



**Energy Transformation
Taskforce**

Energy Transformation Strategy

Program Implementation Plan

1 October 2019



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1. Introduction

1.1 Project background

The power system in the South West Interconnected System (SWIS) is experiencing an unprecedented transformation, largely driven by the increased participation of large-scale renewables and Distributed Energy Resources (DER), such as small-scale solar and battery systems, in our generation mix.

Rapid development in the technology and cost efficiency of renewable energy resources presents significant opportunities for Western Australia's electricity market, including:

- lowering carbon emissions;
- downward pressure on electricity prices from low cost energy and reduced network investment; and
- enabling DER owners to interact with the electricity system to reduce their electricity bills.

However, a high level of renewable generation presents serious technical and regulatory challenges to the operation of the power system, which was not designed for intermittency and two-way energy flows from 'behind the meter' solar systems. These deficiencies must be addressed if we are to fully realise the benefits of this revolution in renewable energy technology.

To meet these challenges, on 6 March 2019 the Hon Bill Johnston MLA, Minister for Energy announced the Energy Transformation Strategy (the Strategy). Fundamentally, the Strategy will deliver the efficient integration of renewable energy into Western Australia's electricity system. This will ensure the continuing security of power supply and enable the benefits of renewable energy to be realised for all electricity consumers.

The Strategy includes three work streams.

1. The **development of a Whole of System Plan** for the SWIS to guide future infrastructure investment, and to inform policy, regulatory and market development decisions. The Whole of System Plan will also assist in managing the security and reliability impacts of transitioning from traditional energy sources to new low-emissions technologies.
2. The **modernisation of the Foundation Regulatory Frameworks** governing the connection of generators to the Western Power network and the operation of the Wholesale Electricity Market in the SWIS. This will include the implementation of a 'constrained access' model for generators connected to the Western Power network, changes to the type of Essential System Services (often referred to as Ancillary Services) provided to the power system and the way these services are procured, as well as the removal of barriers to the connection of new technologies (such as utility-scale storage) that may assist in addressing system reliability and security issues.
3. The **better integration of DER** into the power system by:
 - a. developing a Roadmap to identify the initiatives required to address the challenges and maximise the benefits provided by DER in the power system of the future;
 - b. updating the connection requirements and performance standards for distributed energy technologies like solar and battery storage systems; and
 - c. improving visibility of these systems to the system operator to facilitate better management of the power grid.

On 20 May 2019, the Minister for Energy established the Energy Transformation Taskforce (the Taskforce) to oversee the delivery of the Strategy. The membership of the Taskforce is as follows.

- Mr Stephen Edwell, Independent Chair.
- Mr Michael Court, Deputy Under Treasurer, Department of Treasury.
- Ms Kate Ryan, Executive Director, Energy Policy WA.
- Mr Brett Sadler, Director Economic and Environment Policy, Department of the Premier and Cabinet.
- Ms Katharine McKenzie, Principal Policy Adviser (Energy), Office of the Minister for Energy.

The Taskforce reports directly to the Minister for Energy and is supported by the Energy Transformation Implementation Unit (the Implementation Unit), a dedicated unit within Energy Policy WA.

1.2 Purpose of this document

This document presents a high-level overview of the program management framework adopted by the Taskforce and the Implementation Unit to ensure the delivery of the Strategy in a timely, effective and efficient way.

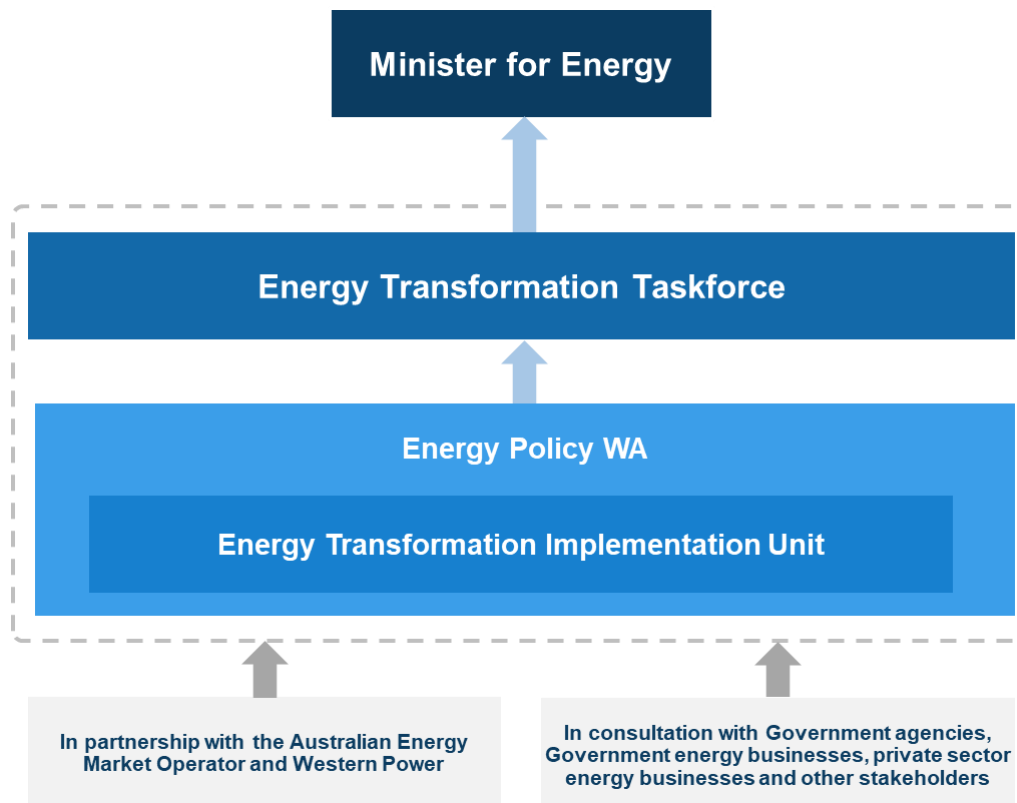
This Program Implementation Plan outlines the timelines for the delivery of key project outputs. It also provides an overview of the governance arrangements that have been implemented to facilitate the successful implementation of the work program, as well as the approach adopted for stakeholder participation.

2. Reporting and organisational structure

2.1 High level reporting structure

The implementation of the Strategy involves several participants and stakeholders across Government and industry. **Figure 1** illustrates the high-level reporting framework for the delivery of the Strategy.

Figure 1 – High level reporting framework



The Taskforce:

- is directly accountable to the Minister for Energy for the delivery of the Strategy;
- provides information and advice to the Minister for Energy on the progress and deliverables of the Strategy;
- provides strategic direction to the Implementation Unit on the implementation of the Strategy; and
- ensures the objectives, deliverables and outcomes of the Strategy are met and support the Government's strategic policy directions.

