

Schedule 5 – Knowledge Sharing Plan

[Before you start:

Under the Australian Renewable Energy Agency Act 2011 (Cth), ARENA is required to promote the sharing of information and knowledge about renewable energy technologies where appropriate. As such, knowledge sharing is considered an integral element of the Measure. It is important that the Knowledge Sharing Plan is aligned firmly with the rationale and purpose of the Measure and that it reflects the specific aims and nature of the Measure.

ARENA's mandate covers the entire innovation chain and therefore the nature and size of the projects/activities which ARENA supports will vary.

Knowledge sharing obligations will, therefore, need to be suitably tailored to accommodate this diversity.

However, it is important that this flexibility occurs within a consistent framework so that ARENA and the renewable energy sector are able to:

- *ensure that data/information being collected is of high quality;*
- *aggregate and analyse data/information across different projects; and*
- *make use of the same data/information for different purposes.*

This template is intended to guide and assist you in developing a Knowledge Sharing Plan for your Measure. ARENA expects Knowledge Sharing Plans to generate and disseminate a substantial amount of high value data, information and lessons learned.

The specific items of data and information that will be covered by your Knowledge Sharing Plan will be subject to negotiation.

While the Knowledge Sharing Plan will be tailored to suit the scope and size of your Measure, in developing the Plan, you should consider the following:

- *Objectives – It is important that your Knowledge Sharing Plan has well defined objectives. What critical question/s about renewable energy in Australia is the Measure trying to answer? What critical knowledge gap/s is the Measure aiming to address? These should be consistent with any Outcomes listed in item **Error! Reference source not found.** of **Error! Reference source not found.** of the Funding Agreement.*
- *End users – To be of value, knowledge needs to be used by someone. Who are the intended end users of the knowledge that will be generated and disseminated under your Knowledge Sharing Plan? If organisations, who within the organisations – e.g. the CEO, technicians, financial officers, or somebody else?*
- *Data and data methodology – the likely volume and complexity of the data and information that will be collected; whether and to what extent the data and information collected will require processing or analysis.*
- *Implementation – whether knowledge sharing activities will require specialist personnel or IT support, including web-based platforms; whether you will need to use collaborative arrangements with relevant partners.*
- *Commercial sensitivities – mechanisms for sharing commercially sensitive information e.g. methods for redacting data, time delays for the release of data, aggregation of data, synthesis reports and small group discussions held under Chatham House rules.*

- *Dissemination – a wide range of dissemination strategies beyond written documents; making use of existing opportunities to disseminate knowledge e.g. participation in industry forums, conferences, webinars etc.*

ARENA's business development team and client managers will work with you in the finalisation of your Knowledge Sharing Plan.]

1. Introduction

On [insert date] ARENA and [insert name of Recipient] (**Recipient**) entered into an Emerging Renewables Program Funding Agreement number [insert] (**Funding Agreement**), under which the Recipient has certain knowledge sharing obligations.

The Recipient has developed this Knowledge Sharing Plan in consultation with ARENA, and must comply with this Knowledge Sharing Plan for the term of the Funding Agreement.

Terms used in this Knowledge Sharing Plan which are defined in the Funding Agreement have the same meaning unless the context requires otherwise.

2. Purpose

Under the *Australian Renewable Energy Agency Act 2011* (Cth), ARENA is required to promote the sharing of information and knowledge about renewable energy technologies where appropriate. As such, knowledge sharing is considered an integral element of the Measure. Effective knowledge sharing is central to ARENA achieving its twin objectives of improving the competitiveness and increasing the supply of renewable energy in Australia.

ARENA invests public money, and knowledge is one of the returns it expects from this investment. Effective knowledge sharing with key players in the Australian energy sector including EPC contractors, DNSPs, regulators, investors, researchers and planners helps to build a stronger, more resilient energy system with increasing levels of renewable energy.

This Knowledge Sharing Plan identifies the data, information and knowledge that will be generated and shared throughout the Measure, along with how it will be shared, in accordance with an agreed timetable. In relation to data generated by the Measure, it also outlines the methodology that will be used to capture, store, assess and report this data.

