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EXECUTIVE SUMMARY

This report aims to develop the value proposition for the NOVICE business model, which is an important part of the business strategy to deploy the dual services into the energy market.

Given the results of WP3, WP4 and WP5 and considering the results from a technical, legal, financial and economic point of view, competitive elements have been identified referring to:

- technical aspects, such as the duration of interventions, the technical reliability, the post-intervention comfort level, etc. ;
- legal/procedural aspects, for instance the activation speed according to standard contract models, the simplicity of regulations, etc.;
- financial/economic aspects, for example the payback periods, the increase in building value after interventions, the savings achievable in the medium/long term, etc.

Since there are three main stakeholders involved in the NOVICE model, three value propositions have been developed, one for the ESCOs, one for the aggregators and one for the end-users. In this case the term “end-users” refers to the building owners and energy or facility managers.

The result is presented in the following tables, which underline the benefits, values and problems solved by the NOVICE model for the ESCOs, aggregators and end-users.

Table 0-1: ESCO's value proposition

	ESCOs		
	BENEFIT	VALUE	PROBLEM
Technical	New expertise with minimal training	Technical reliability	Low availability of skilled personnel
	Offering a wider range of services through a one package solution	Improve reputation & USP	There is a lot of competition between ESCOs
	Agreeing on the method to do baseline + M&V	Ease of implementation/ efficiency	Aggregator and ESCOs might use different methods to do baseline and M&V separately and this might result in disputes
	Optimizing overall performance functionality to maximize all energy assets revenues	Avoidance of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid; Enhanced contract performance	Demand response and energy efficiency might need different operation of energy assets
Legal	Increased market maturity	Active player in growth of energy market	Market cannot grow without projects and case studies of successful projects
	Coordination between DR and EE services	Reduction of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid	Demand response and energy efficiency might need different contractual requirements on energy assets
	Business model can be used to support policy making	Provides evidence for policy making	There are no policies that support EPC
	Access to the aggregator market	Business growth into new markets	Traditional ESCO markets may become saturated

	Agreeing on the method to do baseline + M&V	Ease of implementation/ efficiency	Aggregator and ESCOs might use different methods to do baseline and M&V separately and this might result in contractual disputes
Financial	Unique selling point	Ease to convince the client	Difficulty to convince clients, difficulty to differentiate from competitors/stand out in the market
	Improved ROI	Obtain greater ROI	Risk of no/low ROI
	Shorter contract length	Opportunity to concentrate on new ventures sooner	The payback period on energy efficiency projects can be long
	Increased financial benefits through access to the aggregator market	Business growth into new markets	Traditional ESCO markets may become saturated

Table 0-2: Aggregator's value proposition

	Aggregator		
	BENEFIT	VALUE	PROBLEM
Technical	Offering a wider range of services through a one package solution	Improve reputation & USP	There is a lot of competition between Aggregators
	Agreeing on the method to do baseline + M&V	Ease of implementation/ efficiency	Aggregator and ESCOs might use different methods to do baseline and M&V separately and this might result in disputes
	Optimizing overall performance functionality to maximize all energy assets revenues	Avoidance of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid	Demand response and energy efficiency might need different operation of energy assets
Legal	Pre-contract / prospecting efficiency. One contract with ESCO. Sharing of cost of sales through combined exploratory work.	Sales process lead time and cost can be reduced, no need for contract negotiations with individual customers	Sales process is lengthy
	Access to the ESCO market & smaller assets	Business growth, increased chance of winning the project	Traditional aggregator markets may become saturated, DR project sales are difficult on its own
	Increases market maturity	Active player in growth of energy market	Market cannot grow without projects and case studies of successful projects
	Business model can be used to support policy making	Provides evidence for policy making	No policies for joint EE and DR services
	Agreeing on the method to do baseline + M&V	Ease of implementation/ performance during contract	Aggregators and ESCOs might use different methods to do baseline and M&V separately and this might result in contract disputes

Financial	Unique selling point	Ease to convince the clients	Difficulty in convincing the clients
	Improved ROI	Greater ROI	Risk of no/low ROI due to changing regulations/market conditions
	Access to the ESCO clients	Business growth	Traditional aggregator markets may become saturated

Table 0-3: End-user's value proposition

	End-user		
	BENEFIT	VALUE	PROBLEM
Technical	Reduction in CO ₂ emissions	Contribution to sustainability / CSR be part of the energy transition	Carbon taxes, regulations on energy management, requirements from customers to demonstrate green credentials, poor reputation, negative brand image
	Expert advice from aggregator on flexibility potential & options	Gain knowledge on flexibility potential	They do not know of their potential for flexibility
	Doing baseline + M&V only once	Reduction in cost	End-user may pay for baselining and M&V twice
	Smart building & smart readiness indicator	Improve reputation of tenants, attract best tenants	Businesses improve brand value/image by working in more environmentally sustainable buildings
		Getting ahead of competitors	There is competition between businesses
		Attracting and retaining highly skilled staff members	Lack of desire to work in an uncomfortable environment, complaints from building users
		Staff health and productivity benefits of working in a "smart" building	Poor air quality, ventilation and lighting can harm the health & productivity of staff
	Increased property value/ desirability of property	Tenants can choose different available properties	
Smart monitoring	Low cost, energy efficient operation	Energy costs and operational costs of running the building are always increasing, driving up overheads and reducing profitability	
Legal	One contact point for both ESCO and DSR services	Convenience / reduced administrative burden/ simplicity	It takes time to interact with different stakeholders
	One suite of services that addresses all of the client's energy needs	No hassle to deal with overlapping or conflicting contracts	In general decisions are made separately for each of the services and the client has contracts with several service providers, some of which may overlap and some may be in conflict with each other
	Increased confidence in service provider	Providing novel EE measures increases	For end-users that are outsourcing their energy management to an FM

