Integrated system planning
Role of the ISP

David Swift
ESB forum
October 2018
Energy mix and infrastructure are transforming

A profound transition of the NEM is underway:

FROM
A static world:

- Predictable demand growth
- Predominantly based on coal and gas resources
- A power system designed around bulk energy transport on main highways from major (synchronous) gen centres

TO
Rapidly changing world:

- Consumption flat, but demand peaks even more pronounced under extremes
- Supplies involve geographically dispersed, technologically diverse resources
- Requiring:
  - Flexible dispatchable plant
  - Energy storage
  - Visibility and controllability of resources, including embedded
  - Efficient re-configuration of the transmission system to support
Why do we need system-wide planning?

- Changing supply mix means greater need to share reserves to
  - Manage variability
  - Access reliability and economic diversity benefits
  - Optimise assets
  - Increase resilience

- Changes role of transmission, and increases the value it provides

- Changes the balance of cost and benefits between local and system wide planning
Integrated system plan

What is system-wide planning?

- Relevant information is assimilated and optimised to form holistic plan using a systems approach across the NEM

- Identify needs –
  - TNSPs - local technical and reliability/security needs
  - AEMO – power system reliability/security and resilience needs
  - Governments - regional policy needs

- Identify credible network & non-network options that address the need
  - AEMO determines range of options in collaboration and consultation with networks and wider industry

- Identify developments that efficiently meet identified needs
  - AEMO undertakes integrated power system and economic modelling
  - Systems approach that optimises overall outcomes
  - Identify the combinations of projects that result in secure, reliable and operable power system with greatest net market benefits
Process for development of an ISP

- The ISP was developed as a response to recommendations by the Finkel Review.
- While the development of the ISP used powers and fulfilled obligations under the current Rules for the development of an NTNDP, there is not an appropriate Regulatory framework for the robust development, approval and implementation of such a Plan.
- AEMO is keen to work with others to co-create such a framework.
Future process for planning
Overall framework for the ISP

• AEMO supports the development of a new regulatory framework to deliver an actionable ISP
• Framework could be broadly built on Option 4 in the AEMC’s COGATI Options paper
High level proposed process

Develop plan

- **Scenario development**
  - Establish scenarios, inputs & methodology

- **Identify system needs**
  - Local reliability and security needs
  - NEM reliability and security
  - Public policy

- **Identify development needs**
  - Identify combinations of system developments that efficiently meet needs
  - Develop the ISP

- **Identify options & select solution**
  - TNSP undertakes detailed design, options analysis to implement ISP
  - TNSP develops efficient implementation plans

Implement plan

- **Funding the delivery**
  - AER assesses implementation – does not need re-justification of need
  - AER determines revenue allowance

- **Deliver and operate solution**
  - Detailed costing & planning, implement the investment

Comprehensive and broad based consultation by AEMO

If outcomes of TNSP process are not materially different to ISP assumptions, TNSP should be able to commence implementation – streamlined regulatory approvals

If outcomes of TNSP process materially change published ISP results, further analysis is required

Comprehensive consultation by TNSPs
ISP consultation

Transparent information flows & process ensures credible results.

- Robust inclusive consultation process:
  - Consumers
  - Project developers
  - Network investors
- Qualified, independent, not for profit decision maker
Status of current ISP

- Development and implementation of such a process is a major undertaking and will take some time
- Existing ISP was not developed under such a process
- However the ISP identified a range of modest upgrades (Group 1) which warrant immediate action – delaying these until a second ISP is developed under a new process would forego significant benefits.
Process for implementing Group 1 projects
20 year integrated system plan

GROUP 1
Near-term construction to maximise the economic use of existing resources
As soon as practicable

IMMEDIATE DRIVERS:
• Support start of YET and QRET
• Improve reliability to NSW before Liddell PS retirement

GROUP 2
Developments in the medium term to enhance trade between regions, provide access to storage, and support extensive development of REZs
To mid-2020s (indicative)

MEDIUM-TERM DRIVERS:
• Continuing YET and QRET
• System security in SA
• Firming supply
• Improve wholesale market competition in SA, reducing fuel costs

GROUP 3
Longer-term developments to support REZs and system reliability and security
To 2040 (indicative)

LONG-TERM DRIVERS:
• Firming and energy storage required as renewable generation continues to connect
• Increased need for transfer VIC–NSW
• Gladstone PS reaches end of technical life in QLD
• Coal-fired generation reaches end of technical life in VIC and NSW

Base plan

Base plan with storage initiatives
Status of Group 1 projects

**Western Victoria Renewable Integration** – regulatory process underway

**Queensland to New South Wales upgrade** – engineering work underway, regulatory process yet to commence

**Victoria to New South Wales upgrade** – assessments underway, Regulatory process about to commence.

**South Australia System Strength** – To improve system strength in South Australia, removing the need for market intervention and supporting renewable energy development. Project is being implemented using transitional Rules arrangements relating to system strength.
Status of Group 2, 3 projects

A new 750 MW interconnector between New South Wales and South Australia – Currently advancing through the regulatory process.

A medium to large upgrade of the Queensland to New South Wales interconnector – Preliminary studies undertaken.

SnowyLink North – an upgrade that provides capacity from Snowy 2.0 to Sydney (also supports renewables and increased transfer with Victoria). Regulatory processes are pending decision on Snowy Hydro.

Distributed Energy Resource (DER) Integration in South Australia – AEMO is progressing the DER co-ordination project via the Open Networks initiative with the ENA.

SnowyLink South – an upgrade that provides capacity from New South Wales to Victoria, including provision for Snowy 2.0. Regulatory processes are pending decision on Snowy Hydro.

Battery of the Nation/MarinusLink - Currently advancing through the regulatory process.
Need to fast track Group 1 projects
Expediting Group 1 projects

- Key = expedited regulatory process needed – all RIT-T’s needed complete by mid-Q3 2019
- Process to achieve this needed urgently