3. Knowledge sharing objectives

The Recipient must use its best endeavours to contribute to the advancement of the [insert sector] sector's knowledge in [insert number of, or name of, areas] areas.

The Outcomes for the Measure are specified in **Error! Reference source not found.**

The objectives of the Knowledge Sharing Activities (**Knowledge Sharing Objectives**) support delivery of the Outcomes and are:

- (a) increased skills, capacity and knowledge in [insert technology] within Australia;
- (b) production and dissemination of information that advances [insert technology] through the Technology Readiness Levels (as defined by ARENA from time to time) towards commercialisation;
- (c) sharing of high quality research into [insert technology] which enhances Australia's world-class research position and/or addresses conditions specific to Australia [*please delete if not applicable*];
- (d) increased public awareness and understanding of [insert technology/sector];
- (e) increased understanding of roadblocks to [insert technology] and solutions to address them; [*delete if not applicable*]

- (f) increased understanding of the challenges experienced when testing requirements for *[insert technology]* and approaches trialled to overcome them; *[delete if not applicable]*

[Insert a list of measure-specific knowledge objectives. Please be as specific as possible. Some examples might include:

- (g) *increased understanding of the factors affecting economic viability of solar PV with storage integrated with existing diesel generation in [off grid/fringe of grid/grid constrained] areas;*
- (h) *increased level of publically accessible online material or tools that inform the plant design of [insert biomass technology and feedstock];*
- (i) *improved understanding of design and construction techniques for rooftop integrated photovoltaic systems;*
- (j) *improved understanding of methods to reduce the thermal losses overnight and the risk for crystallisation in the piping of plants using molten salt;*
- (k) *increased understanding of the performance characteristics of [insert technology] in [insert conditions, location and/or application];*
- (l) *increased understanding amongst potential investors and collaborators of the research in [insert technology] and its potential applications in Australia;*
- (m) *increased collaboration between ARENA-funded projects and renewable energy sector projects (by industries and/or universities) in the field of [insert technology/research area];*
- (n) *improved coordination and collaboration on [insert technology] between governments, industry, the finance sector and the research community, both nationally and internationally;*
- (o) *improved understanding of the financing requirements for [insert technology] developments; and*
- (p) *improved [insert data area e.g. resource data, generation data, grid constraint information] for [insert technology].]*

The Measure is to answer the following critical questions that need to be answered to improve the competitiveness and supply of renewable energy technology in Australia:

- (a) *[insert the critical questions the Measure will answer]*

4. Key knowledge sharing audiences

In undertaking the Knowledge Sharing Activities, the Recipient must take into consideration the following audiences:

- (a) ARENA, including the ARENA Executive and Board;
- (b) the Commonwealth;
- (c) *[insert sector]* and allied services companies;
- (d) investors *[delete if not applicable]*;
- (e) researchers *[delete if not applicable]*; and
- (f) *[insert any other groups that would particularly benefit from this knowledge and the Recipient's delivery of the Knowledge Sharing Objectives identified above].*

[The audiences identified in this section should help you determine the most effective types of knowledge and knowledge sharing activities to use.]

5. Confidentiality and dissemination of knowledge

In undertaking its legislated knowledge-sharing function, it is anticipated that ARENA may share information with other areas of government and with the public. The Recipient will provide information of varying levels of confidentiality, from little or none to highly valuable and confidential intellectual property.

To maximise the knowledge sharing benefit, the Recipient has established a level of confidentiality of information provided to ARENA. Accordingly, information the Recipient shares with ARENA is categorised according to those persons with whom it may be shared as follows:

- (a) the public (unrestricted) – This information may be shared freely within ARENA, with industry participants, and with the public in general.
- (b) the public (restricted) (Restricted Information) – Subject to any restrictions imposed by the Recipient, this information may be shared freely within ARENA, with industry participants, and with the public in general.
- (c) ARENA only (Recipient Confidential Information) – this information may be shared freely within ARENA and with other areas of government with equivalent privacy management and control processes and in accordance with clause **Error! Reference source not found.**

Table A identifies the knowledge that will be generated by the Measure and those persons with whom it may be shared.

