Integrated system planning
Role of the ISP

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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

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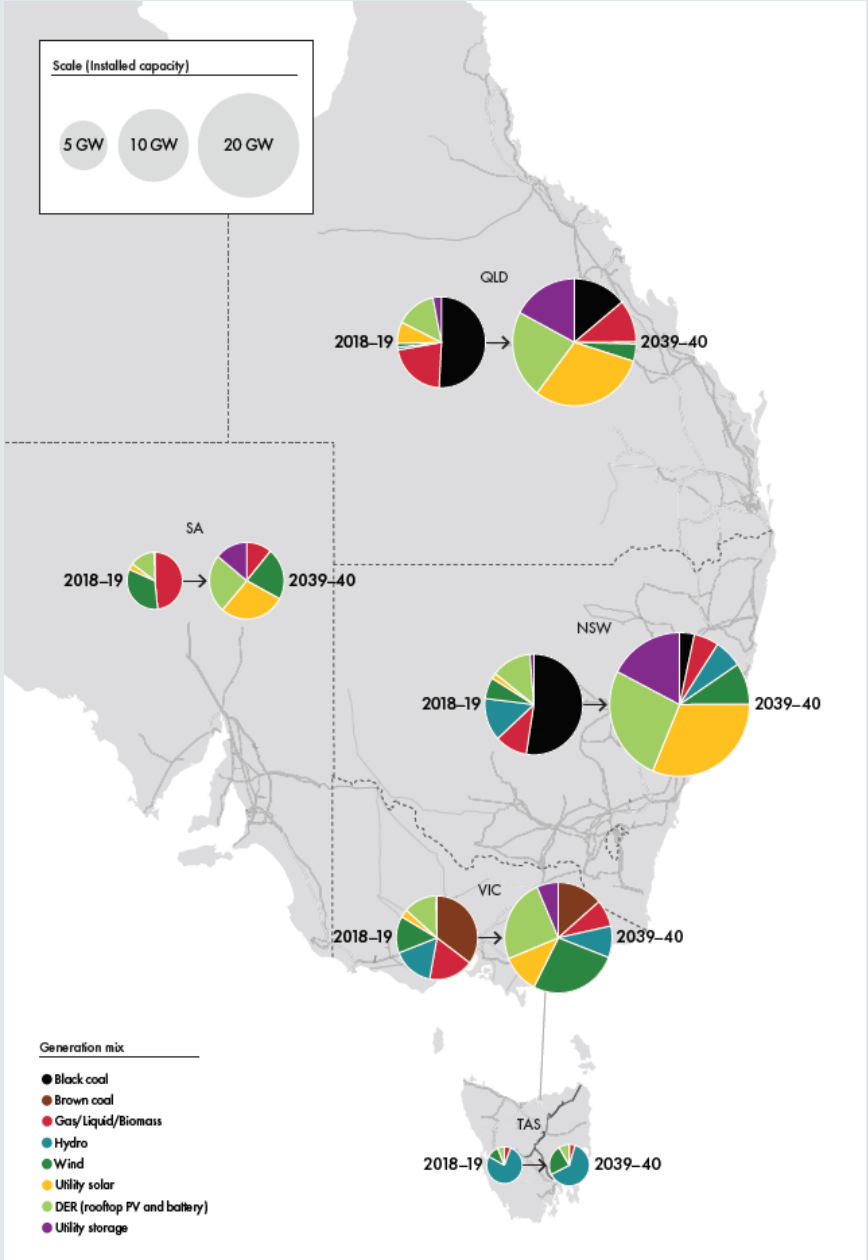
Why do we need system-wide planning?



