

Part III.8 - Supplementary Information Sheet for the notification of an evaluation plan

Member States must use this sheet for the notification of an evaluation plan pursuant to Art. 1(2)(a) of Regulation (EU) No 651/2014¹ and in the case of a notified aid scheme subject to an evaluation as provided in the relevant Commission guidelines.

Please refer to the Commission Staff Working Document "Common methodology for State aid evaluation"² for guidance on the drafting of an evaluation plan.

1. Identification of the aid scheme to be evaluated

- (1) Title of the aid scheme:
Renewable Electricity Support Scheme (RESS)
- (2) Does the evaluation plan concern:
 - (a) a scheme subject to evaluation pursuant to Article 1(2)(a) of Regulation (EU) No 651/2014?
 - (b) a scheme notified to the Commission pursuant to Article 108(3) TFEU?
- (3) Reference of the scheme (to be completed by the Commission):
.....
- (4) Please list any existing *ex-ante* evaluations or impact assessments for the aid scheme and ex-post evaluations or studies conducted in the past on predecessors of the aid scheme or on similar schemes. For each of those studies, please provide the following information: (a) a brief description of the study's objectives, methodologies used, results and conclusions, and (b) specific challenges that the evaluations and studies might have faced from a methodological point of view, for example data availability that are relevant for the assessment of the current evaluation plan. If appropriate, please identify relevant areas or topics not covered by previous evaluation plans that should be the subject of the current evaluation. Please provide the summaries of such evaluations and studies in annex and, when available, the internet links to the documents concerned:
.....

¹ Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (OJ L 187, 26.6.2014, p. 1).

² SWD(2014)179 final of 28.5.2014.

2. Objectives of the aid scheme to be evaluated³

2.1. Please provide a description of the aid scheme specifying the needs and problems the scheme intends to address and the intended categories of beneficiaries, for example size, sectors, location, indicative number:

The RESS aims to promote the generation of electricity from renewable sources. The key elements of the RESS are:

- i. It has been designed to contribute toward Ireland's ambition of 70% renewable electricity, and Ireland's contribution towards an EU-wide renewable energy target of 32%, by 2030, within a competitive auction based, cost effective framework;*
- ii. The new scheme is framed within the context of Ireland's All of Government Climate Action Plan and the European Union's Clean Energy Package, in particular the recast Renewable Energy Directive and the development of Ireland's draft National Energy and Climate Plan (NECP)*
- iii. The RESS will deliver a broad range of policy objectives including:*
 - o the provision of pathways and supports for communities to participate in renewable energy projects;*
 - o broadening the renewable electricity technology mix (the diversity of technologies); and*
 - o increasing energy security, energy sustainability and ensuring the cost effectiveness of energy policy.*
- iv. The RESS will be characterised by a series of renewable electricity auctions, run out to 2025 and it will signal a renewable electricity auction roadmap, providing indicative timelines and capacities; and*
- v. Running in tandem with Corporate Power Purchase Agreements (CPPAs), the RESS will provide up to 70% renewable electricity (res-e) out to 2030 and volumes sought in each auction round will be subject to the determination of the most effective level of procurement which will be set out in Irelands National Energy and Climate Plan.*
- vi. The following renewable electricity generating technologies are eligible to receive support under RESS: High Efficiency Combined Heat and Power Plants (Waste, Biomass and Biogas); Onshore and Offshore Wind, Solar and Hydro.*

³ Beyond providing a general description of the objectives and eligibility rules of the scheme, the aim of this section is to assess how the eligibility and exclusion rules of the scheme may be used to identify the effect of aid. In some cases, the precise eligibility rules may not be known in advance. In those cases the best available expectations should be provided.

- vii. *To qualify for RESS, all projects including Community projects will need to demonstrate that they are 'shovel ready' i.e. consents are in place to progress with construction and operation.*
- viii. *The RESS is a significant departure from the previous support schemes for renewable electricity in Ireland but is in line with new designs operated across Europe. At its core, the RESS is a competitive framework with strong community provisions for the procurement of renewable electricity generation.*

It is planned that throughout its lifetime the scheme will also deliver diversity, in terms of an increased mix of renewable technologies, the number of and types of project actors, and the scale of projects receiving support

- ix *It is proposed that RESS will only be open to projects physically located in Ireland or to countries with whom Ireland has a co-operation agreement.*

The intended categories of beneficiaries of this scheme will be small, medium sized and large enterprises. It is estimated that there will be between 100 and 500 beneficiaries over the lifetime of the scheme.

- 2.2.** Please indicate the objectives of the scheme and the expected impact, both at the level of the intended beneficiaries and as far as the objective of common interest is concerned:

As per 2.1 above.

- 2.3.** Please indicate possible negative effects, on the aid beneficiaries or on the wider economy, that might be directly or indirectly associated with the aid scheme⁴:

Possible negative effects:

Potential for aid to distort competition in the electricity market

Potential for the aid to over compensate technologies

Potential for the aid to not achieve its intended objectives with regard to community participation, wider social acceptance of additional renewable energy infrastructure and investment.

- 2.4.** Please indicate (a) the annual budget planned under the scheme, (b) the intended duration of the scheme⁵, (c) the aid instrument or instruments and (d) the eligible costs:

A) There are no specific annual budgets set under the scheme however the anticipated level of PSO funding required is €7.2 to €12.5 billion (nominal) in

⁴ Examples of negative effects are regional and sectorial biases or crowding out of private investments induced by the aid scheme.

⁵ Aid schemes defined in Article 1(2)(a) of Regulation (EU) No 651/2014 are excluded from the scope of the Regulation six months after their entry into force. After having assessed the evaluation plan, the Commission may decide to extend the application of the Regulation to such schemes for a longer period. Member States are invited to precisely indicate the intended duration of the scheme.

respect of all RESS projects granted support prior to 31 December 2025 – and over lifetime of each project.

- B) The scheme is intended to be in place from 2020 until 2025 with support granted for periods up to 16.5 years.*
- C) The aid instrument will be in the form of financial support provided to successful applicants who meet the terms and conditions and delivery requirements of the scheme.*
- D) Operational support will be provided to renewable electricity generators operating under the scheme to compensate the difference between the wholesale electricity price and the strike price awarded in the scheme.*

2.5. Please provide a summary of the eligibility criteria and the methods for selecting the aid beneficiaries. In particular, please describe the following: (a) the methods used for selecting beneficiaries (e.g. such as scoring), (b) the indicative budget available for each group of beneficiaries, (c) the likelihood of the budget being exhausted for certain groups of beneficiaries, (d) the scoring rules, if they are used in the scheme, (e) the aid intensity thresholds and (f) the criteria the authority granting the aid will take into account when assessing applications:

A) the methods used for selecting beneficiaries

In general, beneficiaries will be selected through a competitive bidding process with the lowest price offers selected first. Where specific policy levers are applied to offers, such as the use of preference categories or the application of evaluation correction factors, the winner selection process will potentially select higher-priced offers first in some cases. A ‘preference category’ refers to a category of offers (for example solar) in which a minimum quantity is required to be selected by the auction, subject to competition concerns.

Eligibility requirements will be set out in the Terms and Conditions of individual auctions under the scheme.

In general, it is expected that in order to qualify for RESS, all projects including Community projects will need to demonstrate that they are ‘shovel ready’ i.e. consents are in place to progress with construction and operation.

For the first RESS auction, community projects must meet the following requirements as per the timelines of the Implementation Agreement:

(a) *at all relevant times be at least 51% owned by a Renewable Energy Community (the “Relevant REC”) either by way of (i) a direct ownership of the RESS 1 Project’s assets, or (ii) a direct ownership of the shares in the Generator;*

and (b) at all relevant times, at least 51% of all profits, dividends and surpluses derived from the RESS 1 Project are returned to the Relevant REC. 7.1.2 An Application for Qualification for a Community-Led Project must be made in conjunction with a Sustainable Energy Community. The Sustainable Energy Community must be identified in the Declaration of Community-Led Project, together with a description of the relationship between the Applicant and the Sustainable Energy Community

A detailed description of the winner selection process for the first competition under the scheme is set out in the RESS Terms and Conditions⁶

B) the indicative budget available for each group of beneficiaries

There are no specific budgets set for individual groups of beneficiaries. Minimum volume allocations for specific groups of technologies and classes of beneficiaries (community projects) will be made by the Government in advance of each auction.

C) the likelihood of the budget being exhausted for certain groups of beneficiaries

Refer to response above.

D) the scoring rules, if they are used in the scheme

Winner selection will be based on offered price. For evaluation purposes this offered price may be adjusted for deemed associated system costs, and where this is the case the adjustment factors will be set out in the terms and conditions of the auction concerned.