		trust in the service provider	company, they can choose a different service provider
	No maintenance on technical equipment, as the performance guarantee moves the operational risk to the ESCO	No risk of need for capex for issues that may arise with the assets	Sometimes building assets do not work as intended
Financial	Increase in building desirability due to reduced energy bills, reduced environmental taxes, increased building smartness and the additional DR revenue	Increase in building sale or rental value and lower operating costs for the building	Operating costs keep increasing
	Verified savings / Increase in revenue	Economic profit	Lack of certainty / Fear of investing and not getting profit
	Reduction in contract length	Greater ROI/reduced payback period	Risk of no/low ROI
		Opportunity to invest in other contracts sooner	Not enough money to invest in contracts
	Paying for baseline and M&V only once	Reduced financial burden	Paying for baseline and M&V twice (ESCO and DSR)
	No upfront capital needed in EPC	Reduced financial burden	Difficulty to find financing

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ABBREVIATIONS

CAPEX	Capital Expenditure
DR	Demand Response
DSR	Demand Side Response
DSO	Distribution System Operator
EE	Energy Efficiency
EPC	Energy Performance Contract
ESCO	Energy Service Company
FM	Facility Manager
HVAC	Heating, Ventilation and Air Conditioning
M&V	Measurement and Verification
ROI	Return on Investment
TSO	Transmission System Operator

1 INTRODUCTION

1.1 NOVICE IN BRIEF

The NOVICE project aims to develop a new business model for integrating demand response services into energy efficiency projects. It builds on the Energy Performance Contracting business model for implementing energy efficiency projects and provides a new contracting agreement between the Energy Services Company (ESCO) and the aggregators providing demand response services. The NOVICE model intends to make better use of the end-user's assets and to offer them more saving opportunities, while providing much needed flexibility to the grid to accommodate for the evolving needs of the energy market.

1.2 STAKEHOLDERS

The following sections describe the different stakeholders involved, the way they interact with each other in the traditional market model, and how they have to work together in the NOVICE model.

1.2.1 ESCOs

An ESCO, or an Energy Services Company, provides a wide range of energy services to clients/end-users. These can include the design and implementation of energy savings projects, retrofitting, energy conservation, power generation and energy supply.

According to the definition of an ESCO by the Joint Research Centre of the European Commission (<http://iet.jrc.ec.europa.eu/energyefficiency/escos>), the three main characteristics of an ESCO are:

- ESCOs guarantee energy savings and/or provision of the same level of energy service at lower cost.
- The remuneration of ESCOs is directly tied to the energy savings achieved.
- ESCOs can finance or assist in arranging financing for the operation of an energy system by providing a savings guarantee.

1.2.2 Aggregators

The aggregator manages the flexibility towards the DSR markets, aggregates that into portfolios and contracts which are assigned to various market programmes, and they get paid by the network operator. Depending on their business model, the aggregators may or may not charge for the initial investment for installing the DSR equipment.

1.2.3 End-users

End-users are private or public individuals or entities that are in possession of title deeds of the building or the site.

1.2.4 New interaction between stakeholders

In the traditional market model, both ESCO and aggregator operate independently from each other, each one interacting separately with the client. In the NOVICE model, the client will interact only with the ESCO, while the aggregator is seen as a partner to the ESCO. Due to legal requirements, the interaction with the TSO and DSO, as well as payments for DSR services will be facilitated by the aggregator. However, on the client side, the specification, equipment, and works for enabling DSR will be incorporated into the wider energy efficiency measures and will be financed and handled through the ESCO. The DSR payment to the client for flexibility will reduce the EPC contract length.

1.3 OBJECTIVE OF THE REPORT

The objective of this report is to determine the value proposition offered under the dual energy services model.

A value proposition is a multi-step process of identifying the benefits that a certain product or service has to offer, describing the value that these benefits bring, identifying the client's problems and connecting these problems to the values offered by the product. The final stage is showing why the solution proposed is better than other solutions offered by competitors.

The methodology used for extracting the value proposition of the NOVICE model was to analyse the results of the WP3, WP4, WP5 and to extract technical, legal and financial benefits for the three stakeholders involved, the ESCO, the aggregator and the end-user. These benefits are then examined to derive the value that can be delivered from them, again taking into account all the collaborators in the project. The last step deals with identifying the existing problem that each benefit can help to solve.

The following sections look in more detail at what benefits the NOVICE dual services model could bring to each of the stakeholders described above.