The Recipient must apply the dissemination levels in Table A to knowledge generated by the Measure.

The Funding Agreement determines the treatment of Intellectual Property Rights and Recipient Confidential Information.

It is the Recipient's responsibility to ensure that any Measure documentation (including Milestone Reports and other Reports) prepared for public release does not contain any Recipient Confidential Information.

Table A – List of high value knowledge to be generated by Measure

[Table A should be as comprehensive as possible, clearly identifying the specific knowledge that the Measure will generate that will help improve the competitiveness and supply of renewable energy technology. It should also be as specific as possible. It may help to order this knowledge according to the Measure stage.]

No.	Category	Area of operation	Information to be shared	Key audiences	Dissemination			Conditions (if any)	Reasons for commercial sensitivity (if any)
					Public (unrestricted)	Public (restricted) (Restricted Information)	ARENA only (Recipient Confidential Information)		
	<i>Examples:</i>								
1.	<i>Technical [Please choose from: technical, financial, regulatory, logistical, or societal]</i>	<i>Life cycle analysis; technology performance; feasibility study</i>	<i>plant design; performance data; construction and operating costs; map of supply chain; identifying technical barriers at varying levels of renewable penetration, etc</i>	<i>mine site engineers</i>		<i>Yes</i>		<i>Public release for technical info; cost data only on aggregated basis with other ARENA projects</i>	
2.	<i>Regulatory</i>	<i>Grid connection</i>	<i>Data on number and location of connections, identifying optimal areas for connection and upgrade work planned</i>	<i>DNSPs, developers applying to DNSPs, regulators</i>		<i>Yes</i>		<i>Delayed release; aggregated</i>	
3.	<i>Technical</i>	<i>Solar PV cell</i>	<i>Improvements made</i>	<i>researchers,</i>	<i>Yes</i>				

No.	Category	Area of operation	Information to be shared	Key audiences	Dissemination			Conditions (if any)	Reasons for commercial sensitivity (if any)
					Public (unrestricted)	Public (restricted) (Restricted Information)	ARENA only (Recipient Confidential Information)		
		<i>design</i>	<i>in cell performance and structural reliability</i>	<i>manufacturers, system designers</i>					
4.		<i>Resource, design development</i>	<i>online interactive tool for downloading resource data</i>		<i>Yes</i>			<i>Summary GIS data provided i.e. not 1 min solar files, but just the temperature information in GIS format</i>	

6. Data

Table B sets out the data that must be generated, collected and stored from the Measure to answer the critical questions identified in item 3 of this Knowledge Sharing Plan. *[This table may be deleted in consultation with ARENA if your measure will not be generating data.]*

The Recipient must provide the data specified in Table B to ARENA on a *[insert timeframe e.g. monthly/quarterly]* basis as specified in Table B.

Table B – Data management and transfer

	Overview (description of data)	Collection methodology considerations	Data categories	Sampling frequency	Format (specific data units and components)	Data provider and owner	Data source	Transfer process / how supplied to ARENA
<i>[Insert first critical question as listed in item 3 of this Knowledge Sharing Plan. Each critical question should be listed as a sub-heading in this table with the relevant data points listed under each one.]</i>								
Example: <i>Economic feasibility assessment</i>	AETA, LCOE cost breakdown table	Subcontractors will provide spreadsheet of figures underpinning financial assessment	<ul style="list-style-type: none"> List specific data points to be captured 	By sec, minute, month, quarter, annually, once only, end of Measure	MWh, MW, DNI levels, \$\$\$, labour hours, GIS data	e.g. proponents, consortia member, BOM, technology supplier	e.g. smart metering, asset specification sheet, asset operation records, asset metering, etc	e.g. automated satellite upload on a daily, weekly, or monthly basis.
			<ul style="list-style-type: none"> Transmission line characteristics, including line impedance data, cable lay and ratings information 					
Study	case study data on minigrid performance	Load demand profiles will be provided by grid operator – agreement in place	<ul style="list-style-type: none"> Total energy demand 	Half hourly over 24 hours for a year	GJ and kWh	Grid operator (privacy conditions apply)	Meter data and gas, diesel billing data form invoices	Spreadsheet to be provided on DVD as so large
Enabling data	Resource information and data on biogas locations	Based on test buoys and BOM data, using algorithms, with panning layers	<ul style="list-style-type: none"> Naval hazards and boundaries data 	Updated quarterly	Geospatial data in line with Office of Spatial Policy standards	Recipient	Geoscience Australia	Via a cloud download