(E) the aid intensity thresholds

N/A

(F) the criteria the authority granting the aid will take into account when assessing applications

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2.6. Please mention specific constraints or risks that might affect the implementation of the scheme, its expected impacts and the achievement of its objectives:

Risks:

- 1. The supply chain for new renewable electricity technologies is not sufficiently developed and results in poor competition outcomes in the auction.*
- 2. Delivery timelines not being met due to legal challenges to projects and or grid connection delays as well as capacity constraints within the electricity network operators and planning authorities.*
- 3. Failure of projects in the scheme to obtain funding due to poor economic conditions.*
- 4. Failure of scheme to deliver on community objectives due to communities not having the capability to progress renewable electricity projects.*

3. Evaluation questions

3.1. Please indicate the specific questions that the evaluation should address by providing quantitative evidence of the impact of aid. Please distinguish between (a) questions related to the direct impact of the aid on the beneficiaries, (b) questions related to the indirect impacts and (c) questions related to the proportionality and appropriateness of the aid. Please explain how the evaluation questions relate to the objectives of the scheme:

Direct effects		
Overall scheme: The level of penetration of renewable generation in Ireland	1	Has the aid resulted in an increase in renewable electricity generation of sufficient scale for Ireland to meet its commitments set out its National Energy and Climate Plan?
	2	How much aid was committed/ given?
	3	How many projects/beneficiaries have received aid under the scheme?
	4	How many projects were built under the scheme?
	5	How much capacity and annual GWh were procured?

	6	Which were the main types of beneficiary projects and enterprises?
Level of investment in renewable energy	7	Has the aid led to adequate interest in investment in new renewable electricity generation in Ireland such that there is a sufficient supply of projects to deliver competitive RESS auction outcomes?
Auction results	8	What were the results of each type of auction carried out under the scheme?
	9	Were safeguard mechanisms (e.g. performance bonds to ensure delivery of projects) implemented after the auctions? Did they change over time?
	10	Did the beneficiaries increase investments in RES projects, including increasing renewable capacity and renewable energy production? (e.g. compared to non- successful applicants to the auctions or another appropriate control group)
The questions address the primary objective of the RESS which is to be a major contribution to Ireland's target of 70% RES-E by 2030 within a cost competitive framework.		
Technology Measures: Diversification of the renewable electricity generation mix so as to reduce the costs of system integration as well as providing security of supply benefits.	11	Has the aid delivered increased levels of diversification of the renewable energy mix in both energy volume and installed capacity?
	12	What impact has the aid had on system services costs and other system costs? Has the diversification resulted in the connection of renewable energy with a different generation profile, therefore, reducing system service costs?
	13	Has the specific aid for solar projects led to overall costs increases relative to a technology neutral scheme?
	14	Has the specific aid for offshore wind projects led to overall costs increases relative to a technology neutral scheme?
	15	Has any specific aid for any other technologies (e.g. biomass) led to overall cost increases relative to a technology neutral scheme?
The rate of grid connection of renewable generation in Ireland	16	Has the specific aid for solar projects led to an improved overall rate of grid connection of renewable energy projects?
	17	Has the specific aid for offshore wind projects led to an improved overall rate of grid connection of renewable energy projects?
	18	Has any specific aid for any other technologies (e.g. biomass) led to an improved overall rate of grid connection of renewable energy projects?
These questions address the diversification and supply security aspects of the scheme which		

<p>are intended to ensure that increases in renewable energy generation take into account the wider system needs and costs that may not be directly reflected through levelised costs of energy measures. They also address whether the technology-specific aspects of the scheme improve the rate at which, and the probability with which, Ireland achieves its renewable energy targets.</p>		
Community Measures: Level of investment in community energy projects	19	Has the aid led to a sufficient increase in community investment in order to deliver on the objectives of the scheme?
	20	<p>Has the specific enablers for communities to develop their own RES-E projects in the scheme led to an increase in the number of community owned renewable generation plants?</p> <p>Is there an increasing percentage of community ownership of renewable energy projects over time compared to developer owned?</p>
Impact of Community Benefit funds on the on communities in close proximity to renewable generation	21	Have the specific aid measures for community projects delivered benefits to local communities such that public and community acceptance of renewable energy increases and project realisation rates increase?
	22	Has the €2MWhr community benefit fund payments led to increased benefits for communities where renewable energy projects aided under the scheme are located?
	23	What effects have the community benefit fund payments to not for profit enterprises had on those who have received the aid?
These questions are intended to evaluate the effects of the community measures in the scheme		

Indirect effects		
Overall Scheme: Reduction in CO2e emissions	24	Has the aid reduced the annual carbon emissions of the electricity sector in Ireland?
Increase in electrification of heat and transport sectors	25	Has the aid led to an increased uptake in electro-mobility and electric heat devices owing to their lower associated CO2 emissions?
Supporting the Just Transition	26	What impact has the aid had on regions affected by the Just Transition (e.g. coal, peat closures)?
	27	What impact has the aid had in offsetting income losses in regions affected by early closure of fossil fuel electricity generation stations associated with climate policies (e.g. EU

		ETS price)?
Effects on competition	28	What impact has the aid had on competition (in particular, the efficiency of entry and exit) in the electricity market in Ireland?
	29	What effects has the aid had on competitiveness and efficiency of the overall power sector?
	30	What effects has the aid had on competition in merchant markets for renewable energy (e.g. through corporate PPAs)
	31	Was there an impact on cross-border trade in RES electricity?
	32	Has the aid increased the beneficiary's market power?
Effects on achievement of standards	33	What effects has the RESS scheme had on the achievement of capacity adequacy and security of supply standards in the electricity industry?
Other socioeconomic impacts	34	How many jobs were created in the renewable energy industry including through direct, indirect and estimated induced employment as a result of the aid?
Technology Measures: Grid impact Developing hybrid technologies (solar/wind/batteries)	35	What impact has the aid had on the development of hybrid technologies (e.g. wind/solar/batteries)?
Other system impacts	36	Have the specific technology levers in the scheme reduced the rate of curtailments relative to a technology neutral scheme?
	37	Have the technology levers increased the beneficiary's market power?
	38	What impact has the specific technology levers in the scheme had on competitiveness of the RESS auctions?
	39	What impact have the specific technology levers in the scheme had on the selection of generators of other technologies within the RESS auctions?
Community measures	40	What economic impact has the specific measures in the aid to facilitate community projects on the sector?
	41	What are the social equity impacts of the community aspects of the aid? What distributive effects have the measures had on communities?

	42	Has the package of community measures facilitated those in energy poverty transition and lower income earners to participate in the renewable energy transition?
Impacts on competition	43	What are the impacts of support to community projects on competition?
	44	What are the impacts of the community benefit fund on the relevant organisations receiving the aid -e.g. provisions of services for energy efficiency, sport clubs etc.?

Appropriateness and Proportionality of the Aid		
Overall Scheme: The level of penetration of renewable generation in Ireland	45	What is the impact of the RESS scheme on consumer electricity prices?
	46	What is the cost of CO2 abatement of the scheme, overall and on a technology-by-technology basis?
	47	Is the net cost of the RESS scheme commensurate with its benefits?
	48	Could the same outcomes (i.e. level of annual renewable energy output) have been achieved through other instruments? E.g. through loans, grants, tax incentives, carbon taxes?
	49	Is the RESS scheme the lowest cost mechanism to achieve the required level of penetration of renewable generation in Ireland? Including: Are there any indications of possible overcompensation? Is pay-as-bid pricing rule preferable to pay-as-clear to meet the scheme objectives at least cost?
	50	Did price ceilings contribute to proportionality or otherwise bind in the auctions?
	51	How did the intensity of competition evolve or become differentiated in the various auctions and preference categories? Does the bid curve reflect the cost curve?
	52	How did the auction/tender award prices evolve or become differentiated over time in the various auctions and preference categories?
Technology Measures	53	Were the technology levers in the scheme proportionate to their objectives?
	54	Could the same outcomes have been achieved through other instruments (i.e. alternatives to the technology levers)?
	55	Was the most effective aid chosen? How do the RESS technology levers compare in outcomes to other schemes to support renewable energy projects in other EU Member State

		and/or previous schemes in Ireland?
	56	What is the difference in cost of abatement between different auctions and to what extent can that be attributed to the auctions having technology-specific elements?
Community Provisions	57	How do the RESS community measures compare in outcomes to other schemes to support renewable energy projects in other EU Member State and/or previous schemes in Ireland? Were the most effective aid instruments chosen?

4. Result indicators

4.1. Please use the following table to describe which indicators will be built to measure outcomes of the scheme, as well as the relevant control variables, including the sources of data, and how each result indicator corresponds to the evaluation questions. In particular, please mention (a) the relevant evaluation question, (b) the indicator, (c) the source of data, (d) the frequency of collection of data (for example, annual, monthly, etc.), (e) the level at which the data is collected (for example, firm level, establishment level, regional level, etc.), (f) the population covered in the data source (for example, aid beneficiaries, non-beneficiaries, all firms, etc.):

	Evaluation question	Indicator	Source	Frequency	Level	Population
	Direct Effects	The basis for comparison for the direct and indirect impacts listed is to assume in the counterfactual that the RESS does not exist. Modelling assumptions may be necessary in the future, to estimate what sources of energy would have replaced the RESS sources had they not been built, and at what cost. For community measures, a basis of comparison is to assume the counterfactual that the specific community measures do not exist, but broader RESS auctions do (without community measures).				
1	Has the aid resulted in an increase in renewable electricity generation of sufficient scale for Ireland to meet its commitments set out its National Energy and Climate Plan?	Market share of electricity from renewable sources (as a % of total electricity) measured as per methodology under Renewable Energy Directive	DCCAIE, CRU (National Regulatory Authority), SEAI (Sustainable Energy Authority of Ireland), EirGrid (Transmission System	Yearly unless otherwise stated	Individual generators	All renewable generation firms, including that supported by RESS to date.