2 ESCOs

2.1 TECHNICAL BENEFITS

Table 2-1: Technical value proposition for ESCOs

BENEFIT	VALUE	PROBLEM
New expertise with minimal training	Technical reliability	Low availability of skilled personnel
Offering a wider range of services through a one package solution	Improve reputation & USP	There is a lot of competition between ESCOs
Agreeing on the method to do baseline + M&V	Ease of implementation/ efficiency	Aggregator and ESCOs might use different methods to do baseline and M&V separately and this might result in disputes
Optimizing overall performance functionality to maximize all energy assets revenues	Avoidance of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid; Enhanced contract performance	Demand response and energy efficiency might need different operation of energy assets

In a standard EPC model, both ESCOs and aggregators interact independently with the client. In the new combined model, the client will interact only with a new type of company or ESCO that integrates energy efficiency and demand response measures, all part of a unified portfolio of energy efficient and cost-effective solutions. The ESCO would establish a business-relationship, whether through outsourcing, integrating or a temporary partnership with the aggregator to tackle new business opportunities.

From a technical point of view, the ESCOs can increase their technical reliability and possibly their reputation, by working closely together with the aggregators and having access to new expertise relating to demand response flexibility potential. Adopting the NOVICE model is a low risk approach for ESCOs to bring new expertise to the business. They can have access to information about demand response without having to use their company's time and money to train their personnel to become experts in the technology.

By offering a whole package solution, the ESCOs are able to present their clients with a wider range of services, which gives them a unique selling point. As a result, their reputation will improve and they will be placed ahead of their competitors.

Carrying out baselining and M&V by working together with the aggregators can avoid possible conflicts in the future. If the two do not consult with each other, the aggregator might come up with a different baseline or use different methods to measure energy consumption and to estimate flexibility potential. In such situations, the client may dispute what the ESCO claims the site can achieve as energy savings. A combined approach where the ESCO and aggregator agree the baseline and M&V approach before contracts are signed will avoid such disputes.

Designing and optimizing HVAC systems to maximize revenues from the flexible use of energy assets not only prevents any conflict between energy efficiency and demand response functionality, but it also maximizes the revenues achieved, improves the building efficiency, makes a building "smart" and

improves the thermal comfort. Because the demand response activities sit within the framework of the EPC, all parties are aware of each other's actions and thus it reduces the chance of parties breaching their agreement to work towards obtaining the best value from the installed equipment.

2.2 LEGAL BENEFITS

Table 2-2: Legal value proposition for ESCOs

BENEFIT	VALUE	PROBLEM
Increased market maturity	Active player in growth of energy market	Market cannot grow without projects and case studies of successful projects
Coordination between DR and EE services	Reduction of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid	Demand response and energy efficiency might need different contractual requirements on energy assets
Business model can be used to support policy making	Provides evidence for policy making	There are no policies that support EPC
Access to the aggregator market	Business growth into new markets	Traditional ESCO markets may become saturated
Agreeing on the method to do baseline + M&V	Ease of implementation/ efficiency	Aggregator and ESCOs might use different methods to do baseline and M&V separately and this might result in contractual disputes

From an ESCO perspective combining energy efficiency and demand response services offers several benefits and an improved value proposition for potential customers. The NOVICE model allows for an enhanced offering to customers, by proposing a more comprehensive assessment of the site's opportunities. In addition to improving the site's energy efficiency, the grid opportunities are also assessed. By offering the services as a combined assessment, the business model ensures that the grid services and the energy efficiency parts of the project are coordinated, thus eliminating any possible conflict between them. The advantage is that it avoids situations where site assets might be run inefficiently in order to generate demand side revenue.

In countries where commercial viability exists for the demand response services, the NOVICE model will help contribute to accelerating the uptake of energy reduction projects, thus increasing the market maturity. This offers a solution that can help in achieving the EU climate targets. As the NOVICE model is a new business concept and there are no regulations in place for such undertakings, projects employing this model could serve as a basis for policy making. Particularly in countries with a small, immature EPC market, adopting this type of business model could help boost the market. The research previously conducted in Deliverable 3.5 concludes that in some countries with ESCO markets that are not mature yet, there are not enough policies to support EPC. NOVICE provides evidence that a dual services EPC is beneficial and can therefore be used to support policies that promote EPC in general.

The NOVICE model results in an efficiency in the sales process through a collaborated dual service approach as aggregators can point the ESCOs to suitable sites with potential for, and a known interest in, energy saving. By working together, ESCOs and aggregators can also ensure that they use the same methods to set the baseline energy consumption and M&V approaches for determining the actual energy savings achieved. If the two produce different baselines, the client might dispute what the

ESCO or the aggregator propose as estimated savings. By agreeing on the methods of calculation, any legal disputes can be avoided.

2.3 FINANCIAL BENEFITS

Table 2-3: Financial value proposition for ESCOs

BENEFIT	VALUE	PROBLEM
Unique selling point	Ease to convince the client	Difficulty to convince clients, difficulty to differentiate from competitors/stand out in the market
Improved ROI	Obtain greater ROI	Risk of no/low ROI
Shorter contract length	Opportunity to concentrate on new ventures sooner	Energy efficiency projects can be long
Increased financial benefits through access to the aggregator market	Business growth into new markets	Traditional ESCO markets may become saturated

One financial benefit of the NOVICE model for ESCOs is that being able to offer dual energy services to their clients gives them a unique selling point compared to other ESCOs in the market. The ESCO may experience greater annual revenues from the addition of demand response, therefore making their offering more attractive to clients than those of other ESCOs. Having a more attractive package of measures, with an added bonus of DR revenues can help retain the client's interest by selling an additional service of flexibility to the grid.