[As well as describing high value knowledge items (in Table A), you will need to clearly specify your methodology for capturing, storing and assessing data from your Measure. This will include:

- defining the form and metrics for collecting the data/information (using Table B above);*
- describing whether the item requires any specific processing, or handling; and*
- ensuring data fields proposed to be collected can be accurately and reliably analysed to answer the critical questions identified in your Knowledge Sharing Plan. This may be supported by examples from previous work, the use of existing models or standards, or by demonstrating your approach with sample data. This is fundamental component of your Knowledge Sharing Plan. ARENA may seek expert advice to ensure the veracity of your proposed analysis. ARENA may also contract a third party to collect, store, analyse and report on data across its programs. This would be in addition to the Measure-specific analysis and reporting set out in this Knowledge Sharing Plan.*

Please also outline your arrangements for the proper storage and back-up of the data and information required for knowledge sharing purposes under this Agreement.

For further guidance in preparing a data methodology, please refer to the documents 'Data and Information Methodology: Guidance for the Design Capture, Storage, Analysis and Reporting of Data and Information' (parts one and two), which were prepared with input from the CSIRO to assist with the identification and collection of robust and consistent data from across the projects ARENA funds. Part two includes a detailed menu of possible data points that you can select from. Of course, there may be others that are relevant to your Measure that you wish to add. The document is available on the ARENA website or by contacting ARENA.]

7. Knowledge Sharing Activities

The Recipient must undertake Knowledge Sharing Activities as outlined in Table C below.

Table C – Detailed program of Knowledge Sharing Activities

Measure stage and timeframe	Number and type of Knowledge Sharing Activity	High value knowledge to be shared and provided to ARENA	Intended audience	Further information (optional)	Related No. in Table A
<i>Examples: (note not all examples may be relevant to your Measure)</i>					
<i>Second phase (October 2014)</i>	<i>One workshop</i>	<i>Outline of research to date and next steps</i>	<i>Researchers Developers</i>	<i>Webinar or presentation to be hosted by university or public forum such as clean energy week</i>	
<i>Measure completion (insert month)</i>	<i>One journal article and one media article</i>	<i>Advancing the field – practical applications</i>	<i>Financiers Regulators NSPs Energy users Government</i>	<i>Citations to be provided</i>	
<i>Measure completion (insert month)</i>	<i>Two presentations at industry conferences</i>	<i>Details of experimental results including key design challenges overcome</i>	<i>Researchers Research institutions</i>		
<i>Third milestone (insert month)</i>	<i>One site visit</i>	<i>Overview of technology performance, familiarisation of techniques, demonstration of new uses for equipment</i>	<i>Technology companies Financiers</i>		
<i>Measure completion (insert month)</i>	<i>Public impact report</i>	<i>Potential market for technology, standard of research compared to international competitors,</i>	<i>ARENA Government Early-stage investors</i>		

Measure stage and timeframe	Number and type of Knowledge Sharing Activity	High value knowledge to be shared and provided to ARENA	Intended audience	Further information (optional)	Related No. in Table A
		<i>international collaboration and co-investment</i>	<i>Researchers General public</i>		
<i>Feasibility study completed (insert month)</i>	<i>Two reports – one technical for engineers and developers; one higher level for senior managers</i>	<i>Details of the optimal plant design including the issues identified (supply chain, integration, etc) and the solutions proposed</i>	<i>ARENA Developers Financiers Governments</i>		