	Evaluation question	Indicator	Source	Frequency	Level	Population
			Operator)			
2	How much aid was committed/ given?	The cost of renewable energy procured as revealed by auction results in total € and €/MWh and forecast annual Public Service Obligation (PSO) levy costs. ⁸ Ex-post annual PSO payments under the RESS scheme.	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All aid beneficiaries supported by RESS to date.
3	How many projects have received aid under the scheme?	Number of projects that received support	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All aid beneficiaries supported by RESS to date.
4	How many projects were developed under the scheme?	Number of new RESS projects built	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All aid beneficiaries supported by RESS to date.
5	How much capacity and annual GWh were procured?	New RESS capacity and energy equivalent, awarded vs. installed, by technology	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All aid beneficiaries supported by RESS to date.
6	Which were the main types of beneficiary projects and enterprises?	Differentiated result indicators above by technology, by new vs. repowered projects, by size	DCCAE, CRU, SEAI,		Individual renewable	All aid beneficiaries supported by

⁸ The direct net cost of the RESS scheme is quantified as the actual cost of electricity including procurement from the RESS competitions, less the cost of the modelled counterfactual. The renewables penetration impact of RESS is found by comparing actual and modelled results.

	Evaluation question	Indicator	Source	Frequency	Level	Population
		and age of enterprises, and/or other relevant factors	EirGrid		projects	RESS to date.
7	Has the aid led to adequate interest in investment in new renewable electricity generation in Ireland such that there is a sufficient supply of projects to deliver competitive RESS auction outcomes?	Ongoing qualitative and quantitative regulatory assessment of the competitiveness of the RESS competitions and of the pipeline of actual and potential participants ⁹	CRU, with support from DCCAE, SEAI and EirGrid		Individual renewable projects and potential renewable projects	All aid beneficiaries supported by RESS to date, non-beneficiaries and potential future RESS participants
8	What were the results of each type of auction carried out under the scheme?	Number and types of auctions, number of participants in each auction, number of offers submitted and number of winning offers for each auction, success rate of projects in auction.	CRU and EirGrid		Individual renewable projects	All participants in the most recent RESS auction
9	Were safeguard mechanisms (e.g. performance bonds to ensure delivery of projects) implemented after the auctions? Did they change over time?	Safeguard mechanisms to ensure high project realisation rates (preventing delays, incongruences between projects and what is built and similar).	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All aid beneficiaries supported by RESS to date.

⁹ This will involve the CRU evaluating the level of competition achieved within each RESS competition, and within each preference category (if any) within each RESS competition. The CRU shall determine the most appropriate metrics and mechanisms to evaluate competitiveness, however it is envisaged these might include metrics such as the Herfindahl-Hirschman Index (HHI), Residual Supply Index (RSI) and/ or others. Regarding the pipeline, the CRU will assess the annual GWh quantity of renewable energy projected to participate in each RESS auction and in each preference category based on its internal studies, and will compare actual qualified quantities to forecast quantities for each auction, and across each auction.

	Evaluation question	Indicator	Source	Frequency	Level	Population
10	Did the beneficiaries increase investments in RES projects, including increasing renewable capacity and renewable energy production? (e.g. compared to non- successful applicants to the auctions or another appropriate control group)	<p>New RESS capacity installed and RESS energy produced. Overall RES-E capacity installed (RESS and non-RESS).</p> <p>Financial data of projects that win (e.g. marginal winners) in the auctions compared to financial data of projects that do not win in the auctions (e.g. marginal losers). This will be complemented by ‘bottom up’ analysis where relevant using Difference in Difference analysis and Regression Discontinuity Design (see Section 5).</p> <p>Details of financial data are set out in Section 6.</p>	DCCAIE, CRU, SEAI, EirGrid	Evaluated for each auction	Individual renewable projects and proposed projects	All aid beneficiaries projects participating in RESS competitions to date.
11	Has the aid delivered appropriate levels of diversification of the renewable energy mix?	Diversity measured by annual market share (GWh and MW) of each technology	DCCAIE, CRU, SEAI, EirGrid		Individual renewable projects	All renewable generation firms including aid beneficiaries supported by RESS to date.
12	What impact has the aid had on system services costs and other system costs?	Total system services costs (measured by annual cost of ancillary services and other system costs that are attributable to incremental	DCCAIE, CRU, SEAI, EirGrid		Generators in the electricity market	Overall electricity market (SEM)

	Evaluation question	Indicator	Source	Frequency	Level	Population
		increase in renewable electricity due to the RESS).				
13	Has the specific aid for solar projects led to overall costs increases relative to a technology neutral scheme?	The direct net cost of the solar preference categories and any other technology categories in the RESS auction ¹⁰	CRU and EirGrid		Individual renewable projects	All participants in the most recent RESS auction
14	Has the specific aid for offshore wind projects led to overall costs increases relative to a technology neutral scheme?	The direct net cost of the offshore arrangements in the RESS auction ¹¹	CRU and EirGrid		Individual renewable projects	All participants in the most recent RESS auction
15	Has any specific aid for any other technologies (e.g. biomass) led to overall cost increases relative to a technology neutral scheme?	The direct net cost of any specific arrangements for other technologies in the RESS auction	CRU and EirGrid		Individual renewable projects	All participants in the most recent RESS auction
16	Has the specific aid for solar projects led to an improved overall rate of grid connection of renewable energy projects?	Market share of electricity from renewable sources (as a % of total electricity) measured as done today. (Counterfactual case for comparison evaluates the MW of non-solar projects that would have won in the auction	DCCAE, CRU, SEAI, EirGrid		Individual generators	All renewable generation, including that aid beneficiaries supported by RESS to date and any un-built non-beneficiaries

¹⁰ The basis for comparison is obtained by re-running a hypothetical auction with no solar preference category, but otherwise with the same actual bids and no other factors changed, and comparing to actual auction results. The direct net cost of the solar preference category is quantified in this way, adjusting for any auction quantity difference using forecast merchant prices as a benchmark.

¹¹ The basis for comparison is to assume no offshore auction was held. Modelling assumptions may be necessary in the future, to estimate what sources of energy would have replaced the offshore sources had they not been built. The direct net cost of the offshore arrangements is quantified as the actual cost of procurement including those offshore arrangements, less the cost of the modelled counterfactual. It should be noted that the modelled counterfactual may result in lower realisation rates of renewable energy given the challenges in public acceptance, planning permissions and grid connections for onshore wind.

	Evaluation question	Indicator	Source	Frequency	Level	Population
		but for the solar preference category.)				losing in RESS auctions.
17	Has the specific aid for offshore wind projects led to an improved overall rate of grid connection of renewable energy projects?	<ul style="list-style-type: none"> Market share of electricity from renewable sources (as a % of total electricity) measured as done today. (Counterfactual case for comparison excludes impact of offshore wind-specific RESS arrangements.) 	DCCAE, CRU, SEAI, EirGrid		Individual generators	All generation, including aid beneficiaries supported by RESS to date, any un-built non beneficiaries losing in RESS auctions, and non-beneficiaries built without aid.
18	Has any specific aid for other technologies (e.g. biomass) led to an improved overall rate of grid connection of renewable energy projects?	Market share of electricity from renewable sources (as a % of total electricity) measured as done today. (Counterfactual case for comparison excludes impact of other technology-specific RESS arrangements.)	DCCAE, CRU, SEAI, EirGrid		Individual generators	All generation, including aid beneficiaries supported by RESS to date and any un-built non beneficiaries losing in RESS auctions.
19	Has the aid led to an increase in community investment in order to deliver on the objectives of the scheme?	<ul style="list-style-type: none"> The cost of renewable energy procured as revealed by auction results¹² 	DCCAE, CRU, SEAI		<ul style="list-style-type: none"> Individual community renewable 	<ul style="list-style-type: none"> All community aid beneficiaries supported by

¹² The basis for comparison for all direct and indirect impacts listed (except public and community acceptance) is found by re-running a hypothetical auction with no community preference category, but otherwise with the same actual bids and no other factors changed, and comparing to actual auction results. In particular the direct net cost of the community preference category is quantified in this way, adjusting for any auction quantity difference using forecast merchant prices as a

	Evaluation question	Indicator	Source	Frequency	Level	Population
		<ul style="list-style-type: none"> • The number of community projects successful in each RESS auction and their annual GWh • The MW of non-community projects that would have won in the auction but for the solar preference category. 			generation projects <ul style="list-style-type: none"> • Individual citizens (with regards to survey) 	RESS to date <ul style="list-style-type: none"> • The general public (with regards to survey)
20	Has the specific enablers for communities to develop their own RES-E projects in the scheme led to an increase in the number of community owned renewable generation plants? Has this aid had a positive impact on the relevant Sustainable Energy Community receiving the support?	Number and size of community projects that received support. Organisational structure and make up of community project (e.g. number of community shareholders) cross-referenced with information on successful or unsuccessful community projects, Survey of community project owners to assess the extent to which the support was critical to project success.	DCCAE, CRU, SEAI, EirGrid	Evaluated for each Auction	Individual renewable projects	All community aid beneficiaries supported by RESS to date.
21	Have the specific the aid measures for community projects delivered benefits to	<ul style="list-style-type: none"> • Public support measured by survey of general support for 	DCCAE, CRU,	To be determined –at	<ul style="list-style-type: none"> • Individual citizens (with 	<ul style="list-style-type: none"> • The general public and/or

benchmark. This will be complemented by ‘bottom up’ analysis where relevant using Difference in Difference analysis and Regression Discontinuity Design (see Section 5).