Additional revenue from the installation of DR measures, O&M and possible project equity could increase with the NOVICE model when compared to a regular EPC project. For projects where the ESCO provides the financing, the revenue streams from participating in demand response will also contribute to improve the return on investment. In addition, as the initial financing will be recovered faster, the length of the contract decreases. As a result, the ESCOs can start concentrating their efforts on new business ventures sooner, and can also tackle measures that have longer payback periods, which would otherwise not be considered in a traditional EPC.

Noel Lawler Green Energy Solutions, one of the partners involved in this project, has provided data from a supermarket in Ireland for analysis as a NOVICE demonstration site. A mix of theoretical analysis and measured data, as well as quotes from an aggregator were used to assess whether adding demand response to an energy efficiency project would have an impact on the project payback period. The supermarket store site is located in Ireland and the energy efficiency project consists of:

- Lighting upgrades to energy efficient LEDs,
- Improvements to the control and operation of the HVAC system,
- Upgrades to the refrigeration system, including using new refrigerant to comply with F-gas regulations,
- Installation of a heat recovery system to use waste heat from the refrigeration system to preheat domestic hot water,
- Installation of solar PV panels on the roof.

By participating in several demand response programmes, the site gains revenue from selling its flexibility to the grid, thus the annual monetary savings improve by 9.3%. The project's payback period decreases from 11.8 years to 10.7 years (or a 9.3 % improvement) at no additional cost, as aggregators often supply the equipment for dispatching a demand response event free of charge. If the building owner also considers the installation of a 150 kW battery storage system on site, at an additional capital cost of €83,500, then the payback period of the project can be further reduced to 9.9 years, equating to a further 6.8 % improvement over and above the initial 9.3% improvement. In conclusion, the demonstration site showed that participation in the demand response schemes could improve the payback period of the project by between 9% and 16%. The reduction in payback period is an important result that improves the business case for traditional EPCs, making it easier for ESCOs to sell this type of project to their clients. A full analysis of the opportunities at this site are described in deliverable 6.2 Validation of the Business Model.

Another opportunities assessment performed by NLGES evaluated the potential benefits of implementing both energy efficiency and DR measures as part of a combined service offer. The site surveyed is an office with data centre located in Ireland. The building has a gross internal area of approximately 3,000 m². By making available the onsite backup generators and the uninterruptible power supply, the facility can participate in a range of demand response programmes available in Ireland. The site may be able to offer demand side units (DSU) or frequency response (known as DS3 in Ireland) to the TSO and be financially rewarded for providing demand side grid stabilization services. The results of the brief opportunities assessment for this site show that DR opportunities could account for 15% of the total monetary savings that can be achieved through implementing the package of energy efficiency and demand response measures that were identified.

If demand response is an automatic part of a set package within a portfolio of similar or identical sites (such as a hotel, restaurant, office chain) the incremental cost of including DR could bring even more value than applying the business model to each site individually/ separately.

Therefore, from the ESCOs perspective, adding the DR offer to their service package might increase their financial returns when they have a contract with a single owner of multiple sites, such as a restaurant, hotel chain or office block, or in the case of single large industrial sites. In general, large industrial sites are not traditional ESCO clients and don't often use EPC, so this demonstrates that there is still potential for the ESCO market to grow, if it is combined with DR as a single package. Additional DR revenues combined with energy efficiency measures that have a short to medium payback period could reduce the EPC contract length to within an acceptable range for private sector clients (typically less than 5 years).

Another possible advantage of this model is that the aggregator could bring customers to the ESCO. For example, an aggregator would benefit from having an ESCO offer energy efficiency services to their clients, because it would add greater value to the DR returns and may help to sell the demand response project if the client had a particular interest or drive to minimise their overall environmental impact.

3 AGGREGATORS

3.1 TECHNICAL BENEFITS

Table 3-1: Technical value proposition for aggregators

BENEFIT	VALUE	PROBLEM
Offering a wider range of services through a one package solution	Improve reputation & USP	There is a lot of competition between Aggregators
Agreeing on the method to do baseline + M&V	Ease of implementation/ efficiency	Aggregator and ESCOs might use different methods to do baseline and M&V separately and this might result in disputes
Optimizing overall performance functionality to maximize all energy assets revenues	Avoidance of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid	Demand response and energy efficiency might need different operation of energy assets

Demand response aggregators enjoy the same technical benefits as ESCOs. By collaborating with ESCOs, aggregators can expand their technical reliability and reputation by bringing new expertise to the business without increasing the risk to the company. They also have the opportunity to learn about which energy efficiency measures could be suitable for their clients.