In addition to being a Member of the Taskforce, **the Executive Director of Energy Policy WA:**

- is accountable to the Taskforce for the work of the Implementation Unit in supporting the timely delivery of the Strategy;
- leads the Implementation Unit in the delivery of key policy options and outputs to the Taskforce;
- oversees the provision of Secretariat support services to the Taskforce by the Implementation Unit; and

- manages the Implementation Unit's operations and performance, ensuring the establishment and delivery of strategic project plans, setting priorities, allocating resources, managing risks and achieving desired outcomes

The Implementation Unit:

- is accountable to the Executive Director of Energy Policy WA for the timely and efficient implementation of the Strategy under the guidance of the Taskforce;
- reports regularly to the Taskforce on project delivery progress and major policy issues;
- provides Secretariat support to the Taskforce; and
- coordinates stakeholder consultation.

2.2 Reporting arrangements

The Taskforce and the Implementation Unit have adopted the following reporting arrangements to ensure the accountable, timely and efficient delivery of the Strategy.

Reporting to Cabinet

The Taskforce has committed to providing the Minister for Energy with progress reports for submission to Cabinet on a six-monthly basis, commencing in December 2019. Major policy issues requiring Cabinet approval will be referred to Cabinet on a case-by-case basis.

Reporting to the Minister for Energy

The Taskforce will provide the Minister for Energy with a written work program status report each month.

The Taskforce Chair will hold regular meetings with the Minister for Energy to discuss policy decisions and progress on the delivery of the Strategy, and to seek the Minister's guidance, as required.

Reporting to the Taskforce

The Implementation Unit will report to the Taskforce on the status of projects within the Strategy, including project risks, dependencies, expenditure and the outcomes of consultation with stakeholders on a monthly basis.

External reporting

The Taskforce and the Implementation Unit will inform stakeholders of progress made in the delivery of the Strategy on a regular basis through monthly newsletters, website updates, information papers, stakeholder consultation and information sessions, formal stakeholder consultation groups and one-on-one meetings with stakeholders.

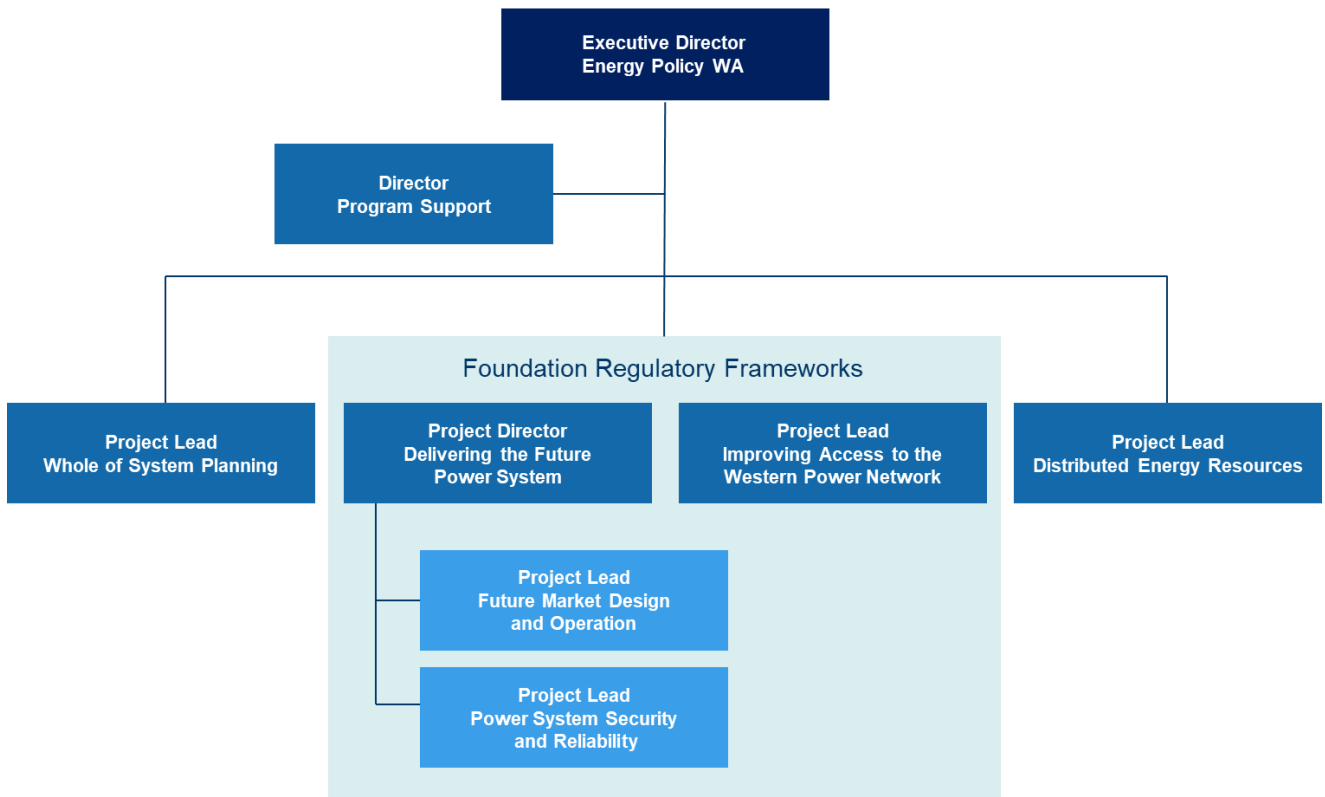
2.3 Implementation Unit's organisational structure

The Strategy is being implemented under three work streams.

1. Whole of System Planning
2. Distributed Energy Resources
3. Foundation Regulatory Frameworks, including:
 - the Improving Access to the Western Power Network work stream; and
 - the Delivering the Future Power System work stream.

Figure 2 illustrates the Implementation Unit's organisational structure, reflecting the work streams established to deliver the Strategy.

Figure 2 – Implementation Unit's organisational structure



Project teams comprise staff from Energy Policy WA and other Western Australian Government agencies, along with placements from Western Power, Synergy and Horizon Power.

The project teams work closely with work program partners, in particular Western Power and the Australian Energy Market Operator (AEMO).

3. Project plans

Each work stream has developed comprehensive project plans to ensure the timely and efficient delivery of the Strategy. An overview of each work stream and key project milestones is provided below.

3.1 Whole of System Planning

3.1.1 Project scope

The Taskforce will develop a Whole of System Plan that will identify the best options for investment in the power system to maintain the security and reliability of electricity supply at the lowest sustainable cost. It will also assist in the transition to a lower-emissions power system, guiding the efficient integration of renewable generation and energy storage.