	Evaluation question	Indicator	Source	Frequency	Level	Population
	local communities such that public and community support for renewable energy increases and project realisation rates increase?	renewable sources of energy and wider climate measures and/or survey of support in specific areas with community projects measured in pre and post realisation of RESS projects. • Rate of RES-E project realisation in areas with community projects compared to those without (control group). <i>N.B. – methodology and survey design to be developed in further detail on this question.</i>	SEAI, EirGrid	least twice during lifetime of scheme including baseline survey.	regards to survey) • Individual community renewable generation projects	citizens of communities concerned (with regards to survey) • All community aid beneficiaries offered in RESS auctions to date
22	Has the €2MWhr community benefit fund payments led to increased benefits for communities where renewable energy projects aided under the scheme are located	Measurement of level of community economic and social benefits and multiplier effects on communities. <i>N.B. – methodology on assessment of these benefits to be developed in further detail on this question.</i>	SEAI	To be determined –at least twice during lifetime of scheme including baseline survey.	Individual citizens and enterprises in receipt of the community benefit fund.	Citizens and enterprises of communities concerned
23	What effects have the community benefit fund payments to not for profit enterprises had on those who have received the aid?	Measured by increase in levels of services provided and collecting data on the types of enterprises and services	DCCAE, CRU, SEAI	To be determined –at least twice during lifetime	Individual citizens and enterprises	The general public and enterprises concerned

	Evaluation question	Indicator	Source	Frequency	Level	Population
		receiving aid.		of scheme including baseline survey.		
	Indirect Effects					
24	Has the aid reduced the annual carbon emissions of the electricity sector in Ireland?	Levels of emissions: <ul style="list-style-type: none"> • RESS vs Non- RESS / total national levels; • Comparison among different RESS technologies, possibly using a life-cycle approach 	SEAI		All generators in the electricity market	Overall electricity market (SEM)
25	Has the aid led to an increased uptake in electro-mobility and electric heat devices owing to their lower associated CO2 emissions? ¹³	Uptake of Electric Vehicles and heat pumps Off-peak electricity prices Availability and levels of retail electricity ‘time of use’ tariffs targeted at EVs and electric heat or other relevant indicators.	DCCAIE, CRU, SEAI		Overall relevant markets	National statistics
26	What impact has the aid had on regions affected by the Just Transition (e.g. coal, peat	Number of projects and revenue generated for	DCCAIE, CRU,		Individual renewable	All aid beneficiaries

¹³ Note – it may be difficult to establish a causal link between these and to isolate the effects of the aid itself.

	Evaluation question	Indicator	Source	Frequency	Level	Population
	closures)?	communities located in areas affected by closure of fossil fuel plants (e.g. the Midlands region where peat generation plants are closing in 2020).	SEAI, CSO		projects	supported by RESS to date.
27	What impact has the aid had in offsetting employment losses resulting from early closure of fossil fuel electricity generation stations associated with climate policies (e.g. EU ETS price)?	Number of people employed by projects supported under the scheme in regions affected by the closure of fossil fuel plants (e.g. the Midlands region where peat plants are closing in 2020).	CSO, data from project developers/ industry groups		Individual renewable projects	All aid beneficiaries supported by RESS to date.
28	What impact has the aid had on competition (in particular, the efficiency of entry and exit) in the electricity market in Ireland?	<ul style="list-style-type: none"> • Number, MW, and annual GWh of new generators entering the market • Number, MW, and annual GWh of new generators exiting the market 	DCCAE, CRU, SEAI, EirGrid		Enterprises in the electricity sector	Overall electricity market (SEM)
29	What effects has the aid had on competitiveness and efficiency of the overall power sector?	<p>Qualitative and quantitative regulatory assessment of the competitiveness and efficiency of the overall power sector, and assessment of how the RESS has impacted on these. Indicators to include:</p> <ul style="list-style-type: none"> • Average wholesale electricity prices (€/MWh) 	CRU		Enterprises in the electricity sector	Overall electricity market (SEM)

	Evaluation question	Indicator	Source	Frequency	Level	Population
		<ul style="list-style-type: none"> • Average PSO charge to consumers (€/MWh) • Average system services charge to consumers (€/MWh) • Impacts (if any) on competition in the electricity retail sector (e.g. retail suppliers who sign RESS Power Purchase Agreements with beneficiaries) 				
30	What effects has the aid had on merchant markets for renewable energy (e.g. through Corporate Power Purchase Agreements).	<p>Levels of new merchant (unsubsidised) renewable energy projects financed and connected to the grid during the lifetime of the scheme measured by:</p> <p>a) Changes in annual levels of Corporate PPAs in Ireland compared to size and prices in each RESS auction.</p> <p>b) Competition ratios applied in RESS auctions.</p>	DCCAIE, CRU, SEAI, Industry sources		Electricity consumers	Overall electricity market (SEM)
31	Was there an impact on cross-border trade in RES electricity?	<ul style="list-style-type: none"> • Level of cross-border trade, in GWh per year and by time of day, export and import • Number of foreign beneficiaries who obtained 	DCCAIE, CRU, SEAI, EirGrid		Generators in the electricity market	Overall electricity market (SEM)

	Evaluation question	Indicator	Source	Frequency	Level	Population
		support under the scheme (and corresponding RESS capacity) • Number of RESS generators obtaining support in other countries (and corresponding RES capacity)				
32	Has the aid increased the beneficiaries' market power?	Market shares of beneficiaries receiving aid under the scheme, market HHI, appropriately segmented into sub-markets	DCCAIE, CRU.		Generating enterprises in the electricity market	Overall electricity market (SEM)
33	What effects has the RESS scheme had on the achievement of capacity adequacy and security of supply standards in the electricity industry?	Existing security of supply and capacity adequacy metrics: Statistics from industry institutions such as the TSO and RA regarding achievement of required standards	CRU, EirGrid		Generators in the electricity market	Overall electricity market (SEM)
34	How many jobs were created in the renewable energy industry including through direct, indirect and estimated induced employment as a result of the aid?	Jobs (FTE)	Central Statistics Office (CSO), SEAI, Industry sources		Individual generators	All aid beneficiaries supported by RESS to date.
35	What impact has the aid had on the development of hybrid technologies (e.g. wind/solar/batteries)?	Number of hybrid projects developed	DCCAIE, CRU, SEAI,		Individual hybrid projects	All aid beneficiaries in the electricity

	Evaluation question	Indicator	Source	Frequency	Level	Population
			EirGrid			market
36	Have the specific technology levers in the scheme reduced the rate of curtailments relative to a technology neutral scheme?	Existing curtailment metrics, measured pursuant to CRU decision paper SEM-13-10 'Definition of Curtailment and Constraint, Version 1.0, 13 Feb 2013' ¹⁴	DCCAE, CRU, SEAI, EirGrid		Generators in the electricity market	Overall electricity market (SEM)
37	Have the technology levers increased the beneficiaries' market power?	Market HHI of beneficiaries receiving aid under the scheme, appropriately segmented into sub-markets	DCCAE, CRU, MMU		Generating enterprises in the electricity market	Overall electricity market (SEM)
38	What impact have the specific technology levers in the scheme had on competitiveness of the RESS auctions?	The ratio of GWh offered to GWh awarded in the various auction categories, with and without the levers	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All participants in the most recent RESS auction
39	What impact have the specific technology levers in the scheme had on the selection of generators of other technologies within the RESS auctions?	The MW and GWh of projects of "non-levered" technologies that would have been awarded in the auction but for the technology levers. (Found by re-running auction with levels "turned off", where applicable.) This will be complemented by 'bottom up' analysis where	DCCAE, CRU, SEAI, EirGrid		Individual renewable projects	All participants in the most recent RESS auction

¹⁴ <https://www.cru.ie/wp-content/uploads/2016/07/SEM13011-TSOs-Definition-of-Curtailment-and-Constraint.pdf>

	Evaluation question	Indicator	Source	Frequency	Level	Population
		relevant using Difference in Difference analysis and Regression Discontinuity Design (see Section 5) examining the effect of the aid on winning and losing projects in the auctions.				
40	What economic impact has the specific measures in the aid had to facilitate community projects had on the sector?	Costs of PSO levy support for community measures.	DCCAIE, CRU, SEAI		Individual community generators	All community aid beneficiaries supported by RESS to date.
41	What are the social equity (intra-community) impacts of the community aspects of the aid? What distributive effects have the measures had on communities?	Survey of social equity 2 surveys carried out -1) before the measures come into force and one after on social equity within a sample community. Specific community design elements should be evaluated: <ul style="list-style-type: none"> • Community category in auction and other community project levers. • Grants and loans through community enabling framework • Community benefit fund 	DCCAIE, IEA Wind TCP Task 28, SEAI	To be determined –at least twice during lifetime of scheme including baseline survey.	Individual citizens	Citizens of communities concerned