- 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

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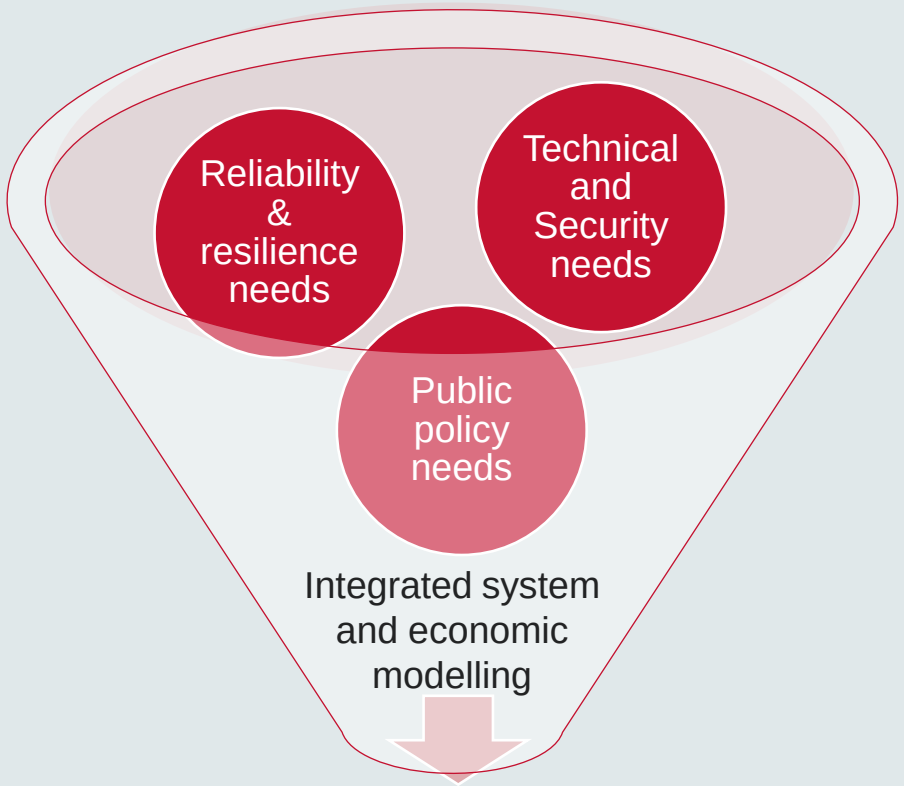
What is system-wide planning?



Integrated <u>system</u> plan

- *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

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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

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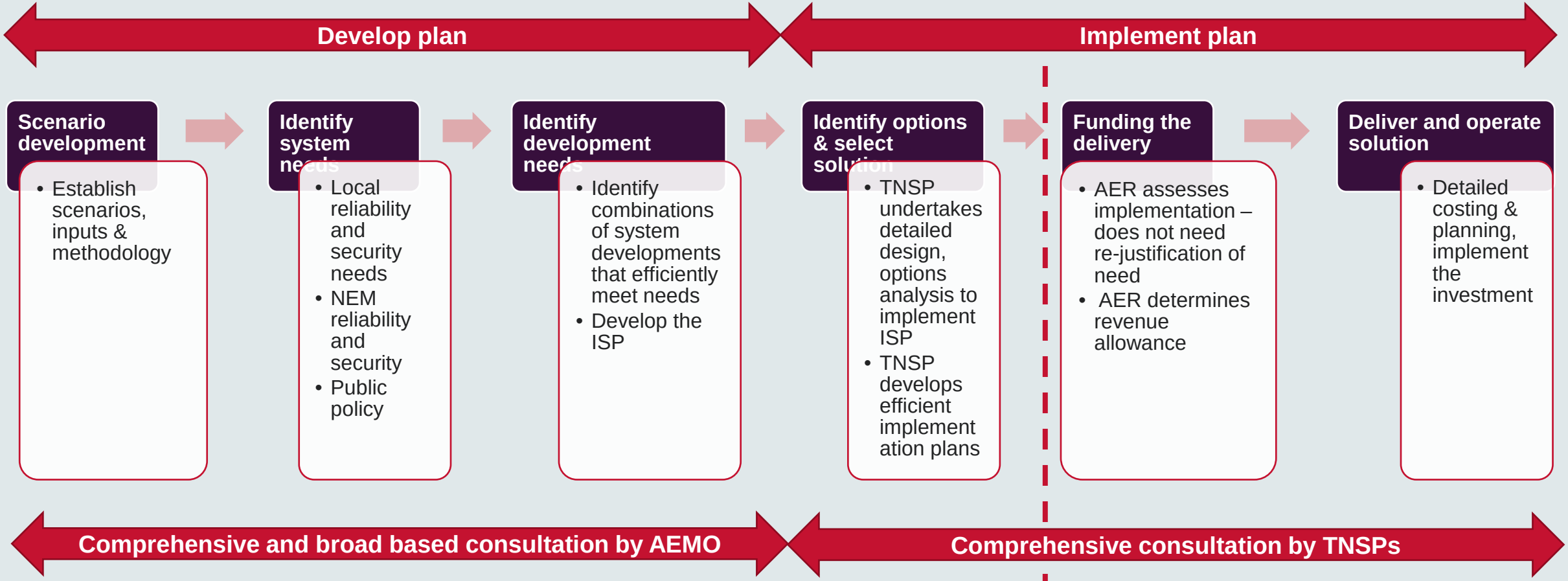
Overall framework for the ISP

- 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



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

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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.

