) that negatively affects energy



savings, and/or does not initiate corrective actions within 5 business days, ESCO holds the right to invoice an amount based on the average performance of the previous months.

Notice

- a. Any notice required or permitted hereunder shall be deemed sufficient if given in writing and delivered personally or sent by registered or certified mail to the address shown below or to such other persons or addresses as are specified by similar notice.

To the Clients: Attention:
Include Copy to:

Termination and Consequences of Termination

- a. The Client shall be entitled to terminate the Contract, without any further payment, by written notice to the ESCO during the Term of this Contract if:
 - i. the ESCO fails to meet the Guaranteed Savings Threshold for a total of 12 months or more within any 18-month period of the Performance Period;
 - ii. the ESCO's design or installation is flawed, and the equipment is not operating properly and the ESCO does not take corrective action within 45 days after receipt of written notice of such breach having been served by Client;
 - iii. the ESCO commits any material breach of the terms hereof and fails to remedy same within 45 days after receipt of written notice of such breach having been served by Client; or

b. When Clauses 14.a.i, 14.a.ii and 14.a.iii are not met, the Client shall be entitled to terminate the ESCO's obligations under this Agreement at its election on 30 business days' notice in writing to the ESCO. In this case, the Client must pay to the ESCO:

i. ___ additional months of monthly payments based on an average of the performance to the date that the termination notice was issued in addition to any outstanding invoices and costs the ESCO has incurred in.

- c. The ESCO shall be entitled to terminate the Contract, without any further obligation, by written notice to the Client during the Term of this Contract if:
 - i. If the Client fails to pay the ESCO any sum due for a service for a period of more than 60 days after written notification by ESCO that Client is defaulting in making payment, and provided the ESCO is not in default in its performance under this Contract;
 - ii. the Client commits any material breach of the terms hereof and fails to remedy same within 45 days after receipt of written notice of such breach having been served by Client; or
- d. When Clauses 14.d.i and 14.d.ii are not met, the Client shall be entitled to terminate the ESCO's obligations under this Agreement at its election on 30 business days' notice in writing to the ESCO. In this case, the Client must pay to the ESCO:

Events of Payments Default

- a. If the ESCO fails to pay the Client any owed Guarantee, for a period of more than 60 days after written notification by Client that ESCO is defaulting in making payment, and provided the Client is not in default in its performance under this Contract, the Client holds the right to exercise all remedies available at law or in equity or other appropriate proceedings for recover of amounts due by the Client and/or for damages which shall include all costs and expenses reasonably incurred in exercise of its remedy.
- b. If the Client fails to pay the ESCO any sum due for a service for a period of more than 60 days after written notification by ESCO that Client is defaulting in making payment, and



provided the ESCO is not in default in its performance under this Contract, the ESCO holds the right to exercise all remedies available at law or in equity or other appropriate proceedings for recover of amounts due by the Client and/or for damages which shall include all costs and expenses reasonably incurred in exercise of its remedy.

Dispute Resolution

- a. If a dispute or difference arises between the Parties with regard to or in connection with this Agreement, such dispute shall be referred in writing to senior members of each of the Client and the ESCO who will use good faith efforts to resolve such dispute within 30 (thirty) days of such referral.

If the Parties are unable to resolve the matter within the thirty (30) day period in Clause 13.1 the Client and the ESCO will attempt to resolve the dispute in question by mediation. Any such mediation will be conducted by a mediator to be mutually agreed upon between the Parties or in the absence of such agreement upon the request of either Party to the Chairman for the time being of the Chartered Institute of Arbitrators, European Branch.

Governing Law

This Contract shall be governed by and confirmed in all respects in accordance with the laws of relevant European Country.



A1.5 SAVINGS AND COST ESTIMATES

The payments schedule for the remaining works (Client 2 Upgrades and PV project) are to be agreed between ESCO and Client before their implementation (€x).

For Phase 2 (Delivery of energy savings) and Phase 3 (Carbon Reduction Journey) the payment is based on Actual Energy Cost Savings each month. The ESCO will receive payments of 65% of the energy cost savings achieved beyond the Guaranteed Savings Threshold (which is 60% of the Budgeted).

A1.6 SCHEDULE A – SCOPE OF WORKS AND PROPOSAL

List of ECMs:

ECMs	Cost	Annual Savings	Payback	Landlord	Tenant
Heat Pumps			4.4	x	x
Back of house lighting			2.9		x
Controls/ventilation			3.0		x
Pump replacement			5.4	x	
72 kWp PV installation			9.1	x	x
Wireless TRVs			2.7		x
Monitoring system				x	x
Renewable Heat Support Scheme Grant			-		
EXEED Grant			-		
TOTAL			3.4		

A1.7 SCHEDULE B – PAYMENTS SCHEDULE

For Phase 1 (Design and Delivery of Optimum Solution) the payment to the ESCO works will be of The table below details the payments for each item to be paid in the first implementation stage (Premises owned and operated by Landlord), which amount in total to €.... Some items will only start to be mobilised by the ESCO upon receiving a pre-payment. The final payment will be executed when the item has been completed.