	Evaluation question	Indicator	Source	Frequency	Level	Population
		<ul style="list-style-type: none"> Community investment opportunities <p>Assessment of effectiveness of mechanisms and institutions through which community benefits are administered.</p>				
42	Has the package of community measures facilitated those in energy poverty transition and lower income earners to participate in the renewable energy transition?	<p>Survey of income levels of those participating in investing renewable energy projects.</p> <p>2 surveys carried out -1) before the measures come into force and one after.</p> <p>Specific community design elements should be evaluated:</p> <ul style="list-style-type: none"> Community category in auction and other community project levers. Grants and loans through community enabling framework Community benefit fund Community investment opportunities 	DCCAE, IEA Wind TCP Task 28, SEAI	To be determined –at least twice during lifetime of scheme including baseline survey.	Individual citizens	The general public and citizens of communities concerned

	Evaluation question	Indicator	Source	Frequency	Level	Population
43	What are the impacts of the support for community projects on competition?	<ul style="list-style-type: none"> • The MW and GWh of non-community projects that would have won in the auction but for the community category • The ratio of GWh offered to GWh awarded in the various auction categories with and without the community category 	DCCAIE, CRU, SEAI, EirGrid		Individual renewable projects	All participants in the most recent RESS auction
44	What are the impacts of the community benefit fund on the relevant organisations receiving the aid -e.g. provisions of services for energy efficiency, sport clubs etc.?	<p>Survey of recipients of community benefit fund.</p> <p><i>N.B. – methodology and survey design to be developed in further detail on this question.</i></p>	SEAI	To be determined –at least twice during lifetime of scheme including baseline survey.	Individual citizens and enterprises	Citizens and relevant enterprises in the communities surrounding the aid beneficiaries
	Appropriateness and Proportionality of the Aid					
45	What is the impact of the RESS scheme on consumer prices?	Consumer prices by customer class	DCCAIE, CRU, SEAI		Customer class	National average retail electricity prices
46	What is the cost of CO2 abatement of the scheme, overall and on a technology-by-technology basis?	€/tCO2 saved, per technology, with and without technology-specific levers	DCCAIE, CRU, SEAI,		Generators in the electricity market	Overall electricity market (SEM)

	Evaluation question	Indicator	Source	Frequency	Level	Population
			EirGrid			
47	Is the net cost of the RESS scheme commensurate with its benefits?	<ul style="list-style-type: none"> • Net cost of RESS scheme • Net benefits of the RESS scheme, incorporating an appropriate CO2 compliance value 	DCCAIE, CRU, SEAI, EirGrid		Generators in the electricity market	Overall electricity market (SEM)
48	Could the same outcomes (i.e. level of annual renewable energy output) have been achieved through other instruments? E.g. through loans, grants, tax incentives, carbon taxes?	Qualitative and quantitative regulatory assessment of the relative efficacy of the RESS scheme	DCCAIE, CRU, SEAI, EirGrid		RESS scheme	Alternative schemes
49	Is the RESS scheme the lowest cost mechanism to achieve the required level of penetration of renewable generation in Ireland? Including: Are there any indications of possible overcompensation? Is the pay-as-bid pricing rule preferable to pay-as-clear to meet the scheme objectives at least cost?	High-level estimate of net cost of alternative schemes	DCCAIE, CRU, SEAI, EirGrid		Irish electricity market (SEM)	International electricity markets
50	Did price ceilings contribute to proportionality or otherwise bind in the auctions?	<ul style="list-style-type: none"> • Number of offer prices made at a price cap; • Number of offer prices accepted at a price cap 	CRU and EirGrid		Individual renewable projects	All participants in the most recent RESS auction
51	How did the intensity of competition evolve or become differentiated in the various auctions? Does the bid curve reflect the cost curve?	<ul style="list-style-type: none"> • Relationship between offer and tender volumes • Differences between the offer prices 	CRU and EirGrid		Individual renewable projects	All participants in all RESS auctions to date

	Evaluation question	Indicator	Source	Frequency	Level	Population
52	How did the auction award prices evolve or become differentiated over time in the various auctions?	Quantity-weighted tender award prices by auction	DCCAIE, CRU, SEAI, EirGrid		Individual RESS auction	All aid beneficiaries and non-beneficiaries in RESS auctions to date
53	Were the technology levers in the scheme proportionate to their objectives?	<ul style="list-style-type: none"> • Net cost of each technology lever (qualitative and quantitative) • Net benefits each technology lever (qualitative and quantitative) 	DCCAIE, CRU, SEAI, EirGrid		Generators in the electricity market	Overall electricity market (SEM)
54	Could the same outcomes have been achieved through other instruments (i.e. alternatives to the technology levers)?	Qualitative and quantitative regulatory assessment of the relative efficacy of the technology levers	DCCAIE, CRU, SEAI, EirGrid		Technology levers	Alternative mechanisms
55	Was the most effective aid chosen? How do the RESS technology levers compare in outcomes to other schemes to support renewable energy projects in other EU Member State and/or previous schemes in Ireland?	Average aid amount per GWh of additional renewable energy production for the technology concerned	DCCAIE, CRU, SEAI, EirGrid		Irish electricity market (SEM)	International electricity markets
56	What is the difference in cost of abatement between different auctions and to what extent can that be attributed to the auctions having technology-specific elements?	€/tCO ₂ saved, per technology, with and without technology-specific levers	DCCAIE, CRU, SEAI, EirGrid		Generators in the electricity market	Overall electricity market (SEM)
57	How do the RESS community measures compare in outcomes to other schemes to	High-level estimate of net cost of alternative schemes	DCCAIE, CRU,		Irish electricity market (SEM)	International electricity markets

	Evaluation question	Indicator	Source	Frequency	Level	Population
	support renewable energy projects in other EU Member State and/or previous schemes in Ireland? Was the most effective aid chosen?		SEAI, EirGrid			

Please explain why the chosen indicators are the most relevant for measuring the expected impact of the scheme:

The evaluation questions and indicators cover two broad aspects:

- *an evaluation of the overall RESS scheme*
- *an evaluation of specific design elements within the RESS schemes, such as the community preference category in the auctions or a 'lever' which applies to a specific technology such as offshore wind or solar energy*

Ireland intends to use the indicators set out above to evaluate the benefits and costs of the overall RESS, the technology levers, the individual components of the package of community measures in the scheme as well as a number of design elements that will be kept under review. The methodological approaches to evaluating these various components are set out in Section 5 below.

The focus of the evaluation will be on assessing the scheme and measures against the counterfactual, i.e. netted out from what would have happened in the absence of the RESS. The most relevant evaluation questions are those measuring the extent to which a given effect can be causally linked to the scheme being in place.

The intention of the evaluation process is assess the impact of the RESS and evaluate whether the benefits of the aid justify the costs. Ongoing evaluation of specific design elements, community measures and technology levers will inform any design changes during the lifetime of the scheme as well as any potential increases in the levels of aid/energy supported through specific technology categories or features for directly supporting community projects.

The evaluation questions and indicators set out above will be used to keep under review the following design aspects of the RESS as set out the in the description of the scheme¹⁵:

- 1) *the full costs and benefits of each of the various different features for supporting community projects (as well as the measures for supporting communities hosting RESS projects) will be identified as part of the evaluation of the RESS.*
- 2) *Assessment of whether the assumed benefits of technology specific support for solar projects materialise.*
- 3) *Assessment of whether the assumed benefits of technology specific support to offshore wind projects materialise.*
- 4) *Evaluations of the possibility of internalising more costs in future and reduce/avoid the need for technology specific approaches.*
- 5) *The costs and benefits of moving from a 'Pay as Bid' to 'Pay as Clear' auction pricing rule.*

¹⁵ Note that the methodology for assessing some of these aspects will be developed as part of the implementation of the evaluation plan

- 6) *The costs and benefits of implementing technology specific price caps.*
- 7) *Adapting future collateral requirements if necessary to ensure realisation of projects.*
- 8) *Implementing an alternative settlement approach for the RESS Floating Feed in Premium.*
- 9) *The likelihood of offshore wind becoming more competitive with onshore technologies reducing the need for separate offshore auctions.*

5. Envisaged methods to conduct the evaluation

5.1. In light of the evaluation questions, please describe the envisaged methods to be used in the evaluation to identify the causal impact of the aid on the beneficiaries and to assess other indirect impacts. In particular, please explain the reasons for choosing those methods and for rejecting other methods (for example, reasons related to the design of the scheme)¹⁶:

The basis for comparison for the direct and indirect impacts listed is to establish data and indicators related to the direct and indirect impact of the aid and to establish a causal link between the aid and its effects (positive and negative).

The envisaged methods to be used in the evaluation fall into two over-arching categories, 'top-down' analysis and 'bottom-up' analysis, which are described below. In summary, top-down involves modelling counterfactual scenarios at the industry or auction level, and comparing modelled outcomes to the actual outcomes observed. Bottom-up involves analysing specific project-level data points and inferring causality where possible on that basis. Where it is not possible to establish causality through bottom-up analysis, greater emphasis will be placed on modelling of the counterfactual. Similarly, surveys will be employed as complementary tools.

The ultimate goal of the evaluation (both top-down and bottom-up) will be to establish whether the scheme in general, and in its specific provisions, was necessary, appropriate and proportional in delivering its policy goals. Overall, the evaluation will involve a thorough examination of the counterfactual across a number of evaluation questions set out in sections 3 and 4. Zooming in on comparisons of projects at either side of the thresholds will allow for evaluation of the causal effects of the aid on the beneficiaries.