Aggregators can increase their customer reach by having access to a wider range of opportunities. Some measures that would normally not be profitable alone to aggregators, might make sense when combined with other measures offered by the ESCO as a complete set of energy efficiency measures. For example, for a site that may not have a large turn down capacity, installing a CHP with thermal and electrical storage as part of an energy efficiency project would allow them to access they capacity and frequency response markets (if market conditions allowed) and thus bring the site into the scope of aggregators. By offering a whole package solution, aggregators are presenting their clients with a wider range of services, which gives them a unique selling point. As a result, their reputation will improve, giving them a competitive advantage as the market grows.

Carrying out baselining and determining the M&V approach by working together with the ESCOs can avoid possible conflict in the future. If the two do not consult with each other, aggregators and ESCOs might come up with a different baseline or use different methods to measure energy consumption and estimate energy savings or potential demand response revenues. Such situations can lead to contractual disputes if the client does not achieve the predicted energy savings or demand response revenues in reality. Designing and optimizing HVAC systems to maximize revenues from the flexible use of energy assets not only prevents any conflict between energy efficiency and demand response functionality, but it also maximizes the revenues, improves the building efficiency, makes a building “smart” and improves the thermal comfort. Because the demand response activities sit within the framework of the ESCO, all parties are aware of each other’s actions and thus the chance of parties breaching their agreement to work towards obtaining the best value from the installed equipment is reduced.

3.2 LEGAL BENEFITS

Table 3-2: Legal value proposition for aggregators

BENEFIT	VALUE	PROBLEM
Pre-contract / prospecting efficiency. One contract with ESCO. Sharing of cost of sales through combined exploratory work.	Sales process lead time and cost can be reduced, no need for contract negotiations with individual customers	Sales process is lengthy
Access to the ESCO market & smaller assets	Business growth, increased chance of winning the project	Traditional aggregator markets may become saturated, DR project sales are difficult on its own
Increases market maturity	Active player in growth of energy market	Market cannot grow without projects and case studies of successful projects
Business model can be used to support policy making	Provides evidence for policy making	No policies for joint EE and DR services
Agreeing on the method to do baseline + M&V	Ease of implementation/ performance during contract	Aggregators and ESCOs might use different methods to do baseline and M&V separately and this might result in contract disputes

The NOVICE model takes the benefit of combined resources and expertise between aggregators and ESCOs and hence simplifies the end-to-end sales to delivery process for the end user as well as aggregators. By signing one contract with an ESCO instead of individual customers, the sales process lead time and cost for aggregators can be reduced significantly as there is no need for contract negotiation with individual customers. Sharing data between ESCO and aggregator can also significantly help to speed up the process of revenue estimation and pre-qualification testing, leading to an overall pre-contract efficiency in the sales process.

Another advantage of the NOVICE model relates to combining typical procedures that would normally be carried out by both ESCOs and aggregator. By minimising the number of processes (such as site survey, installing hardware, and training), and offering a single procedure for transferring information between client and service providers, aggregators can minimise their end-to-end sales to delivery lead time and cost, and can also offer a simplified process to their customers that is more appealing to new clients. Going via an ESCO that already has a strong relationship with, and is trusted by, the end-user reduces the sales effort and increases the chances of winning the project compared to a cold approach.

Sharing the potential customers between ESCOs and aggregators can also help to implement new types of demand response programmes by giving aggregators access to different segments of markets that might not have seemed appealing to them previously. These include social housing projects where there are clusters of residential units, such as block of flats or social housing estates and potentially the commercial sector, such as offices, leisure centres, educational facilities.

The joint effort between aggregators and ESCOs to engage clients can help to educate a larger number of potential customers on the potential of their buildings to participate in flexibility programmes. This results in increased market maturity and faster integration of demand response programmes into the market. The potential challenges of communication with the customers via a third party (ESCOs) can

be solved by training ESCOs on the demand response systems and requirements. This shows that the NOVICE model can be used to influence policy makers to change policy to enable closer collaboration with ESCOs.

By working together, the ESCOs and the aggregators ensure that they use the same methods to develop the baseline and M&V processes. In the traditional approach, if the two parties produce different baselines, the client might dispute what the ESCO or the aggregator propose as estimated savings. By using the NOVICE model and agreeing on the methods of calculation, the baseline and M&V need only be carried out once, thus avoiding any legal disputes.

3.3 FINANCIAL BENEFITS

Table 3-3: Financial value proposition for aggregators

BENEFIT	VALUE	PROBLEM
Unique selling point	Ease to convince the clients	Difficulty in convincing the clients
Improved ROI	Greater ROI	Risk of no/low ROI due to changing regulations/market conditions
Access to the ESCO clients	Business growth	Traditional aggregator markets may become saturated

From the aggregator's perspective, the financial problems relate less to investment, because the technology that they install is not normally very expensive when compared to installing energy efficiency measures. Hence, they don't normally require investment in the same manner as ESCOs. Instead, the financial problems they face are caused by the uncertainty in the demand response market, changes to regulations or tariffs for demand response programmes that are constantly changing. All this makes it hard for clients to understand the value that demand response services could bring to them and can make it difficult for the aggregators to successfully sell these projects. The NOVICE model can help solve these problems by broadening the portfolio of clients, gaining another revenue stream through referral fees from ESCOs, and bringing more sites into scope that they would otherwise not have considered working with.