The Whole of System Plan will apply to the SWIS only. The experience and expertise of parties operating outside the SWIS (such as Horizon Power) will be sought as appropriate, and technological developments more broadly will be factored into system design considerations. However, all modelling will be limited to the capacity, networks and customer requirements within the SWIS.

The Plan will be subject to regular review, with the first iteration published in the third quarter of 2020.

3.1.2 Project delivery stages

The Whole of System Plan will be delivered in four phases.

Phase 1 – Develop and agree scenarios – Completed

This phase has involved the development of credible and detailed scenarios for how the electricity industry in the SWIS may develop in coming years, including capacity type and location, changing demand profiles, uptake of DER and optimal network configuration.

The development of scenarios, inputs and assumptions for modelling required access to data held by both AEMO and Western Power, and input from industry participants, to ensure that the modelling outputs are credible and the recommendations in the Whole of System Plan can be supported.

The project team has built on the 2018 SWIS Generation Mix Modelling work conducted by the former Public Utilities Office, updated as required, and determined the appropriate assumptions in relation to the future policy and regulatory settings based on other work being overseen by the Taskforce and progressed as part of the State Government's reform agenda more broadly.

To the extent possible, the project team has also leveraged work undertaken by AEMO for the development of the Integrated System Plan for the National Electricity Market and Western Power in the development of its Grid Transformation Engine.

The project team has consulted with the Market Advisory Committee (MAC) and held a workshop to consult with industry more broadly and to test the proposed scenarios and modelling inputs and assumptions.

In August 2019, the Taskforce published an information paper outlining the modelling scenarios to be used in the Whole of System Plan. The scenarios will be subject to sensitivity analysis.

Phase 2 – Deliver forecasts, technical assessment and modelling

The project team will coordinate subject matter experts from the Implementation Unit, Western Power and AEMO, as well as independent experts to model the expected outputs of each of the agreed scenarios. The following activities will be undertaken as part of this phase.

- Western Power and AEMO will collaborate to develop a 20-year electricity demand forecast. This will be underpinned by Western Power's granular, bottom-up, locational consumption-based electricity network demand forecasting method. It will then be stress-tested using AEMO's top-down, system-wide operational load forecast produced as part of the Electricity Statement of Opportunities.
- An independent modelling consultant will develop a 20-year capacity forecast designed to meet the reliability and reserve requirements consistent with the Long-Term Projected Assessment of System Adequacy. A capacity forecast will be developed for each scenario and used as an input in the modelling.
- The independent modelling consultant will also develop a least cost expansion simulation model to co-optimize the development of generation and network investment in the SWIS, while adhering to a set of constraints. Constraints in the model can represent network or power system operational limits, a reliability standard, Essential System Service requirements or other applicable constraints identified by the project team.
- Western Power and AEMO will collaborate to define network power transfer limits, power system operational limits and Essential System Service requirements to represent the technical envelope that the SWIS must operate within.
- The Implementation Unit will coordinate the necessary resources to conduct the least cost expansion simulation modelling. The outputs of the least cost expansion simulation model will be a co-optimized generation and network expansion schedule and an estimate of total system cost for each of the scenarios modelled.

Phase 3 – Develop capacity/network recommendations and investment plan

The third phase of the project will require the verification of the plausibility of the generation and network expansion developed as part of Phase 2 using a market dispatch model.

This will determine the appropriateness of the various locational demand, capacity mix and network augmentation combinations to meet the electricity demand and capacity forecasts within the technical envelope. This will be an iterative process involving the expertise of independent experts, AEMO and Western Power.

The project team will take the modelling and technical assessment outputs from this phase as inputs into an investment plan for the SWIS covering the next 20 years. This investment plan will discuss the underlying evolution pathways that the project team considers most likely from the scenario analysis, and the various key projects across the supply chain that would facilitate the most optimal outcome for end-use customers.

Phase 4 – Deliver the Whole of System Plan

Phase 4 will see the production of the final Whole of System Plan document and associated modelling outputs. Drafting will commence as soon as the modelling scenarios have been defined, and will be an iterative process throughout the program. However, the document will not be completed until the modelling outputs and investment recommendations have been finalised.

The inaugural Whole of System Plan will comprise a report outlining the scenarios considered, the modelling approach taken, the network, system and market outcomes of each scenario, and the

information and evidence required to support regulators, policy-makers and industry in making decisions, and to enable the broader community to understand the changes underway in the sector.

3.1.3 Key project milestones

Table 1 provides an overview of the timing of key project milestones. Grey shading indicates completed milestone.

Table 1 – Key Whole of System Plan milestones

Due date	Milestone
Phase 1	
June 2019	Develop modelling scenarios, inputs and assumptions
June-July 2019	Taskforce endorses draft scenarios
July 2019	Industry workshop on modelling scenarios
July-Oct 2019	Consultation with MAC and individual stakeholders on modelling scenarios, inputs and assumptions
July 2019	Taskforce endorses final scenarios
August 2019	Publish information paper on modelling scenarios
Phase 2	
October 2019	Update MAC on final inputs and assumptions
Oct-Nov 2019	Publish information paper on final inputs and assumptions
Oct-Nov 2019	Finish transmission network/system technical assessment using finalised scenario forecasts
December 2019	Least cost expansion simulation model built
December 2019	Present technical assessment to MAC
Phase 3	
February 2020	Identify initial capacity mix and network configuration recommendations
March 2020	Update MAC on preliminary generation and network plans
April 2020	Run dispatch simulation model to verify SWIS/network investment recommendations
April 2020	Develop SWIS/network investment plan
June 2020	Present on SWIS/network investment plan to MAC
June 2020	Industry workshop on preliminary modelling outcomes
Phase 4	
June 2020	Drafting of Whole of System Plan complete
July 2020	Taskforce endorses Whole of System Plan to be submitted to Minister for Energy
Q3 2020	Whole of System Plan published

3.2 Distributed Energy Resources

The DER work stream comprises three core projects that seek to identify and facilitate the integration of DER into the SWIS. The projects are:

- the DER Roadmap;
- the DER Register; and
- DER Connection Guidelines.

3.2.1 Distributed Energy Resources Roadmap

3.2.1.1 Project scope

Work within scope

The Taskforce will develop a DER Roadmap to facilitate the integration of growing levels of DER into the power system in a safe and secure way, and to ensure customers can continue to benefit from small-scale solar systems and other new technologies.

The Roadmap will guide changes to policies, regulations, technical requirements and consumer protections to support the integration of DER over the short, medium and longer term.

The project will focus on the SWIS, but will also consider issues relevant to the integration of DER in regional and remote parts of the State.

The Roadmap will cover the following topics.