[Knowledge sharing activities may take a variety of forms. Some examples include expert roundtables or peer-assist workshops, public forums, presentations or participation in conferences, site visits, webinars, reports posted online or emailed to stakeholders, data sets, data visualisations and web-based tools, websites or social media platforms, journal articles or posters, models, and staff exchanges/secondments. If the same knowledge is being shared through several different activities (e.g. a report and a presentation) each activity should be listed separately. Table C should be completed with the audience in mind – e.g. are they a senior executive, a technician, or member of the public.]

8. Reporting

[Note: If progress reports are required under item **Error! Reference source not found.** of **Error! Reference source not found.**, this section will be amended so that Milestone Report requirements also apply to progress reports.]

8.1 Reporting on Knowledge Sharing Activities

- (a) Each Milestone Report must include a description of:
 - (i) the Knowledge Sharing Activities completed during the period to which the Milestone Report relates, including a list of any public reports or knowledge sharing reports;
 - (ii) the outcomes of those Knowledge Sharing Activities; and
 - (iii) any data or documentation developed from the Measure during the period to which the Milestone Report relates.
- (b) The Final Report must include details of:
 - (i) all of the Knowledge Sharing Activities completed as at the date of the Final Report;
 - (ii) analysis of the effectiveness of each of the Knowledge Sharing Activities so completed;
 - (iii) for any on-going Knowledge Sharing Activities, an update of progress in undertaking each Knowledge Sharing Activity; and

- (iv) an assessment by the Recipient of its success in achieving the Knowledge Sharing Objectives.

8.2 Measure failure report

In the event of Measure failure, the Recipient must, within 20 Business Days after the Measure failure, provide a report to ARENA for public release explaining the reasons for the failure and the Measure Lessons Learnt.

8.3 Schedule of standard metrics (quantitative)

[Insert timeframe, eg in each Milestone Report or on a financial year basis] the Recipient must provide to ARENA a prescribed schedule of standard metrics that will provide overall information on the performance of ARENA's investment portfolio, using the following template:

[At the Measure inception, this table should be completed using Measure forecasts. Ongoing reporting should report actual recorded costs or performance data. This is a standard requirement across all ARENA-funded projects. The Measure-specific data will be kept confidential, but may be used publicly in an aggregated form (e.g. total MWs generated or patents lodged by all ARENA-funded projects or by all projects within a particular technology category).]

Input	Unit	Total value	Description of category source (i.e estimated, references, based on x analysis)
Other (ARENA portfolio reporting)			
Publications	1		URL
Citations	1		URL
Patents lodged	patent number		
Generation – gross	MWh/year		
Generation – net	MWh/year		
No. of direct employees (on project)	FTE		Across the whole project lifecycle
Monthly page views (if any websites or online tools created)	No.		Unique page views or downloads reported by month

8.4 'Lessons learnt' (qualitative reporting)

Each Milestone Report must include 'lessons learnt' knowledge sharing reports which capture all Measure Lessons Learnt since the previous Milestone. A separate 'lessons learnt' knowledge sharing report must be provided for each Measure Lesson Learnt. Each 'lessons learnt' knowledge sharing report must use the template provided by ARENA.

[These short one page reports are intended to capture the nuggets of knowledge that were learnt and perhaps were not a pre-determined learning of the Measure. There may be only one key lesson learnt between Milestones or there may be multiple lessons to be captured. These are required in addition to pre-determined knowledge identified in Tables B and C.]

9. Specified Personnel

[*Insert name*] occupying the position of [*insert position*] will be the central contact point for ARENA for the Knowledge Sharing Activities.

10. Budget Estimate

The Recipient has allocated approximately _____ hours and \$ _____ (ex GST) from within the Project Budget towards implementing this Knowledge Sharing Plan.