Including demand response in the scope of the energy efficiency projects creates a unique selling point for aggregators and can make it easier for them to convince clients to consider flexibility services if it is part of a larger project. In terms of the NOVICE model, cooperation is required between both the ESCO and demand response aggregator. Based on the analysis discussed in section 2.3, it is evident that the earnings from demand response would interest ESCOs and aggregators alike, if the project was self-financed by the ESCO. Since the revenues would increase compared to doing only energy efficiency measures or only demand response, the initial capital investment would be recovered sooner thus reducing the payback period and improving the return on investment. If the ESCO is able to bring a group of customers to the aggregator, the opportunity of the NOVICE model increases the financial advantages.

As stated in section 2.3, there is also the opportunity for the aggregator to bring customers to the ESCO. If the ESCO can bring a group of customers to the aggregator, the opportunity of the NOVICE model increases the financial advantages. As further discussed in D7.3, the earnings from the addition of DR to energy efficiency measures would only interest investors and aggregators if there are a substantial number of participants to pool as part of a robust and new pipeline of possible clients. This

is due to the fact that, the ESCO's margins are often already thin, (especially when the cost of financing is included) and they would only be able to pay the aggregator a small margin (perhaps 1% to 4% of returns at most) for bringing them additional clients.

4 END-USERS

4.1 TECHNICAL BENEFITS

Table 4-1: Technical value proposition for end-users

BENEFIT	VALUE	PROBLEM
Reduction in CO2 emissions	Contribution to sustainability / CSR be part of the energy transition	Carbon taxes, regulations on energy management, requirements from customers to demonstrate green credentials, poor reputation, negative brand image
Expert advice from aggregator on flexibility potential & options	Gain knowledge on flexibility potential	They do not know of their potential for flexibility
Doing baseline + M&V only once	Reduction in cost	End-user may pay for baselining and M&V twice
Smart building & smart readiness indicator	Improve reputation of tenants, attract best tenants	Businesses improve brand value/image by working in more environmentally sustainable buildings
	Getting ahead of competitors	There is competition between businesses
	Attracting and retaining highly skilled staff members	Lack of desire to work in a bad environment, complaints from building users
	Staff health and productivity benefits of working in a "smart" building	Poor air quality, ventilation and lighting can harm the staff health
	Increased property value/ desirability of property	Tenants can choose different available properties
Smart monitoring	Low cost energy efficient operation	Energy costs and operational costs of running the building are always increasing, driving up overheads and reducing profitability

Facility managers are often reluctant to undertake energy efficiency projects either because they lack the finance to be able to invest or because they consider the payback period of the investment to be too long. This is particularly true in the private sector where payback periods of less than 3 years are generally expected in order to justify the scale of the investment. Too often, the energy efficiency projects deal only with the "low hanging fruit measures" or those measures that have a fast payback, but that achieve minor energy savings relative to the total consumption of the facility. While these measures might seem alluring in the short term, obtaining larger benefits in the long term requires committing to deeper energy refurbishment projects.

The NOVICE model proposes integrating energy efficiency projects with demand response flexibility and it has the advantage of reducing the EPC contract length. This is possible because the extra revenue from demand response reduces the payback period, but also because by doing both types of project under one contract has its own benefits in terms of project and contract management. This is achieved firstly, by doing baselining and M&V only once instead of twice for each type of project, and secondly by having access to skilled personnel that can put together a holistic package of energy efficiency and demand response measures that work together seamlessly without impacting on the

normal operation of the building. The NOVICE model also maximizes the potential revenues available from energy assets by ensuring that the project considers and optimizes the HVAC systems for both energy efficiency and demand response, not one or the other.

Facility managers often aren't familiar with the potential of their assets for demand response flexibility. They are also often concerned about losing control of their building and not being able to provide the required indoor comfort for the occupants, therefore increasing the number of complaints. Energy Performance Contracts (EPCs) move the operational risk to ESCO via the performance guarantee and through agreed satisfactory building parameters which are specified in the contract document. For example, the level of opt in/out to demand response events can be specified in the contract as well as the acceptable comfort parameters under normal operating conditions and during a demand response event. Case studies will help to prove that buildings can be operated in this way with no detriment to the occupant comfort or site productivity. Through the NOVICE model, the end-users can gain knowledge on the flexibility potential of their building by obtaining expert advice through the unified services of aggregators and ESCOs.

By adopting the NOVICE business model instead of a regular EPC project, end users contribute to sustainability in two ways. Firstly, by increasing the energy efficiency of their building, they are directly reducing their carbon footprint and they are demonstrating their commitment to corporate social responsibility. This contributes to improving the brand image of their company and demonstrating green credentials that are nowadays often a requirement for winning over new customers. By reducing their CO₂ emissions, building owners reduce their need to pay carbon taxes. Secondly, by participating in demand response events by offering their flexibility to the electricity grid, buildings can play an important role in improving the stability and reliability of the electricity network in relation to avoiding black-outs, reducing peaks, avoiding oversizing, etc., and ensuring a smooth energy transition.

One considerable positive outcome of improving the energy efficiency of buildings and sharing their energy flexibility with the grid is obtaining a smart building that is fully automated and flexible without harming the indoor environment and occupant comfort. Having their place of business in a smart building offers end users an added value that helps them to get ahead of competitors by attracting the best tenants or employees, while enhancing their reputation. Moreover, the company has an advantage in attracting and retaining highly skilled personnel by offering a healthy working environment that yields increased productivity. In general, having a smart building increases the property value and desirability, thus reducing the risk of possible tenants choosing other properties available on the market instead of theirs.