- Uptake and deployment of storage systems at a household and community level.
- Inverter standards and capabilities.
- Customer protections, including licencing for new business models.
- DER investment signals and options for pricing reform.
- Distribution Market Operator and Distribution System Operator roles.
- Distribution network visibility.
- System operations requirements to maintain system security and stability.
- Pathways to customer DER participation in markets and new business models.
- Integration of electric vehicles into the power system.
- Customer information and public, industry and government education.

Work outside scope

The following work is outside the scope of the DER Roadmap.

- Transmission connected renewables such as large-scale solar, wind or battery facilities and their connections and access requirements and market interactions.
- Building code or other related items affected by DER requirements.
- Changes to the retail contestability threshold for the SWIS.

- Reforms to enable the delivery of stand-alone power systems as an alternative to traditional network augmentation in the SWIS.¹
- Safety standards and inspections for customer-side DER installations.
- Solar and battery system recycling schemes and associated infrastructure.

3.2.1.2 Project delivery stages

The Roadmap will be developed in four phases.

Phase 1 – Planning inputs – Completed

This phase has involved the development of principles and objectives to guide the delivery of the Roadmap, as well as the development of an options analysis and evaluation framework to underpin Roadmap assessments and recommendations.

Phase 2 – Information gathering – Completed

In consultation with stakeholders, information has been gathered on current regulatory settings, customer protections, market interactions and technical settings applying to DER.

A stocktake of DER projects has also been undertaken. The stocktake has focused on pilots and trials underway or planned in Western Australia. National and international case studies have been included where relevant.

Phase 3 – Options analysis

This phase involves identifying regulatory framework settings and other actions required to mitigate any negative implications and to unlock the opportunities of a high participation of DER in the power system. The consequences of not implementing the recommended actions (do-nothing scenario) will also be considered.

Unwarranted barriers to entry and opportunities to further accelerate the uptake of DER will also be identified.

Direct consultation with key stakeholders will be undertaken as preliminary positions are refined.

Phase 4 – Roadmap development and recommendations

This phase will involve the prioritisation of short, medium and long-term actions, and the development and delivery of the Roadmap for consideration by the Minister for Energy.

A Roadmap review process will also be proposed to ensure recommendations remain consistent with the defined principles and objectives, and to update planning inputs and assumptions over time.

3.2.1.3 Project outputs

Four key outputs will be delivered as part of this project.

Regulatory settings summary

The Implementation Unit will present to the Taskforce an assessment of the current regulatory settings, customer protections, market interactions and technical settings as they relate to DER. This will form a foundation of the Roadmap, articulating the current environment in which DER operates.

¹ Energy Policy WA is separately considering the deployment of stand-alone power systems by Western Power in the SWIS.

DER project stocktake

The stocktake will provide a comprehensive summary of existing and planned DER projects. This is intended to capture lessons from DER-related projects to date and to identify any gaps that may warrant additional pilots or trials to be undertaken.

DER Roadmap

The Roadmap will outline the existing DER environment, outcomes from stakeholder engagement and policy options analysis. It will also detail prioritised actions and the entities responsible for their implementation, future recommendations, and an ongoing review process.

3.2.1.4 Key project milestones

Table 2 provides an overview of the timing of key project milestones. Grey shading indicates completed milestones.

Table 2 – Key DER Roadmap milestones

Due date	Milestone
June 2019	Stocktake template developed
July 2019	Initial scoping workshop with industry
July 2019	Current state assessment completed
October 2019	Project stocktake completed
October 2019	Industry forum conducted
November 2019	Draft DER Roadmap completed
December 2019	Taskforce approval of final DER Roadmap, for delivery to Minister for Energy
Early 2020	Publication of DER Roadmap

3.2.2 Distributed Energy Resources Register

3.2.2.1 Project scope

The Taskforce will oversee the development of a Register to improve the visibility of DER in the SWIS. The Register will enable improved efficiency of network investments, better medium to long-term network and system planning, improved management of the power system, and better ability for the system to respond to emergencies and contingency events.

This project will involve:

- investigating and providing advice to Government on options for developing a DER Register; and
- facilitating the implementation of a Register in the Wholesale Electricity Market by AEMO, Western Power and DER installers.

This project considers DER as decentralised generation, storage and demand response systems located behind the customer meter. This can include solar systems, inverters, energy storage systems, electric vehicles and their chargers and demand response resources.

The project is proceeding on the basis that AEMO should manage the Register. This is because AEMO has been tasked by the Council of Australian Governments Energy Council to establish and maintain a DER register for the National Electricity Market, and is well placed as System Operator in the SWIS to use the same infrastructure and processes for managing a register in Western Australia.

This project will identify necessary changes to the regulatory framework to enable Western Power and AEMO to collect data, and AEMO to implement the Register for the SWIS.

As data requirements, collection and sharing processes, and regulatory obligations become clear, stakeholders will be consulted on the work required to implement the Register and its associated costs. AEMO will also be engaged to advise on how work occurring in parallel with the National Electricity Market may lower costs for the implementation of a register in the Wholesale Electricity Market in the SWIS.

The findings of the investigation and recommendations will be provided to Government to assist in deciding its preferred option for implementing the Register.

The project will also include the facilitation of any required regulatory framework changes, including changes to the Wholesale Electricity Market Rules (the Market Rules).

3.2.2.2 Key project milestones

Table 3 provides an overview of the timing of key project milestones.

Table 3 – Key DER Register milestones

Due date	Milestone
November 2019	Recommended approach to establish the Register approved by the Taskforce
November 2019 – January 2020	Development of, and consultation on, proposed changes to the Wholesale Electricity Market Rule Changes and other instruments
February 2020	Taskforce approval of Wholesale Electricity Market Rule Change proposal
February – April 2020	Western Power systems and processes developed
March 2020	Regulations made by the Governor
May – June 2020	Register testing by DER installers, Western Power and AEMO
July 2020	Register go-live

3.2.3 Connection Requirements for Distributed Energy Resources

3.2.3.1 Project scope

Work within scope

The Taskforce will facilitate the delivery of an updated set of connection requirements for customer-connected DER in the SWIS. These requirements will specify the required level of functionality of DER to safeguard the electricity system. They will also ensure the benefits of DER for customers and the system are able to be captured.

DER are predominantly connected to the grid using inverter energy systems, with requirements for the function and performance within the technical envelope specified in the Australian Standard for 'Grid Connection of Energy Systems via Inverters: Part 2 Inverter Requirements' (AS/NZS4777.2:2015).

Some inverter functions within the Australian Standard are non-mandatory, while various functions have been identified across industry as needing enhancement to provide better resilience and to minimise system security issues in an environment of high uptake of DER.

Analysis by AEMO has identified that the existing Australian Standards for inverter energy systems do not contain adequate performance standards to support system security, with standards below those of large-scale generation, despite their aggregated impact as the largest generator in the SWIS.

Enhancement of existing performance standards could include the following key areas.