APPENDIX 2: FLEXIBLE TARIFF TEMPLATE

A2.1 CONTRACT OVERVIEW

This Electricity Supply Contract (the “**Contract**”) is made and entered into as of the day of [01/07/2023] between:

- (1) [INSERT Client] having its registered office at [] (the “**Client**”); and
- (2) [INSERT Electricity Supplier] having its registered office at [] (the “**Electricity Supplier**”);

each a “**Party**” and collectively the “**Parties**”) for the purpose of supplying electrical energy using a Flexible Tariff, to reduce monthly electricity costs for the Client’s property located at [INSERT ADDRESS].

A2.2 RECITALS

1. This Contract sets out to provide electricity supply at a convenient rate accounting for the possibility to avail of flexibility in electricity consumption offered by the Client, which enables to shift consumption from peak hours to non-peak hours;
2. The Client provides daily electricity consumption data from 5:00 to 11:00 and from 15:00 to 2:00 (peak hours) for the past 12 months as well as the amount of electricity consumption that can be reduced in those peak hours and/or moved to non-peak hours (flexibility in electricity consumption);
3. The Electricity Supplier after analysing the electricity consumption and flexibility data provided by the Client outlines to the Client a discounted electricity tariff of x_1 €/kWh from 8:00 to 20:00 (day tariff), and of x_2 €/kWh from 20:00 to 8:00 (night tariff) provided that the Client agrees to be flexible with electricity consumption reducing the average consumption in a month of at least C_1 kWh from 5:00 to 11:00 and of at least C_2 kWh from 15:00 to 2:00.
4. The Electricity Supplier outlines that it is acceptable that the consumption is increased up to z_1 kWh from 11:00 to 15:00 and up to z_2 kWh from 2:00 to 5:00 (non-peak hours) without affecting the electricity tariff that is applied (electricity consumption shift).
5. The Electricity Supplier outlines that if the total average reduction in electricity consumption C from 5:00 to 11:00 and from 15:00 to 2:00 in a month is lower than the agreed target $C_1 + C_2$ then the electricity tariff applied to the Client will be increased of an amount $\alpha(C_1 + C_2 - C)$ where α represents the tariff increment in € for each kWh of energy consumed in excess of the agreed reduction (flexibility) in the peak hours $C_1 + C_2$. In such case the electricity tariff applied by the electricity supplier to the Client will be $[x_1 + \alpha(C_1 + C_2 - C)]$ €/kWh from 8:00 to 20:00 (day tariff), and from $[x_2 + \alpha(C_1 + C_2 - C)]$ €/kWh from 20:00 to 8:00 (night tariff).

Day	Electricity consumption peak hours 05:00 – 11:00	Flexibility peak hours 05:00 – 11:00	Electricity consumption peak hours 15:00 – 02:00	Flexibility peak hours 15:00 – 02:00
01/01/2023	40 kWh	15 kWh	62 kWh	20 kWh
02/01/2023	38 kWh		59 kWh	
03/01/2023	41 kWh		55 kWh	
04/01/2023	36 kWh		57 kWh	
...	
01/02/2023	37 kWh	12 kWh	59 kWh	17 kWh
02/02/2023	35 kWh		43 kWh	
03/02/2023	29 kWh		51 kWh	
			49 kWh	
Please include one year data				





APPENDIX 3: PERFORMANCE-BASED CONTRACT AGREEMENT FOR PILOT SITE IN IRELAND

This Agreement is made and entered into as of the [Insert Date], by and between Jones Lang LaSalle (JLL), located at 30 Herbert Street, Dublin, Ireland (hereinafter referred to as “Client”), and Lawler Sustainability, located at [Insert Address] (hereinafter referred to as “Consultant”).

The Client and Consultant may be referred to individually as a “Party” or collectively as the “Parties”.

1. SCOPE OF WORK

The Consultant agrees to provide management and optimisation services for the Building Management System (BMS) and Metering System at 30 Herbert Street, as per the following terms and conditions:

- Management and optimisation of BMS for energy efficiency improvements.
- Continuous monitoring and reporting on metering systems.
- Implementation of measures to reduce energy consumption and operational costs.
- Collaboration with on-site personnel and other relevant stakeholders to ensure efficient operation of the systems.
- Monthly reporting of energy savings and progress toward energy reduction targets.

2. PERFORMANCE TARGETS

The Consultant shall aim to achieve a minimum of 60% of the targeted energy savings identified during the baseline assessment of the building’s energy usage. The target savings are [Insert target savings].

