Eyre Peninsula electricity supply options investigation

ESCOSA Public Forum – Port Lincoln

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Executive Manager Asset Management
Purpose and outline

> Describe what ElectraNet is doing to investigate electricity supply options for Eyre Peninsula

> Clarify understanding of options being considered

> Respond to issues raised in submissions on ESCOSA draft report
About ElectraNet

> Owner and operator of SA’s regulated transmission network
> Making connections and moving high-voltage power over long distances
Existing 132kV radial line is close to full capacity with limited potential to meet increased demand.

Asset condition challenges with line >45 years old.

Port Lincoln supply reliability includes network support from 3 x 25 MW diesel-fired gas turbines.

Current maximum demand is about 55 MW southwest of Cultana with about 35 MW at Port Lincoln.
Background to exploring options

New drivers exist for looking at Eyre Peninsula electricity supply options

ElectraNet commenced feasibility studies in 2011

Formal economic (RIT-T) assessment
- Draft economic assessment report – Jan 2013
- Found a new higher capacity 275 kV transmission line is economic to meet a demand increase of about 50 MW or more
- Process put on hold pending customer commitment

New drivers now exist for reassessing options
- Condition of existing transmission line
- Expiry of Port Lincoln network support agreement

For more information see www.electranet.com.au
Eyre Peninsula reliability standards

Electricity Transmission Code¹ specifies minimum reliability standards

<table>
<thead>
<tr>
<th>Exit point</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middleback (Category 1)</td>
<td>• Provide “N” equivalent line and transformer capacity for 100% of contracted demand (i.e. with all transmission elements in service)</td>
</tr>
</tbody>
</table>
| Wudinna and Yadnarie (Category 2) | • Provide “N” equivalent line capacity for 100% of contracted demand (i.e. with all transmission elements in service)  
  • Provide “N-1” equivalent transformer capacity for 100% of contracted demand (i.e. with any one element out of service) |
| Port Lincoln (Category 3)   | • Provide “N-1” equivalent line and transformer capacity for 100% of contracted demand (i.e. with any one element out of service), including the use of post-contingent network support operation |

¹ TC09 July 2018
² Restoration standards also apply in each case

For more information see [www.escosa.sa.gov.au](http://www.escosa.sa.gov.au)
Identified need for RIT-T

To explore electricity supply options for meeting reliability standards at Port Lincoln most efficiently in the future

Identified need is driven by:

> The need to **replace significant transmission line components** in the next few years

> The upcoming **expiry of the network support arrangement** at Port Lincoln
Electricity supply to Eyre Peninsula

Primary options:

> Partial line replacement (to replace components at end of life)

> Full rebuild of the transmission line supplying the Eyre Peninsula

Full line replacement would proceed only if benefits to customers exceed costs

About 120 km of line conductor needs to be replaced in next 5-year regulatory period
## Options identified in PSCR

<table>
<thead>
<tr>
<th>Option</th>
<th>Overview of option</th>
<th>Cost ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Replace components of the existing 132 kV single-circuit transmission line and enter a new network support contract</td>
<td>80, plus major network support costs</td>
</tr>
<tr>
<td>2</td>
<td>Construct a new double-circuit 132 kV transmission line following a Cultana to Yadnarie to Port Lincoln route</td>
<td>200-300</td>
</tr>
<tr>
<td>3</td>
<td>Construct two new single-circuit 132 kV transmission lines following separated routes between Cultana and Port Lincoln (one route via Yadnarie, the other via Wudinna)</td>
<td>200-350</td>
</tr>
<tr>
<td>4</td>
<td>Construct a new double-circuit 275 kV transmission line following a Cultana to Yadnarie to Port Lincoln route</td>
<td>280-380</td>
</tr>
<tr>
<td>5</td>
<td>Construct two now single-circuit 275 kV transmission lines following separated routes between Cultana and Port Lincoln (one route via Yadnarie, the other via Wudinna)</td>
<td>400-550</td>
</tr>
</tbody>
</table>
Non-network options

ElectraNet is analysing a range of generation and other technology proposals that were received in response to the PSCR

> Each of the options currently proposed will require network support, either as an ongoing requirement or until new lines are constructed:

  – Option 1: 10 years or more
  – Options 2-5: 2-5 years

> For options that rely on double circuit lines, we will also investigate:

  – the costs and benefits of an emergency back-up arrangement to quickly install and activate back-up generators in the unlikely event of an extended unavailability of both circuits
The Regulatory Investment Test for Transmission (RIT-T)…

- Is an economic cost benefit test designed to ensure that network investment or non-network alternatives deliver net benefits to customers
- Must be applied to transmission network investments more than $6m
- Considers all technically and economically feasible options to meeting an identified need (such as a network limitation or constraint)
- Both network and non-network solution options are considered
- Involves an open and transparent public consultation process

For more information see www.aer.gov.au
Options developed to meet identified need

Project specification consultation report (PSCR) published

Review submissions and assess credible options

Undertake cost benefit assessment and determine “preferred” option

12 weeks for submissions

Project assessment draft report (PADR) published

Review submissions and finalise assessment

Project assessment conclusions report (PACR) published

Disputes resolved by AER if needed

6 weeks for submissions

30 days to raise a dispute

TNSP = Transmission Network Service Provider

Security Classification: Public
# Key issues in submissions to PSCR

<table>
<thead>
<tr>
<th>Issue Raised</th>
<th>ElectraNet Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 500 kV line option should be considered, to enable the connection of more renewable generation</td>
<td>ElectraNet will assess whether the additional benefits of a 500 kV option would exceed the additional costs</td>
</tr>
<tr>
<td>Eyre Peninsula should be considered for inclusion as a Renewable Energy Zone in the Integrated Grid Plan recommended by the Finkel Review</td>
<td>We agree and are working with AEMO on development of an Integrated Grid Plan</td>
</tr>
<tr>
<td>The ability for new wind farms to export renewable energy to the Eastern States will be influenced by whether or not a new interconnector to the eastern states is constructed</td>
<td>Economic analysis will consider scenarios with and without a new interconnector</td>
</tr>
</tbody>
</table>
| • There are community concerns about the historical performance of the existing Port Lincoln Power Station  
  • Battery storage should be considered as a short-term option                                                                                                                                            | We are analysing a range of generation and other technology proposals that were received in response to the PSCR                                                                                                  |
### Key issues in submissions to PSCR

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<td>• There are potential future large mining load connections on the Eyre Peninsula</td>
<td>We are assessing “option value” as a component of the economic analysis</td>
</tr>
<tr>
<td>• There is significant uncertainty regarding whether potential new projects will proceed</td>
<td>Options 3 and 5 are now targeted to explicitly consider the viability of taking one of the new Cultana to Port Lincoln lines via Wudinna, and the other line via Yadnarie</td>
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<tr>
<td>A ring route for the Eyre Peninsula should be considered</td>
<td></td>
</tr>
<tr>
<td>Upgrades to the Eyre Peninsula transmission system will be paid for by South Australian consumers more broadly, and need to be considered in the light of recent extreme electricity price increases</td>
<td>Full line replacement would proceed only if benefits to customers exceed costs</td>
</tr>
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### Issue Raised

Increased information about demand characteristics and resources could support the ability of Distributed Energy Resource providers to deliver targeted proposals to the RIT-T

### ElectraNet Comment

- Much of the information identified is not readily available to network service providers
- ESCOSA could consider an alternative approach to making this data available, e.g. public register
- Demand management cannot address the identified replacement need for this RIT-T
Benefits to be quantified

Identification of a preferred option will depend on the impact each option has across a wide range of potential benefits

> Benefits include:

- Reliability improvements on the Eyre Peninsula
- Option value
  - Flexibility to support future new demand on the Eyre Peninsula
  - Capacity to support future new generation on the Eyre Peninsula
- Customer benefits of reducing constraints on existing wind farms
- Reducing transmission system electrical losses
Current status and next steps

ElectraNet is committed to running an open and transparent process to find the best option for affordable and reliable electricity supply

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Timing</th>
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<tr>
<td>Project Specification Consultation Report (PSCR) published</td>
<td>28 April 2017</td>
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<tr>
<td>Public forums</td>
<td>26 and 29 June 2017</td>
</tr>
<tr>
<td>Submissions on PSCR closed</td>
<td>21 July 2017</td>
</tr>
<tr>
<td>Draft report (PADR) consultation and public forum</td>
<td>Q4 2017</td>
</tr>
<tr>
<td>Final report (PACR)</td>
<td>Q1 2018</td>
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</tbody>
</table>
Questions
Thank you

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