Particular focus will be placed throughout this process of identifying the impact of RESS on RES-E capacity installed and RES-E energy produced (question 10), system services costs (question 12), the level of community investment (question 19), the benefits to local communities (question 21), carbon emissions (question 24), and beneficiaries' market power (question 25).

Top-down analysis

From a 'top down' perspective the control group for evaluation purposes will, in the case of evaluation of the overall RESS scheme, be an assessment of market outcomes in the absence of the RESS. In the case of evaluation of specific design elements within the RESS scheme, the control group will be market outcomes with the RESS but without the specific element concerned, such as the community preference category in the auctions or a 'lever' which applies to a specific technology such as offshore wind or solar energy.

¹⁶ Please make reference to SWD (2014)179 final of 28.5.2014.

In the case of evaluating the overall RESS itself, it is necessary to compare actual outcomes in the electricity sector to a counterfactual case, without the RESS, which by definition will be a hypothetical scenario. Electricity sector outcomes in this hypothetical scenario will therefore be estimated by way of modelling. The model will estimate what new generation investments would have been made without the RESS, and what generation retirements would have occurred without the RESS. It will also estimate what output would have been produced by each generator without the RESS (and thus the energy mix by technology type). Accordingly, other metrics such as the total amount of investment, fuel usage, the level of emissions, and so on, will be estimated for the “without RESS” scenario. The levels of each of these metrics modelled will be compared to actual levels observed in real life, so as to estimate the impact of the RESS on each such metric.

Modelling assumptions will naturally need to be made as part of this process. The most important modelling assumptions will likely be those relating to the investment cost and efficiency of potential new generators, and those relating to the fuel (as applicable) and other operating and maintenance costs of all generators. These assumptions for the counterfactual case will be based on the best available data at the time the modelling analysis is conducted. This may include actual observed new-entry costs and efficiency factors from new plants that have been built, or studies of the same, actual fuel and emissions costs, and so on. It will include the evolution of those costs and other factors up to the point in time in which the study is conducted, and extrapolation of expectations of future values forward from that point in time. For example, the analysis may utilise actual observed LCOEs of new gas-fired generators and other technologies including renewables, updated annual rates of technological and cost improvement, actual fuel and CO2 costs, actual fuel futures costs, and so on.

The model used for this purpose, to be selected, will be an appropriate industry-standard model which integrates efficient long-term planning and security-constrained least-cost dispatch into a single problem formulation. Regarding the long-term aspect of this model, the capacity mix in the counterfactual scenario will reflect the optimised mix of: continuing operation of efficient legacy generators; the economic and technical retirement of inefficient legacy generators; and investment in new generating capacity of each technology in the most efficient mix and quantity so as to offset retirements and meet load growth. Regarding the short-term (dispatch) aspects of this model, production will be simulated in much the same way as it is done today using the security-constrained least-cost simulation which is carefully calibrated and employed by the National Regulatory Authority.

Econometric Analysis

It is intended that, insofar as is possible, the ‘top down’ evaluation will utilise auction econometrics based on actual bid data from each RESS auction (and updated levelised cost of energy data). In theory, and subject to sufficient data points, it should be possible to construct a supply curve from all bids submitted into a given RESS auction. The supply curve will inform how much investment would be carried out depending on the aid amount given. This aid effect will primarily be a function of a lower weighted average cost of capital per € of investment as well as effects resulting from specific design features in each RESS auction.

That supply curve can be used as an input into the counterfactual model which will show much investment would have been carried out without any aid (if the aid was zero) and, in turn, allows identifying how much investment was 'caused' by the aid.

Further analysis may be done to compare the outcomes of the RESS auctions to 'competition' benchmarks in other countries (refer to evaluation questions 55 & 57) and which may be used to inform some of the decision elements of the scheme which Ireland has pledged to keep under review.

Regarding specific RESS elements and in particular the community and technology-specific provisions, the 'top down' basis for obtaining result indicators is more straightforward and will not involve estimating alternative investment costs. Rather, actual data from the RESS auctions can be used. The basis for comparison is obtained by re-running a hypothetical auction without the element concerned, for example with no solar preference category, but otherwise with the same actual bids and with no other factors changed. The outcome is compared to the actual auction results and the results indicators are directly attributable to the inclusion of the element concerned within the RESS scheme. Differences in production cost can then be assessed using the calibrated production cost simulation model.

The 'top down' approach regarding offshore wind may contain elements of both of the above-mentioned approaches. The counterfactual case (i.e. the basis for comparison) is to assume no offshore auction was held. Specific assumptions may be necessary in the future to estimate what sources of energy would have replaced the offshore sources had they not been built. The direct net cost of the offshore arrangements is quantified as the actual cost of procurement including those offshore arrangements, less the cost of the modelled counterfactual.

Bottom-up analysis

To complement the above, a 'bottom up' approach will also be used in the evaluation, to the extent that sample sizes are sufficient, to identify the causal impact of the aid on the beneficiaries and this will utilise 'difference in difference' analysis between the treatment group (the winners in the auctions) and the control group. The control group will consist of firms who were not successful in the auction where such information is available. Evaluation of projects' financial indicators (for example Internal Rates of Return, Capital Expenditure, Weighted Average Costs of Capital, Gearing levels and sourcing of equity and debt funding) will be assessed from both groups where reliable data sets are available.

This 'bottom up' approach will involve Regression Discontinuity Design (RDD) analysis which will focus on projects that are 'near-marginal' in the auctions: both marginal winning bids and marginal losing bids. This analysis will attempt to utilise a threshold (i.e. clearing in the auction) that can then be used to assess the effects of the aid on these two categories by assessing the impact on both the ultimate financing and realisation of the projects (did the aid lead to the marginal winning projects being realised and the marginal losing projects not? or did projects fail to clear in the auction as they are marginally unable to achieve financial close at the price of the winning bid in the auction) and also whether the differences in financial data between the two categories

was the driver for some projects receiving aid and others not. For RDD, the discontinuity may be also analysed in the context of the eligibility criteria or performance milestones of projects participating in the auction (e.g. requirement to meet ‘new investment’ criteria, requirement to have planning consent/grid connection, requirement to deliver the project by a long stop date) and the financial characteristics of such projects (e.g. Internal Rates of Return, Capital Expenditure, Weighted Average Costs of Capital, Gearing levels and sourcing of equity and debt funding). For example, the, RDD evaluation may consider projects which do not participate in a particular auction.

If it is not possible to gather sufficiently robust data to carry out the above ‘bottom up’ analysis within the legal framework of the scheme without undermining the auctions themselves then a greater emphasis will be placed on the top down econometric analysis described above.

Further development of the top down and bottom up methodologies will be will be required as the part of the implementation of the Evaluation Plan. As the methodologies are refined, greater emphasis may be placed on methodologies that are most appropriate, proportional and efficient to support the evaluation. Ireland will keep DG Competition informed of this on an annual basis as part of progress reporting on the evaluation plan

Community aspects

Regarding measuring community and wider social responses to RESS (aside from investment and production effects): This is best suited for a bottom-up approach to a) evaluating the direct material effects (e.g. Questions 19-20, 22-24, 26, 27, 41, 42, 44), as well as b) the perceptions / attitudes of the beneficiaries towards the effects (e.g. Questions 21-22) - i.e. community and social acceptance of RESS. For the former, data will be gathered from project developers (‘the generator’ in RESS), and not-for-profit community enterprises benefiting from the community benefit fund. This will align with the ministerial reporting requirements and community benefits registry under RESS where relevant (e.g. Section 7.2.7 of RESS-1 Terms and Conditions).

A general baseline of attitudes to renewable energy projects across suitable control groups in relevant (i.e. wider social acceptance), and potential and actual projects proximate to communities (i.e. community acceptance) will be established prior to RESS commencement. The aim is to serve as a broad baseline for several evaluation questions (i.e. Q 19-23, 26, 42, 44, 57). The baseline will employ a suitably representative survey, and will leverage existing socio-economic data in the public domain (e.g. from Irish Central Statistics Office), and established methods employed to measure attitudes to renewable energy infrastructure in Ireland and abroad. These include prior academic survey methods (Bertsch, Hyland, Mahony 2017; Firestone et al. 2018) and concurrently running research programmes in Ireland (e.g. COWIND), and potentially the annual Irish Wind Energy Association (IWEA) surveys.

The survey will control for background socio-economic variables that may affect responses to renewable energy infrastructure, as well as the procedural variables that affect attitudes - i.e. procedural fairness, transparency and institutional administrative arrangements for community engagement and benefit measures. Given the control group

representative sampling, it opens the possibility of different configurations for difference in difference analysis which still needs to be decided on. For example, the baseline will include communities who had not previously experienced effects related to proximate renewable energy infrastructure at all; communities that have prior (pre-RESS) experience of proximate renewable energy infrastructure, and a broader public who will not be directly affected by particular RESS measures.

Employing emergent good practice scientific methods for measuring social and community acceptance will also enable wider international European comparisons, and standardisation of research methods in this field. This may include employing choice-based conjoint analysis to track community attitudes to different attributes of the community measures of RESS

Further development of the methodology for evaluation of the community aspects of the schemes will be done in the coming months as part of the implementation of the Evaluation Plan. Ireland will keep the EU Commission informed annually of these developments.