One requirement of doing M&V is to have a comprehensive building monitoring system, which give facility managers useful insights into their buildings' energy performance. With time, buildings tend to decrease in efficiency as parameters drift from their intended in their design, but regular monitoring can alert facility managers to unpredicted behavior and give the stakeholders the right tools to take informed decisions on how this can be corrected.

4.2 LEGAL BENEFITS

Table 4-2: Legal value proposition for end-users

BENEFIT	VALUE	PROBLEM
One contact point for both ESCO and DSR services	Convenience / reduced administrative burden/ simplicity	It takes time to interact with different stakeholders
One suite of services that addresses all of the client's energy needs	No hassle to deal with overlapping or conflicting contracts	In general decisions are made separately for each of the services and the client has contracts with several service providers, some of which may overlap and some may be in conflict with each other
Increased confidence in service provider	Providing novel EE measures increases trust in the service provider	For end-users that are outsourcing their energy management to an FM company, they can choose a different service provider
No maintenance on technical equipment, as the performance guarantee moves the operational risk to the ESCO	No risk of need for capex for issues that may arise with the assets	Sometimes building assets do not work as intended

One advantage of adopting the NOVICE model is that the end user has a single contact point for both ESCOs and DSR services, which leads to a reduced administrative effort. As it takes time to interact with the different stakeholders, the NOVICE model will allow for more efficient use of work time for all collaborators involved.

In a traditional approach, project decisions are made separately for each of the services (energy efficiency and demand response) and the client has contracts with several service providers, some of which may overlap and some may be in conflict with each other. Offering one suite of services that addresses all of the client's energy needs, ensures that the two offered services will be coordinated and ensures that the building assets will be operated as effectively as possible.

By working together under the NOVICE model, both ESCOs and aggregators can build a stronger relationship with their clients and increase the level of confidence the end-user has in them. By providing state-of-the-art services and offering novel energy efficiency saving measures, the service providers prove their trustworthiness. End-users that outsource their energy management to an FM company can always change their service partners, so gaining their client's trust is an important strategy to keep them on board.

From the client's perspective, the EPC reduces the risk for a sudden need of capex. In an EPC contract, the technical equipment remains the responsibility of the service provider, which means that any problems with the site's assets and corresponding costs are not within the end-user's obligation. Under the performance guarantee, the ESCO takes on the operational risk of ensuring that the technical equipment is operating as expected and it is their responsibility to correct any discrepancies.

4.3 FINANCIAL BENEFITS

Table 4-3: Financial value proposition for end-users

BENEFIT	VALUE	PROBLEM
Increase in building desirability due to reduced energy bills, reduced environmental taxes, increased building smartness and the additional DR revenue	Increase in building sale or rental value and lower operating costs for the building	Operating costs keep increasing
Verified savings / Increase in revenue	Economic profit	Lack of certainty / Fear of investing and not getting profit
Reduction in contract length	Greater ROI/reduced payback period	Risk of no/low ROI
	Opportunity to invest in other contracts sooner	Not enough money to invest in contracts
Paying for baseline and M&V only once	Reduced financial burden	Paying for baseline and M&V twice (ESCO and DSR)
No upfront capital needed in EPC	Reduced financial burden	Difficulty to find financing

As the signee of any EPC contract, the end client may be a public, commercial, or industrial client of the ESCO (and by extension the demand response aggregator). Participation in DR may create additional returns which can add value to the client. If a demand response offering is well designed, the end client should also either not notice or be only slightly inconvenienced by a particular demand response call. Therefore, as long as the NOVICE business model works for the aggregator and ESCO, the end client will benefit from participation. To overcome the lack of capital or fear of putting their own capital at risk, investment can be sought from a third party finance provider. This not only reduces the financial burden for the end user but also transfers the operational risk to the ESCO.

One benefit of adopting the NOVICE model is that the end user will increase the value of their assets, as the building will become an energy efficient asset. Since the end user will benefit from reduced energy bills, reduced environmental taxes and with the additional DR revenue, they will have lower operating costs for their facilities.

End clients may view investments provided under the NOVICE model as a greater opportunity to improve the profitability of their business by maximizing returns from their energy assets and benefit from the additional revenue stream. Having a reduced payback period gives the opportunity to the client to recoup their investment faster. In this manner they are free to invest money and effort in other contracts earlier.

In a traditional contracting model, the end-user would normally have to pay for the baselining and M&V twice, once for the ESCO and one for the aggregator, as the two services are offered separately. Under a combined service offering, the project need only charge for these services once, as the ESCO and the aggregator would work together to develop the baseline and the M&V method.