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Process for implementing Group 1 projects

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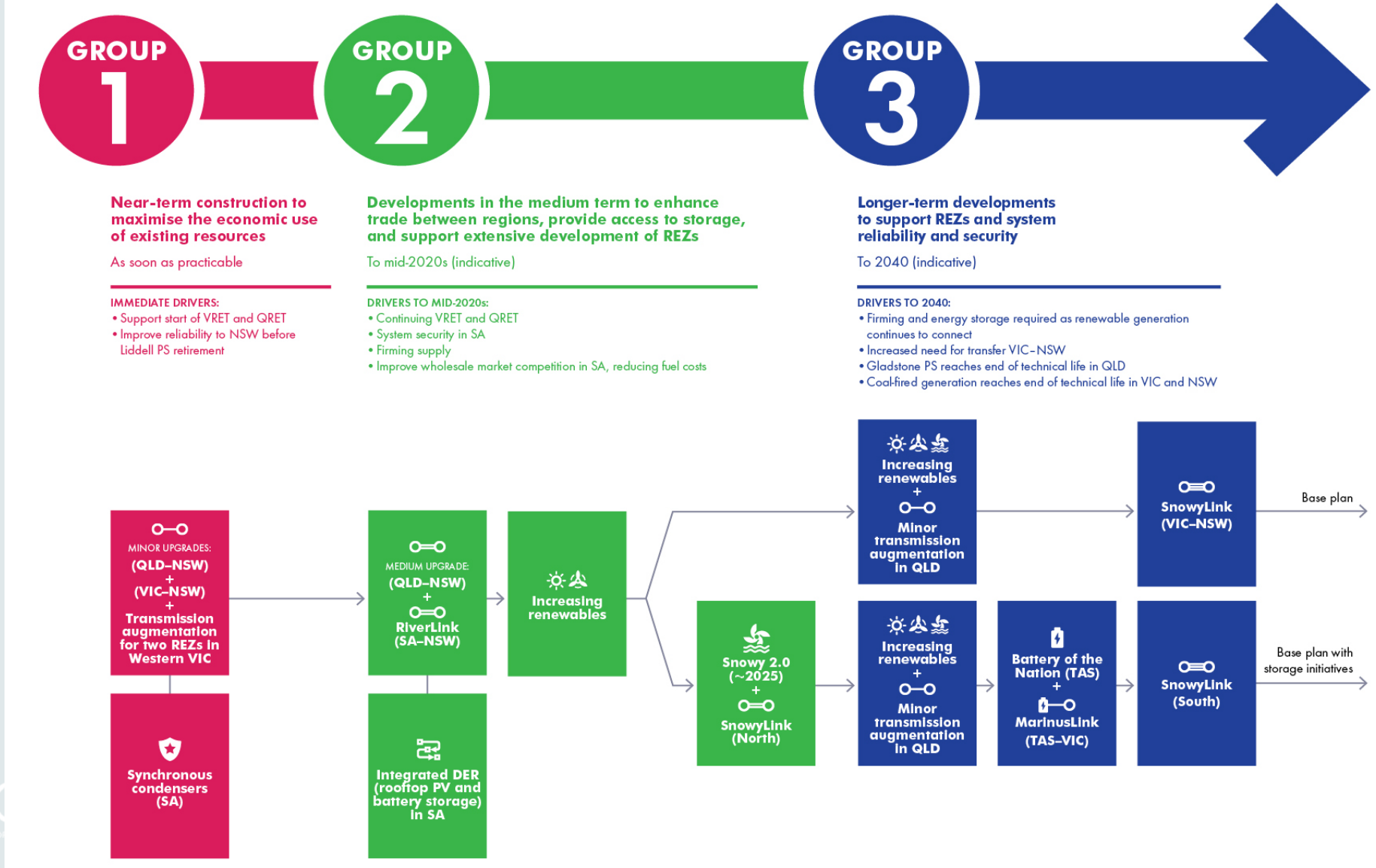
20 year integrated system plan



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.