- Disturbance withstand capability, where inverters can provide support during events such as voltage and frequency disturbances.
- Grid support functions, where inverters respond to support voltage and reactive power control and frequency response.
- DER storage system response to under-frequency events.
- Testing and compliance.

The project team will work with Western Power and AEMO to identify appropriate technical settings and to fast track any required mandatory standards for new connections within Western Power's *Network Integration Guidelines*.

The connection requirements for network operators in Australia have differed between jurisdictions and even between network businesses in the same jurisdiction. This has typically caused issues for installers understanding the exact requirements on each network.

Energy Networks Australia, the peak advocacy body for the electricity distribution networks across Australia, has recently released its *National DER Connection Guidelines*, seeking to standardise the national approach for customers seeking to connect DER to the network. The DER project team will work with Western Power to ensure alignment with these guidelines, and to identify any departures from the guidelines that are required for the Western Australian context.

Work outside scope

The following work is outside the project scope.

- Transmission connected renewables such as large-scale solar, wind or battery facilities and their connections, access requirements and market interactions.
- Safety standards and inspections for customer-side DER installations.

3.2.3.2 Key project milestones

Table 4 provides an overview of the timing of key project milestones. Grey shading indicates completed milestones.

Table 4 – Key DER Connection Requirements milestones

Due date	Milestone
July 2019	Assessment of AS4777.2, reviewing mandatory and non-mandatory technical settings and how they best apply to DER connections on the SWIS Note: Western Power released an updated <i>Network Integration Guideline</i> on 1 August 2019, requiring previously non-mandatory “volt-watt” and “volt-var” functionality, with a three-month transition period.
November 2019	AEMO to identify proposed updates to AS4777.2 and appropriateness of fast tracking for the SWIS (for inclusion in DER Roadmap)
January 2020	Identification of required departures from Energy Networks Australia’s connection guidelines by Western Power
January 2020	Finalise agreed position on Australian Standard 4777.2 between Implementation Unit, Western Power and AEMO
January 2020	Draft updated Western Power <i>Network Integration Guideline</i> developed
February – March 2020	Stakeholder feedback period (consultation conducted by Western Power)
April 2020	Western Power finalises DER Technical Requirements
July 2020	Western Power’s DER Technical Requirements go-live

3.3 Foundation Regulatory Frameworks

The Foundation Regulatory Frameworks work stream includes two work streams – Delivering the Future Power System and Improving Access to the Western Power Network.

3.3.1 Delivering the Future Power System

3.3.1.1 Project scope

Work on elements of the Delivering the Future Power System work stream commenced as part of the previous Government’s Electricity Market Review. Following the change in Government in March 2017, most aspects of market reform planned under the Electricity Market Review were revisited for continued relevance given the decision not to move to the national framework for network regulation. Prior to the establishment of the Implementation Unit, this work was progressed by the former Public Utilities Office under the auspices of the Wholesale Electricity Market Reform Program.

Work within scope

There are two separate, but interrelated projects comprising the Delivering the Future Power System work stream: *Future Market Design and Operation*, and *Power System Security and Reliability*.

Future Market Design and Operation

The Future Market Design and Operation project is focused on the design and implementation of a Security-Constrained Economic Dispatch market model to improve the operational efficiency and transparency of the energy and Essential System Services markets in the Wholesale Electricity Market, in the context of a constrained access framework for the Western Power network.

The Future Market Design and Operation project is comprised of a number of work packages to facilitate a sequential approach to design, consultation and project delivery.

- The **Foundation Market Parameters** work package is required for other aspects of market design to proceed. Specific matters in this work package include the network model to be used for market clearing, the location of the reference node used to determine loss factors, facility-level bidding and dispatch for all market participants (including Synergy), and the retention of the Short-Term Electricity Market.
- The **Scheduling and Dispatch of Energy** work package assesses current market settings and will make recommendations regarding the scheduling and dispatch of energy under a Security-Constrained Economic Dispatch regime, reflecting physical network constraints.
- The **Essential System Services Acquisition Framework** work package details the proposed arrangements for the acquisition of the Essential System Services required to maintain system security. Specific consideration is being given to the design and methods of acquisition of frequency control, locational and emergency services. The potential effects of market power being exercised in the delivery of Essential System Services and the extent to which this affects the delivery of outcomes consistent with the Wholesale Electricity Market objectives is also being considered.
- The **Scheduling and Dispatch of Essential System Services** work package addresses the changes required to the scheduling and dispatch of market-based Essential System Services in order to implement Security-Constrained Economic Dispatch. This work package will address matters relevant to the co-optimisation of the dispatch of energy and Essential System Services.
- The **Synergy Readiness for New Market** work package addresses the need for Synergy to prepare for new market arrangements, such as the replacement of Synergy's current portfolio bidding and dispatch approach with individual facility bidding and dispatch, which is required for the implementation of Security-Constrained Economic Dispatch. This work package includes changes to the obligations under the Market Rules that currently exist for Synergy.
- The **Settlements** work package addresses the changes required to be made to market settlement (the calculation and allocation of costs to market participants, and related terms of payment) for energy and Essential System Services as a result of the implementation of a Security-Constrained Economic Dispatch regime.
- The **Outage Management** work package will recommend and implement mechanisms to manage planned and unplanned generation outages.
- The **Registration and Participation** framework work package will define the way individual facilities are able to participate in different aspects of the Wholesale Electricity Market, including the energy market, Essential System Services, and the Reserve Capacity Mechanism. This work package addresses deficiencies in the current framework with respect to the treatment of emerging technologies, such as energy storage.
- The **Market Information** work package will describe the information to be captured and stored as part of market processes, and/or provided to relevant parties to ensure that current and potential market participants have timely, comprehensive and transparent access to information to support their decision making.

- The **Market Evolution** work package will propose and implement a pathway for future market evolution over the short, medium and long term, including an ongoing schedule of monitoring, review and identification of ‘trigger points’ at which additional sophistication in the design of the market has the potential to materially improve its functioning.
- The **Control for Efficient Market Outcomes** work package will implement changes to address market power in the design of the Security-Constrained Economic Dispatch related Market Rules and supporting systems and processes.
- **Economic Analysis of the Delivering the Future Power System Package** – Subsequent to the Taskforce’s endorsement of the new market design (i.e. the aggregate of all the individual Taskforce design decisions), a comprehensive economic and quantitative analysis of the costs and benefits of the combined recommendations of the Delivering the Future Power System work stream will be developed, reflecting all proposed changes to the market and relevant regulatory instruments, including the interaction of various parts of market design.

Each of these work packages will include public consultation, primarily through the Transformation Design and Operation Working Group (TDOWG)² established by the Implementation Unit, prior to the presentation of recommendations to the Taskforce.