5.2. Please describe precisely the identification strategy for the evaluation of the causal impact of the aid and the assumptions on which the strategy relies. Please describe in detail the composition and the significance of the control group:

The direct net cost of the RESS is quantified as the actual cost of electricity including procurement from the RESS competitions, less the cost of the modelled counterfactual.

For the indirect impacts of the aid, some effects will be assessed through a combination of technically available data comparing the position before the aid was granted with the position after the aid.

As explained above, this ‘top down’ analysis will be complemented by a ‘bottom up’ analysis using Difference in Difference and Regression Discontinuity Design methods as appropriate. The causal impact of the aid will be identified through the examination of financial and project data of successful and unsuccessful bidders whether it is possible to collect this information. The control group will be unsuccessful projects who qualified for auctions under the scheme but did not clear in the auction winner selection algorithm or that qualified but did not proceed to auction or projects that didn’t qualify for the auction as a result of being slightly under the qualification threshold.

Regarding standards, the counterfactual is to assume that standards have in the counterfactual case been met in accordance all requirements, except where any actual failure to meet required standards is not RESS related.

Regarding competitiveness and efficiency of the overall power sector, the counterfactual will be the most recent qualitative and quantitative regulatory assessments of the competitiveness and efficiency of the overall power sector prior to the establishment of the RESS programme.

The basis for comparison for all direct impacts of the technology levers (except public acceptance) is found by re-running a hypothetical auction with no such technology levers, but otherwise with the same actual bids and no other factors changed, and comparing to actual auction results.

On the community measures the control group will be determined based on the specific evaluation question and indicator set out in section 4. For community projects the control group could be a community with only developer led projects or alternatively the impacts of developer led projects within a specific community could be compared with community project impacts within the same community. For community benefits, the control group could be communities who host developments prior to compulsory community benefits provision. For attitudes towards RESS projects (including specific measures like the benefit fund), the control group(s) may be the wider population (with comparable socio-economic characteristics) who had no direct dealing with RESS projects; and/or those communities who experienced either or both of the RESS development models; and or neighbouring communities without scheme support..

For those questions concerned with issues of direct material effects (e.g. local development and social equity), targeted methods (including surveys of recipients) will be used to evaluate the effects of community measures in host communities/regions. These effects will be situated within the overall socio-economic context of these areas, for example using deprivation indexes or socio-economic data gathered through surveys, to build a picture of broad distributive effects.

Further development of the methodological approach for assessing the community measures will be carried out over the coming months in conjunction with experts from the IEA Wind TCP Task 28 who will act as an international expert community of reviewers to ensure best practice is followed in survey method design, execution, and analysis of results assessing the community impacts of the scheme.

5.3. Please explain how the envisaged methods address potential selection bias. Can it be claimed with sufficient certainty that observed differences in the outcomes for the aid beneficiaries are due to the aid?

Great care will need to be taken in establishing the causal effect of the aid across all evaluation questions. This will only be possible where the effects of the aid can be isolated from other policies (such as those designed to increase merchant funding of renewables or other mechanisms to support renewable energy community policy such as planning guidelines) and where there is sufficient data available (for example from both auction winners and losers).

For these reasons a number of complementary methodologies are being employed in this evaluation. Where it is not possible to establish causality through RDD analysis, greater emphasis will be placed on modelling of the counterfactual as described above. Similarly, surveys will be employed as complementary tools.

In the case of the top-down evaluations described, selection bias is inherently avoided because the entire population of data is utilised to calculate the result indicators. For evaluations analysing specific RESS elements and in particular the community and preference categories the total offer price curve will be used for the calculation of the

counterfactual. It will be established that this offer price curve reasonably represents underlying costs because the CRU will have tested for sufficient competitiveness as a precondition to running the auction(s) concerned. In the case of the overall RESS scheme it is total costs that are calculated, built up from all generators, total CO2 emissions, and so on.

In the case of specific RESS elements and in particular the community and solar-specific provisions, the 'top down' basis for obtaining result indicators doesn't involve sampling but rather utilising the entire population of actual data from the RESS auctions. It could be argued that selection bias might exist in these cases if, for example, some non-solar and non-community potential participants chose not to participate because of the existence of the preference categories, but in practice we expect this impact to be minimal or non-existent.

If relevant, please explain how the envisaged methods intend to address specific challenges related to complex schemes, for example schemes that are implemented in a differentiated manner at regional level and schemes that use several aid instruments:

Not applicable.

6. Data collection

6.1. Please provide information on the mechanisms and sources for collecting and processing data about the aid beneficiaries and about the envisaged counterfactual.¹⁷ Please provide a description of all the relevant information that relates to the selection phase: data collected on aid applicants, data submitted by applicants and selection outcomes. Please also explain any potential issue as regards data availability:

Data will be collected through the following mechanism and sources:

- *General data on renewable energy procured under the scheme*
 - *Renewable energy statistics from the Sustainable Energy Authority of Ireland comparing historical trends with changes arising from the introduction of the scheme.*
 - *Energy market data and public service obligation levy payments from the Commission for Regulation of Utilities comparing historical trends with changes arising from the introduction of the scheme.*
- *Top down data for modelling of counterfactual*
 - *Bid prices and LCOE data for auctions for relevant technologies and community projects*
- *Bottom up data for Difference in Difference and Regression Discontinuity Design:*
 - *Financial Data from all successful aid beneficiaries in each auction: the Project Internal Rate of Return / Weighted Average Cost of Capital, and the level of Capital and Operating Costs per MW of capacity. . (This information will be requested from winning projects in the scheme and be subject to commercial confidentiality however it is not be possible to legally oblige entities to provide this information for the first auction as the terms and conditions have already been published and qualification is underway)*
 - *Financial Data from all non-beneficiaries /unsuccessful projects in each auction: the Project Internal Rate of Return / Weighted Average Cost of Capital, and the level of Capital and Operating Costs per MW of capacity. (This information will be requested from unsuccessful projects in the scheme and be subject to commercial confidentiality however it is not be possible to legally oblige entities to provide this information for the first*

¹⁷

Please note that the evaluation might require sourcing of both historical data and data that will become progressively available during the deployment of the aid scheme. Please identify the sources for both types of information. Both types of data should preferably be collected from the same source as to guarantee consistency across time.

auction as the terms and conditions have already been published and qualification is underway)

The draft information request for applicants submitting bids in the first RESS auction is set out below for information purposes:

Draft Information Request to RESS bidders

Due to State Aid ex-post evaluation requirements, bidders are requested to provide the information specified in the table below. Bidders should note that the Department will treat all such information as confidential and commercially sensitive for the purposes of the FOI Act. The Department will ensure that, to the extent such information is used in any published ex-post evaluation, it will be on an anonymized basis – whereby the identity of a bidder cannot be determined.

Information request	Bidder response
<p>Importance of RESS</p> <p>Please estimate the percentage likelihood of you being able to deliver your project, should it be unsuccessful in this or any subsequent RESS auction?</p>	<p>Select one of the following:</p> <ul style="list-style-type: none"> • > 99% (almost certain to be delivered); • 75% to 99% (highly likely to be delivered); • 50% to 75% (likely to be delivered); • 25% to 50% (unlikely to be delivered); • 1% to 25% (highly unlikely to be delivered); or • < 1% (almost certainly <u>not</u> delivered).
<p>Non-RESS opportunities</p> <p>If your project is unsuccessful in this or any subsequent RESS auction, please estimate the percentage likelihood of you delivering your project through a Corporate Power Purchase Agreement (Corporate PPA) or by other means.</p>	<p>Select one of the following:</p> <ul style="list-style-type: none"> • > 99% (almost certain to be delivered); • 75% to 99% (highly likely to be delivered); • 50% to 75% (likely to be delivered); • 25% to 50% (unlikely to be delivered); • 1% to 25% (highly unlikely to be delivered); or • < 1% (almost certainly <u>not</u> delivered).
<p>Explanation</p> <p>Please provide a brief explanation for your response to the question above.</p>	<p>Select one or more of the following:</p> <ul style="list-style-type: none"> • The project would not be economically viable without RESS support; • The project would be unlikely to proceed as a corporate PPA; and/or. • Other – please specify

Information request	Bidder response
<p>Project Internal Rate of Return (IRR)</p> <p>Please indicate the Nominal pre-tax PIRR (PIRR) in respect of your project.</p> <p>The PIRR is the discount rate that equates the Nominal Project Cashflows equal to zero.</p> <p>Nominal means inclusive of escalation or inflation (i.e. ‘money of the day’, and <u>not</u> in ‘real terms’).</p> <p>Project Cashflows:</p> <ul style="list-style-type: none"> — include project revenues, capital and operating costs (see definitions below), and working capital adjustments; and — exclude all Financing Costs, Taxes and Accrual Items. <p>Whereby:</p> <ul style="list-style-type: none"> — Financing Costs include interest, finance arranging or refinancing fees, dividends; — Taxes include corporation tax, capital gains tax, VAT, rates and stamp duty; and — Accrual Items include depreciation, amortisation and other accrual accounting adjustments to the project cashflows. <p>The Nominal pre-tax Project IRR should equal the Weighted Average Cost of Capital on a Nominal pre-tax basis and assuming no refinancing, equity sell down or other changes to the capital structure during the life of the project.</p>	<p>Select one of the following:</p> <ul style="list-style-type: none"> • PIRR \geq 10%; • 10% > PIRR \geq 8%; • 8% > PIRR \geq 6%; • 6% > PIRR \geq 4%; • 4% > PIRR \geq 2%; or • 2% > PIRR.