3. COMPENSATION AND FEE STRUCTURE

1. Monthly Fee: The Client agrees to pay the Consultant a monthly optimisation fee of €2,000 (two thousand euros), contingent upon the achievement of at least 60% of the targeted energy savings for the building.
2. Reduced Fee: In the event that the achieved savings fall below the 60% threshold, the Client shall pay the Consultant a reduced fee of €1,000 (one thousand euros) for that respective month.
3. Target Review: The agreed-upon targets for energy savings shall be reviewed and potentially adjusted on a quarterly basis to account for any changes in operational conditions, facility use, or external factors beyond the control of the Consultant.

4. MEASUREMENT AND VERIFICATION



1. **Baseline Energy Use:** A baseline energy consumption will be established at the commencement of this contract. This baseline will be determined based on historical energy usage data and will form the reference point for measuring energy savings achieved through optimisation efforts.

2. **Monitoring:** Energy savings will be monitored continuously using the BMS and metering system, and results will be reported monthly by the Consultant to the Client. Savings will be determined through a comparison of actual energy consumption against the baseline figures.

3. **Verification Process:** The energy savings shall be verified using standard measurement and verification (M&V) protocols, such as the International Performance Measurement and Verification Protocol (IPMVP), or any other method agreed upon by both Parties.

4. **Non-Routine Adjustments:** Non-routine adjustments are factors that were not expected to change, but that will affect the building’s energy use, beyond the impact of the energy efficiency measures installed as part of the Energy Performance Contract. Any non-routine changes to the building operation need to be identified, which is both a responsibility of 30 Herbert Street and Lawler Sustainability.

5. Examples of Non-Routine Adjustments

- A change in the facility size
- A change in operating hours or equipment operation
- A change in space type/use
- A change in zone temperature set points
- A change in boiler setpoints, humidity or CO2 set point
- Change in occupancy density

6. M & V Responsibility and Roles:

Responsibility and Roles	Party
Creation of Monthly M & V report	Lawler Sustainability
Apply Routine Adjustment	Lawler Sustainability
Approve non-routine adjustments within a reasonable timeframe	30 Herbert Street
Perform routine interviews and site-visits to assess non-routine adjustments	Lawler Sustainability
Identify major changes in static factors that can affect energy consumption significantly	30 Herbert Street & Lawler Sustainability
Report changes in occupancy schedules	30 Herbert Street
Report on changes in systems schedules	30 Herbert Street
Report equipment addition, removal and/or shutdown in the building	30 Herbert Street
Monthly invoice to Client for performance fees, accompanied by respective M&V Report	Lawler Sustainability



5. DURATION AND TERMINATION

1. Term: This Agreement shall commence on [Insert Date] and continue for a period of 12 months, unless terminated earlier in accordance with the provisions set out in this Agreement.
2. Termination for Convenience: Either Party may terminate this Agreement by providing the other Party with thirty (30) days' written notice of termination.
3. Termination for Cause: Either Party may terminate this Agreement immediately if the other Party is in material breach of any of its obligations under this Agreement and fails to remedy such breach within fourteen (14) days of receiving written notice of the breach.
4. Effect of Termination: Upon termination of this Agreement, the Consultant shall be entitled to payment for all services provided up to the effective date of termination. Any outstanding savings performance reports shall be delivered within thirty (30) days of termination.

6. CONFIDENTIALITY

The Consultant shall treat as confidential all information provided by the Client in connection with the performance of the services under this Agreement. The Consultant shall not disclose any such information to third parties without the prior written consent of the Client, except as required by law.

7. LIABILITY

The Consultant will not be liable for any loss or damage arising from factors beyond its control, including but not limited to:

- Unforeseen building conditions.
- Changes in energy prices or tariffs.
- Changes in the building's usage or occupancy levels.

However, the Consultant will be liable for any losses or damages arising from gross negligence, fraud, or wilful misconduct in the execution of the services under this Agreement.

8. FORCE MAJEURE

Neither Party shall be liable for any failure to perform its obligations under this Agreement if such failure results from circumstances beyond the reasonable control of that Party, including, but not limited to, acts of God, natural disasters, war, or any other force majeure event.

9. GOVERNING LAW

This Agreement shall be governed by and construed in accordance with the laws of Ireland. Any disputes arising under or in connection with this Agreement shall be subject to the exclusive jurisdiction of the courts of Ireland.

10. ENTIRE AGREEMENT

This Agreement constitutes the entire understanding between the Parties regarding the subject matter hereof, and supersedes all prior agreements, discussions, and negotiations, whether written or oral.

11. AMENDMENTS



This Agreement may be amended only by a written document signed by both Parties.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date first above written.

Client (Jones Lang LaSalle):

Name: _____

Title: _____

Signature: _____

Date: _____

Consultant (Lawler Sustainability):

Name: _____

Title: _____

Signature: _____

Date: _____

This contract formalizes the management and optimization of the BMS & Metering System at 30 Herbert Street, with compensation linked to performance metrics.