Power System Security and Reliability

The framework supporting power system security and reliability is spread across primary legislation, regulation (including Codes), and other subordinate instruments such as Market and Technical Rules. These frameworks have evolved little over time, do not work well together, and now require substantial changes to:

- respond to current and future changes in generation mix and customer behaviour;
- reflect changes in the roles of key market participants and institutions;
- ensure that sufficient change management, monitoring and enforcement functions are in place; and
- support the implementation of Security-Constrained Economic Dispatch.

The Power System Security and Reliability project will resolve these problems by changing regulatory and subsidiary instruments, with a key guiding principle being that control and regulatory responsibility for outcomes should be assigned to the entities that are best able to effect the desired outcome.

The Power System Security and Reliability project is comprised of several work packages.

- The **Power System Constraints** work package will develop a governance framework in the Market Rules to allow for the development and management of constraint equations to enable dispatch decisions to be made on a constrained basis. In addition to being a critical component to enable the functioning of Security-Constrained Economic Dispatch arrangements in the Future Market Design and Operation project, constraint equations are also required for the Reserve Capacity Mechanism and Whole of System Plan processes.
- The **Regulatory Framework** work package will make improvements to the regulatory framework (including Market and Technical Rules) for power system security and reliability to support the safe and reliable operation of the SWIS. The work package will remove duplication and

² TDOWG subsumed the functions of two working groups previously constituted under the MAC to advise on changes to market and power system security and reliability arrangements: the Market Design and Operation and the Power System Operation Working Groups.

inconsistencies between regulatory instruments, move existing and revised standards to the instruments in which they may be operationalised most effectively, and resolve the incomplete transition of System Management functions from Western Power to AEMO.

- The **Technical Rules Change Management** work package – Western Power’s Technical Rules set out the standards for facilities (loads and generators) connecting to the SWIS. Western Power makes and amends the Technical Rules, subject to the oversight and approval of the Economic Regulation Authority. Western Power has only made minimal changes to the Technical Rules since its inception, despite substantial changes in technology and customer behaviour. This work package will review the current framework governing the Technical Rules and identify options to improve change management processes.
- The **Generator Performance Standards** work package – Large-scale generators can provide services that improve the ability of the system and network to respond to disturbances. The failure of generators to provide these services can have a detrimental effect on the management of the power system and increase the requirement for Essential System Services. Failure can be due to generators not meeting specified Generator Performance Standards as a result of either being exempt from compliance or being of technology types historically assessed as being unable to provide these services. This work package will consider the economic and power system benefits of imposing additional obligations on generators to comply with Generator Performance Standards and implementing an improved monitoring and compliance framework.
- The **Reliability Standards Framework** work package – Under the existing framework, reliability standards are contained in multiple instruments created at different times, by different parties, with varying change management processes. The way many standards are defined precludes efficient options for meeting them; inconsistent standards and definitions are used by parties such as AEMO and Western Power to define and measure reliability; and the way in which existing standards should be operationalised is, in many cases, unclear. The Reliability Standards Framework work package will examine the existing framework of system and network reliability standards, and make recommendations and implement measures to address this problem.
- The **Whole of System Plan Framework** work package will establish the framework for the development of second and subsequent Whole of System Plans, taking into account lessons learned and recommendations made to the Taskforce in the development of the initial Whole of System Plan, as well as feedback received from stakeholders following its release.

Work outside scope

The following work is outside the scope of the Delivering the Future Power System work stream.

- The **design and implementation of new market and dispatch systems** to make the new market arrangements operational are outside the scope of this project. This activity will be wholly undertaken by AEMO. However, the Future Market Design and Operation team will work closely with AEMO throughout the project to ensure matters relating to the practicality of implementation are adequately considered in market design.
- While the subject of work on future governance frameworks and a critical input to the Delivering the Future Power System work stream, the development of **system constraint information** is outside of scope. System constraint information will be developed collaboratively by AEMO and Western Power.

- The necessary changes to the **Reserve Capacity Mechanism** resulting from the introduction of constrained network access are outside the scope of the Delivering the Future Power System work stream and are being progressed under the Improving Access to the Western Power Network work stream (see section 3.3.2 below). Additionally, changes to pricing under the Reserve Capacity Mechanism are being finalised by Energy Policy WA, in consultation with the Implementation Unit.³
- The current Technical Rules Change Management work package is limited to reviewing the change management process of the Technical Rules and does not include a **comprehensive review of the Technical Rules** themselves, which is currently being undertaken by Western Power.

3.3.1.2 Key project milestones

Table 5 provides an overview of the timing of key project milestones. Grey shading indicates completed milestones.

Table 5 – Key Delivering the Future Power System milestones

Due date	Milestone
July 2019	Recommendations to Taskforce and public information papers on: <ul style="list-style-type: none"> • Foundational Market Parameters • Scheduling and Dispatch (Energy) • Regulatory and Reliability Standards – High level framework • Technical Rules Change Management – High level framework • Synergy – Preparedness for Market Changes • Power System Constraints Equations Governance Framework
August 2019	Recommendations to Taskforce and public information papers on: <ul style="list-style-type: none"> • Essential System Services Acquisition Framework • Settlements – Foundation Settings • Governance Framework for Constraint Equations
November 2019	Recommendations to Taskforce and public information papers on: <ul style="list-style-type: none"> • Technical Rules Change Management – Detailed design and exposure draft of the Electricity Networks Access Code 2004 (Access Code) and Market Rules • Governance Framework for Constraint Equations – Exposure draft of the regulation and Market Rules • Frequency Operating Standards

³ For more information on the proposed changes to the reserve capacity pricing arrangements, see <https://www.wa.gov.au/government/document-collections/improving-reserve-capacity-pricing-signals>

Due date	Milestone
December 2019 – January 2020	<p>Recommendations to Taskforce and public information papers on:</p> <ul style="list-style-type: none"> • Essential System Services – Locational Services and Emergency Management • Essential System Services – Scheduling and Dispatch • Settlements – Reserve Capacity Mechanism, Essential System Services and Energy • Generator Performance Standards • Power System Security and Reliability Regulatory Framework • Outage Management • Registration and Participation Framework • Market information framework
January – June 2020	<ul style="list-style-type: none"> • Power System Security and Reliability and Generator Performance Standards – Progressive consultation on, and implementation of, changes to Market Rules and relevant regulations (i.e. Access Code) • Wholesale Electricity Market Design – Progressive release of draft Market Rules for public comment
July 2020	Recommendations to Taskforce and public information paper on Market Power Mitigation
September 2020	<ul style="list-style-type: none"> • Ministerial decision on final Wholesale Electricity Market design and making of changes to regulations, Market Rules etc. • Future Whole of System Planning – Recommendations to Taskforce
October 2020	<ul style="list-style-type: none"> • Recommendations to Taskforce on framework for reliability standards • Implementation of new Wholesale Electricity Market arrangements (ongoing to commencement of new market arrangements in October 2022)

3.3.2 Improving Access to the Western Power Network

3.3.2.1 Project scope

Current network access arrangements do not make the best use of available network capacity, restricting access for new generators to the Western Power network. This is because of legacy arrangements that provide many existing electricity generators with ‘unconstrained network access’ that requires Western Power to ensure its network has sufficient capacity to transmit up to the maximum output of these generators under normal operating conditions. This can be a barrier to any new generator seeking to connect in congested parts of the network, as the network must be augmented so that the ability of existing generators to transmit electricity at any time is not impeded.