5 VALUE PROPOSITION

5.1 VALUE PROPOSITION FOR ESCOS

By adopting the NOVICE model, it will become easier for ESCOs to convince end users in certain sectors to commission whole building energy upgrades. This is because holistic projects that consider both energy efficiency and demand response maximise the revenues that are available from correct management of onsite energy assets thus reducing the payback period of the investment. This reduces the length of the EPC making it more attractive to a wider range of clients in different business sectors and improves the ROI, allowing the ESCO to finance more new ventures for a given time frame. Demonstration sites have shown that a possible reduction in project payback period of 9 % to 16 % can be obtained from considering demand response in addition to energy efficiency. This increases the ESCO's profit margins and reduces risk through increasing the number of clients and having access to clients in new business sectors that had previously not considered EPC. In addition, the inclusion of demand response revenues in energy efficiency opportunities assessment could bring into scope more projects that would previously have been ruled out due to long payback periods.

In addition to these financial benefits the ESCO will also improve their technical reliability and efficiency, and benefit from gaining new expertise relating to demand response without extra training. This allows them to offer a wider range of services than ESCOs that do not have similar relationships with aggregators, giving them a unique selling point that could improve their reputation and help them to stand out in a crowded market.

By adopting the enhanced EPC, the ESCOs can become an active player in the growth of the energy market. This results not only in business growth for the ESCO into new markets, but it also provides concrete evidence for policy making. The risk of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid is minimized through coordination between demand response and energy efficiency services and by optimizing the overall performance functionality of the assets. The implementation of the project will go more smoothly and with a reduced risk of contractual disputes, since the ESCOs and aggregators will agree on the method for baselining and M&V procedure.

5.2 VALUE PROPOSITION FOR AGGREGATORS

Offering a wider range of services through a one package solution gives aggregators a unique selling point and helps to place them ahead of competitors by improving their reputation. By partnering with an ESCO, aggregators will be able to deliver added value to any of their clients who are interested in improving the efficiency of their building by referring them to trusted partner. Referral fees could bring them an additional revenue stream for little effort.

Aggregators will also benefit from adopting the NOVICE model through the reduced cost of sale associated with receiving referrals from ESCOs for clients that have sites with suitable large flexibility potential. A 'warm referral' of this nature is more likely to be converted into a sale compared to a cold approach. In addition, since the ESCO will handle the contractual negotiations with the end-user, the administrative burden and cost of sale can be reduced further.

An additional benefit for aggregators is that partnering with an ESCO could broaden their client base by allow them to access new markets and a broader range of flexible energy assets. For example, ESCOs typically have a strong client base in the public sector where as aggregators have a stronger relationship with the industrial and commercial sector. Broadening the client base makes the

aggregator more resilient to changes in the markets and will help them to stand out in maturing markets where competition is increasing. Aggregators who adopt the NOVICE model will also contribute to increasing the market maturity by becoming an active player in the growth of the energy market. This results not only in business growth for the aggregators, but it also provides concrete evidence for policy making.

The risk of possible conflict between running the assets to maximize energy efficiency as opposed to offering flexibility to the grid is minimized by using the NOVICE business model through coordination between demand response and energy efficiency services. The advantage of this coordinated approach is that there is less chance of a building owner declining the option to participate in demand response events if they are confident that their normal operation will not be disrupted.

5.3 VALUE PROPOSITION FOR END-USERS

From a financial and technical point of view, the end-user has substantial gains from adopting the NOVICE model. Not only will they maximise the value of their energy assets through reducing energy bills, reducing environmental tax liability and accessing revenues from demand response, but they will also contribute to improving organisational sustainability and fulfilling their corporate social responsibility obligations by being part of the energy transition. Compared to regular EPC projects, the NOVICE model is more appealing as it reduces overall cost of procurement and project management since there is only one contract to administer, baseline energy consumption is set once, and a single M&V plan is created covering all aspects of the project. These financial benefits translate to a shorter EPC duration and the ability to free up capital more quickly to invest in other projects.

Having a smart building is also a considerable advantage to the end-users. In particular, having a more environmentally sustainable building and showcasing the work they are doing to minimise environmental footprint can: improve corporate reputation and brand image; help them to get ahead of competitors; attract and retain the best tenants and/or highly skilled staff members; and improves the health and productivity of staff. There is evidence to suggest that property value and desirability also increases, making it easier to rent or sell an efficient smart building than an inefficient property.

From a legal and contractual perspective, the end-user will have a reduced administrative burden in the NOVICE model, as they will have one contact point for the ESCO and demand response services. As these services are offered together, there is no risk of overlapping or conflicting contracts and all the services will work together to act in the best interests of the end user at all times. Providing novel energy efficiency services increases the end-user's trust in the service provider and allows them to leave the maintenance of the technical equipment in their charge, thus reducing the risk of needing CAPEX for any issues that may arise with the assets.

6 CONCLUSION

This deliverable presented the different value propositions of the NOVICE model for the three stakeholders involved: the ESCOs, the aggregators and the end-users.

A value proposition communicates why a product or service is better when compared to other similar products or services and how it responds to the customer needs. In general, value propositions are directly communicated to customers through the company's website in a short and easy to understand format. However, in order to reach specific clients and to increase awareness, marketing or advertising can be employed as well.

This deliverable containing the value propositions will be made available on the NOVICE project website and it will be announced on social media (LinkedIn, Twitter).

Moreover, the NOVICE team proposes to increase awareness by introducing the NOVICE concept through several webinars and workshops. These dissemination methods can make use of the listed value propositions to outline why the NOVICE model is superior to common EPC models.