Information request	Bidder response
<p>Capital costs</p> <p>Please indicate the total Nominal Capital Costs associated with your project, relative to its Generation Capacity.</p> <p>Nominal Capital Costs:</p> <ul style="list-style-type: none"> — include all planning, design, construction, contingency, escalation or inflation, project management, plant, machinery, equipment and other acquisition, installation or demolition costs associated with construction of the generation facility, grid connection costs or other costs of a capital nature that will be incurred directly by your project — exclude all Financing Costs and Taxes. <p>Generation Capacity is defined on a peak load basis in MW.</p>	<p>Specify total Nominal Capital Costs to the nearest €100,000 per 1 MW of Generation Capacity</p>
<p>Annual Operating costs</p> <p>Please indicate your Nominal Annual Operating Costs for your project, relative to its Generation Capacity.</p> <p>Nominal Operating Costs:</p> <ul style="list-style-type: none"> — include all repairs, maintenance, operations, inflation management costs and similar associated with operation of the generation facility; — exclude all Financing Costs and Taxes. <p>Annual means the period from 1 January 2026 to 31 December 2026.</p>	<p>Specify Nominal Annual Operating Costs to the nearest €10,000 per 1 MW of Generation Capacity</p>

- *Data from surveys related to impact of community measures:*
 - *Surveys will be used to address a number of evaluations set out in Sections 3 and 4 to assess the impact of the aid comparing classes of entities (including households and businesses etc.) who have received the aid.*

6.2. Please provide information on the frequency of the data collection relevant for the evaluation. Are observations available on a sufficiently disaggregated level, that is to say at the level of individual undertakings?

Generally data will be collected to inform the evaluation after a four year period (e.g. project data, auction performance, impact of community measures). Where data is available and relevant it will be collected on an annual basis (e.g. annual incremental increase in RES-E levels)

Data for surveys will be collected twice – before and after projects under the scheme become operational.

6.3. Please indicate whether the access to the necessary data for conducting the evaluation might be hindered by laws and regulations governing confidentiality of data and how those issues would be addressed. Please mention other possible challenges related to data collection and how they would be overcome:

The commercially sensitive nature of the financial data may make it difficult to obtain reliable indicators. This is particularly the case for non-beneficiaries /unsuccessful projects in the scheme which may subsequently enter into a corporate power purchase agreement and may not be prepared to divulge detailed project finance data. It is planned that results of the evaluation will be aggregated and made anonymous wherever possible.

6.4. Please indicate whether surveys of aid beneficiaries or of other undertakings are foreseen and whether complementary sources of information are intended to be used:

Yes, as stated above it is intended to request data from aid beneficiaries.

7. Proposed timeline of the evaluation

7.1. Please indicate the proposed timeline of the evaluation, including milestones for data collection, interim reports and involvement of stakeholders. If relevant, please provide an annex detailing the proposed timeline:

Expectation is that baseline data collection will need to be undertaken in 2021 for surveys with further surveys in 2023/2024 to facilitate Evaluation Plan by 2024.

7.2. Please indicate the date by which the final evaluation report will be submitted to the Commission:

Expected by 31 December 2024.

7.3. Please mention factors that might affect the envisaged timeline:

- *The availability of sufficient data to carry out the evaluation.*
- *Delays to planned auction schedules*
- *Methodology issues for carrying out of surveys*
- *All datasets being available*

8. The body conducting the evaluation

8.1. Please provide specific information on the body conducting the evaluation or, if not yet selected, on the timeline, procedure and criteria for its selection:

Independent appointed experts appointed by the Department for Communications, Climate Action and Environment will carry out the evaluation. The independent expert has not yet been selected. It is intended that the independent expert will be in place by the end of 2021 at the latest and sooner if necessary to establish baseline data in advance of that.

IEA Wind TCP Task 28 may support the evaluation in terms of advising on survey design, carrying out the surveys, analysis of results and developing the methodologies assessing the community impacts of the scheme¹⁸.

Early stage design of the methodology for assessing the community impacts of the scheme will be undertaken by researchers/academic secondments in the SEAI in 2020.

8.2. Please provide information on the independence of the body conducting the evaluation and on how possible conflict of interest will be excluded during the selection process:

Declaration in the tender documentation by the body conducting the evaluation

In selecting a body to conduct the evaluation, the Department will ensure independence to avoid any conflicts of interest.

8.3. Please indicate the relevant experience and skills of the body conducting the evaluation or how those skills will be ensured during the selection process:

In selecting a body to conduct the evaluation, the selection criteria will be used to ensure that the selected entity has the relevant experience and skills.

8.4. Please indicate which arrangements the granting authority will make to manage and monitor the conduct of the evaluation:

¹⁸ SEAI is currently the contracting party to the IEA Wind TCP for Ireland and represents Ireland on the Executive Committee. SEAI appoints, and funds the costs of, Irish experts participating in IEA Wind research Tasks and may also fund research that contributes to the joint outputs of Tasks. Ireland has participated in IEA Wind Task 28 on “Social Acceptance of Wind Energy Projects” since its inception.

Granting authority will appoint a manager to oversee the contract and ensure contract management plan in place.

The Electricity Policy Division in the Department will be responsible for managing and monitoring the evaluation and liaising with the independent body carrying out the evaluation.

- 8.5.** Please provide information, even if only of an indicative nature, on the necessary human and financial resources that will be made available for carrying out the evaluation:

The Department will make available adequate resources to oversee the collection of the data including ensuring that there is adequate capacity in SEAI, CRU and EirGrid in coordinating data indicators for the independent body carrying out the evaluation.

9. Publicity of the evaluation

- 9.1.** Please provide information on the way the evaluation will be made public, that is to say, through the publication of the evaluation plan and the final evaluation report on a website:

Details will be made public on the granting authority website www.dccae.gov.ie

The Evaluation Plan will be published on the Department's website.

- 9.2.** Please indicate how the involvement of stakeholders will be ensured. Please indicate whether the organisation of public consultations or events related to the evaluation is envisaged:

Stakeholders will be involved in the evaluation through the use of public consultations and surveys where relevant.

- 9.3.** Please specify how the evaluation results are intended to be used by the granting authority and other bodies, for example for the design of successors of the scheme or for similar schemes:

The Evaluation Report will be used as evidence in designing future renewable electricity support schemes (as well as, insofar as is possible, as input in the design of individual RESS auctions) and related measures to meet long term climate targets including community energy policies.

- 9.4.** Please indicate whether and under which conditions data collected for the purpose or used for the evaluation will be made accessible for further studies and analysis:

It is intended that relevant data collected under the evaluation will be made available for further research to the IEA Wind TCP Task 28 which coordinates international research and collaboration on improving the social acceptance of wind energy¹⁹.

¹⁹ <https://community.ieawind.org/task28/home>

IEA Wind TCP Task 28 may use the data collected under the Evaluation to deliver research outputs under its annual work programme

9.5. Please indicate whether the evaluation plan contains confidential information that should not be disclosed by the Commission:

Some project specific commercial data may be included and this should not be disclosed. Only aggregate or anonymous financial data will be published in the Evaluation Plan.

10. Other information

10.1. Please indicate here any other information you consider relevant for the assessment of the evaluation plan:

Ireland proposes to retain the flexibility to improve on the evaluation methodologies and data collection methods set out in sections 5 and 6 above as part of the initial phase of the evaluation once the independent experts are appointed. This will change the basis or objectives of the evaluation and the EU Commission will be kept informed of any improvements.

10.2. Please list all documents attached to the notification and provide paper copies or direct internet links to the documents concerned:

List of documents submitted with the Notification SA. 54683(2019/PN) – Irish Renewable Electricity Support Scheme²⁰:

Date Submitted to DG Comp	Document	Description
11 November 2019	20191111 State aid RESS questions responses to DG Comp final clean.pdf	Responses to questions dated 24/7/2019 from DGComp
6 February 2020	20200206 RESS state aid Notification Further Responses to DG comp.pdf	Responses to Questions dated 20/12/2019 from DG Comp
20 February 2020	2020020 Note for DG Competition – RESS Community Measures: Assessment of Costs.pdf	Estimated costs of the package of community measured planned for the Renewable Electricity Support Scheme
17 April 2020	20200417 RESS offshore wind state aid supplementary note.doc	Supplementary note sent on Overview of Offshore in Ireland
29 April	20200429 Updated draft of Ireland RESS Evaluation Plan	Updated draft of

²⁰ Please refer to documents submitted on SANI.

2020	PDF.pdf	RESS Evaluation plan
1 May 2020	20200501 2019156074SA 54683 RESS updated budget costs	Email with updated RESS budget and community measures assessment of costs document
8 May 2020	20200508 Response to DGCompSA54683 IE REQ RESS offshore and compatibility points	Email with further notes on RESS offshore wind and compatibility points for SA.
May 2020	https://www.dccae.gov.ie/documents/RESS_1_Terms_and_Conditions.pdf	Terms and conditions for the first RESS auction dated February 2020