These arrangements also lead to an outcome where generator dispatch occurs based on different rights to access network capacity, creating inefficiencies in the dispatch of generators in the Wholesale Electricity Market. This is because, when constraints bind under existing arrangements, generators with unconstrained access are dispatched ahead of generators with constrained access, regardless of whether the generator with unconstrained access rights is more expensive. In a truly efficient market, where generators have equal access rights, energy demand is matched against bids from market participants to supply energy, who are then dispatched according to an economic merit order so that the cheapest generators are dispatched ahead of more expensive generators.

The Improving Access to the Western Power Network project aims to improve generator access to the grid through the adoption of a constrained network access regime that will provide more equitable access for generators and optimise grid use. This will help remove barriers to investment and facilitate access to the Wholesale Electricity Market for new low cost and low emissions generation technologies. By facilitating more efficient use of available network capacity, the reforms will also provide a greater return on the investment in new and existing network infrastructure that is ultimately paid for by electricity consumers in the SWIS.

This project involves the following main elements.

- **Amendments to the Access Code** to implement a constrained network access regime.

Changes to the Access Code and its operational instruments (such as Western Power’s Applications and Queuing Policy, Transfer and Relocation Policy, Capital Contributions Policy, and Model Electricity Transfer Access Contract) are required by the second quarter of 2020 so that Western Power can commence preparations for its fifth Access Arrangement and meet its regulatory obligation to submit its draft Access Arrangement to the Economic Regulation Authority by February 2021.

Once the changes to the Access Code are made, Western Power will be responsible for progressing the changes to the operational instruments required under the Access Code, supported by the Implementation Unit and in consultation with industry.

Changes to the Market Rules to implement a new security-constrained market design are being progressed by the Delivering the Future Power System work stream.

- **Changes to the Reserve Capacity Mechanism** to implement a new process to allocate capacity credits to reflect the constrained nature of the grid.

These changes are required to ensure that the Reserve Capacity Mechanism continues to achieve its intended purpose of incentivising the investment needed to ensure a reliable power system in the context of a constrained network access model. Without reform, uncertainty around how network constraints affect facilities’ Capacity Credits would undermine the ability of the Reserve Capacity Mechanism to achieve this purpose.

The project team will work with stakeholders to develop a new capacity allocation process and a clear, transparent approach to determine how network constraints will be taken into account in assessing the capacity of a facility to generate and transfer its power into the network during peak demand periods.

3.3.2.2 Key project milestones

Table 6 provides an overview of the timing of key project milestones.

Table 6 – Key Improving Access to the Western Power Network milestones

Due date	Milestone
November 2019	Recommendations to the Taskforce on new connection and access framework
December 2019	Recommendations to the Taskforce on high-level design of Capacity Credit Rights and publication of information paper
January – June 2020	Consultation with industry on exposure draft of Market Rules and Access Code changes
Mid-2020	Ministerial decision on final constrained access and capacity credits design and making of changes to the Access Code and Market Rules

4. Work program governance arrangements

Given the complexity and significance of its work program, the Taskforce has established robust governance arrangements to ensure the timely and efficient delivery of the Strategy.

4.1 Conflict of interest

All Taskforce Members and Implementation Unit staff are required to declare any potential, perceived or actual conflicts of interest in relation to the work program being delivered under the Strategy.

The materiality, relevance and management of any declarations of conflict of interest will be assessed on a case by case basis by the Taskforce Chair and the Executive Director of Energy Policy WA.

4.2 Confidentiality and record management

All Taskforce Members and Implementation Unit staff, including placements and secondees from other agencies or Government energy businesses, are required to sign a confidentiality agreement precluding them from disclosing confidential information they may come across in the course of their work. This is particularly important in relation to confidential information shared by stakeholders to assist the Taskforce and the Implementation Unit in implementing the work program.

The Implementation Unit is responsible for the safe record management and record keeping of all Taskforce and Strategy documents in accordance with Energy Policy WA's record keeping policies. Access to work program documents is restricted to Implementation Unit staff only.

4.3 Project scope management

The nature of the Strategy demands a robust approach to scope management. Changes in scope include any amendments to project deliverables, delivery dates, dependencies and consultation.

Minor scope changes can be approved by the Executive Director of Energy Policy WA in consultation with the Taskforce Chair. Material changes in scope require approval by the Taskforce.

4.4 Timely project delivery

Project Leads have responsibility for monitoring progress on individual projects within their respective work stream. The timely delivery of components of the work program forms part of each Implementation Unit staff member's performance plan.

The Implementation Unit is required to provide a status report on the implementation of the program at each regular monthly meeting of the Taskforce. In turn, the Taskforce is required to provide a written work program status report to the Minister for Energy each month and to Cabinet every six months.

4.5 Risk management

The Implementation Unit has established a register to assist in the management of risks to the successful delivery of the Strategy. The register includes the identification of strategies to manage the risks identified.

The risk register is reviewed by the Implementation Unit on a monthly basis.

The Implementation Unit is required to provide monthly updates of the risk management register to the Taskforce, highlighting risks requiring consideration and/or action by the Taskforce.

4.6 Issues management

The Implementation Unit has established a register to assist in the management of emerging issues that could jeopardise the successful delivery of the Strategy. The register includes the identification of strategies to manage the issues identified.

The issues register is reviewed by the Implementation Unit on a monthly basis.

Material issues will be reported to the Taskforce as they arise.

4.7 Project dependencies

To ensure all project dependencies are adequately managed, the Implementation Unit has developed and maintains a register of project dependencies. The register records each project dependency, as well as proposed actions, timelines and officers responsible for the management of each project dependency.

The register is reviewed and updated by the Implementation Unit on a monthly basis.

Material issues relating to project dependencies will be reported to the Taskforce as they arise.

4.8 Budget management

The Implementation Unit will provide the Taskforce with a monthly report on the status of the program budget for information and noting.

The Implementation Unit will also ensure compliance with Government's budget management and reporting requirements.

5. Stakeholder engagement

Stakeholder engagement is essential in ensuring that the implementation of the Strategy delivers the intended benefits to the energy sector, consumers and the Western Australian economy more broadly. This will only happen if key stakeholder groups are effectively and appropriately engaged throughout the process.