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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.

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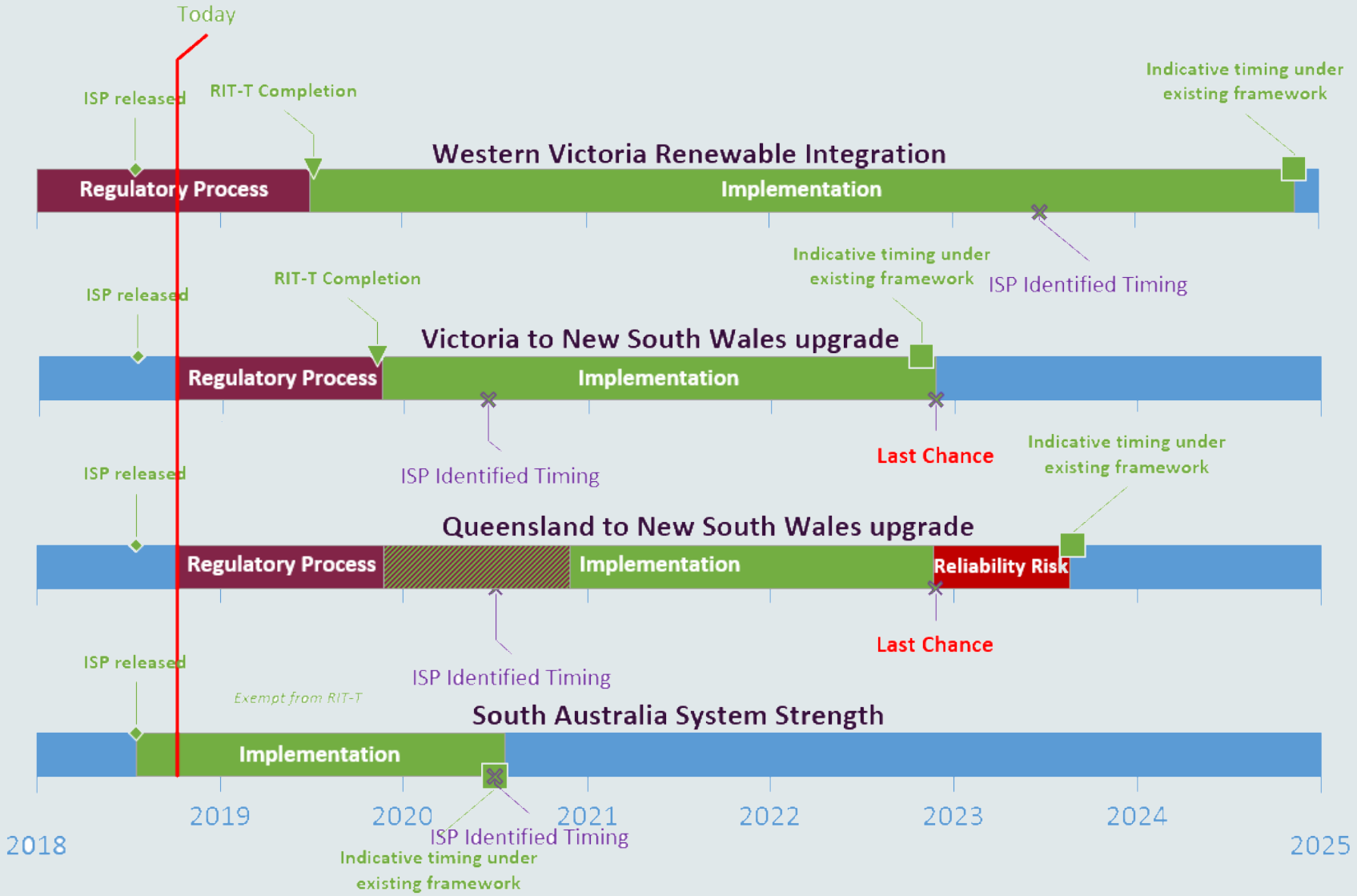
Need to fast track Group 1 projects



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

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