The Taskforce and the Implementation Unit will adopt a structured and targeted approach to stakeholder consultation. This approach is intended to provide opportunities for input from relevant external stakeholders, while recognising the tight timeframes within which the Strategy will be delivered.

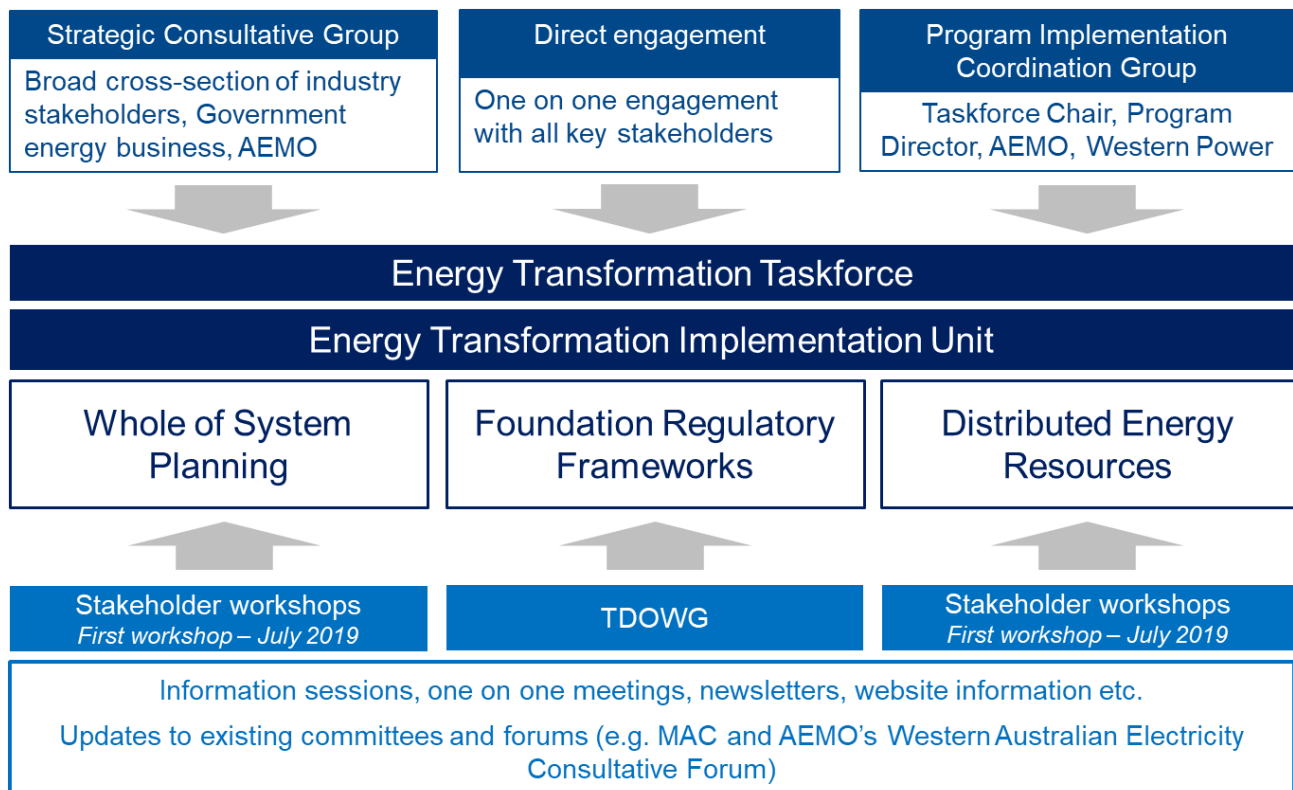
Achieving specific project outcomes after appropriate consultation is only part of the process. Effective communication will also be essential as the Implementation Unit and the Taskforce seek to keep stakeholders informed of progress. Effective communication means that all stakeholders are aware of the progress of the work program towards its outcomes.

The main channels of engagement with stakeholders will be formal, senior level working and consultation groups; work stream level working groups; presentations to stakeholder groups established by other organisations; regular public and targeted workshops and briefing sessions; one-on-one meetings; the publication of information on the Energy Policy WA website; email communications; and the Taskforce’s monthly newsletter.

On occasion, public consultation papers and exposure drafts will be published for written consultation.

Figure 3 provides an overview of the stakeholder engagement plan adopted by the Taskforce and the Implementation Unit.

Figure 3 – Stakeholder engagement channels



5.1 Formal consultation groups

Two formal groups will assist in the delivery of the Strategy.

5.1.1 Program Implementation Coordination Group

The Strategy has a strong focus on implementing changes to existing network and Wholesale Electricity Market arrangements in the SWIS. It is therefore important for the Taskforce and the Implementation Unit to work collaboratively with Western Power and AEMO.

A Program Implementation Coordination Group has been established to facilitate the collaborative, coordinated and timely implementation of the Strategy's work program. The group will focus on work program coordination at a strategic level, including ensuring each organisation has sufficient resources directed to the delivery of the Strategy.

Membership of the Program Implementation Coordination Group includes:

- the Chair of the Taskforce;
- the Executive Director of Energy Policy WA;
- a senior representative of Western Power; and
- a senior representative of AEMO.

The Program Implementation Coordination Group will meet every month or more frequently, if needed.

5.1.2 Strategic Consultative Group

The Strategic Consultative Group was established by the former Public Utilities Office in August 2018 to inform its Wholesale Electricity Market reform work program. Representatives were selected through an Expressions of Interest process.

The Strategic Consultative Group has been maintained and its membership expanded to include Horizon Power (given the organisation's extensive experience in DER) and AEMO.

Representatives include AEMO, Alinta, the Australian Energy Council, the Clean Energy Council of WA, Horizon Power, Simcoa, Summit Southern Cross Power, Synergy, the WA Independent Power Association and Western Power.

The purpose of the Strategic Consultative Group is to provide feedback and guidance to the Taskforce at a strategic and whole of program level. It is anticipated that the group will meet on a quarterly basis or more frequently, if needed.

5.2 Work stream level working groups

Most work streams of the Implementation Unit have established a working group to seek technical input from relevant stakeholders on specific projects.

Membership of the working groups is as follows:

- Whole of System Planning Working Group: Implementation Unit, Western Power and AEMO.
- DER Working Group: Implementation Unit, Western Power, Horizon Power, AEMO and Energy Safety.
- Delivering the Future Power System Working Group: Implementation Unit, AEMO and Western Power.

Regular consultation with industry stakeholders is also undertaken through the TDOWG, particularly with regard to the detailed design of elements of the Foundation Regulatory Frameworks work stream.



Energy Transformation Taskforce

