Overview of the Economics of Nuclear Waste Disposal in South Australia

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Nuclear Waste Storage and Disposal

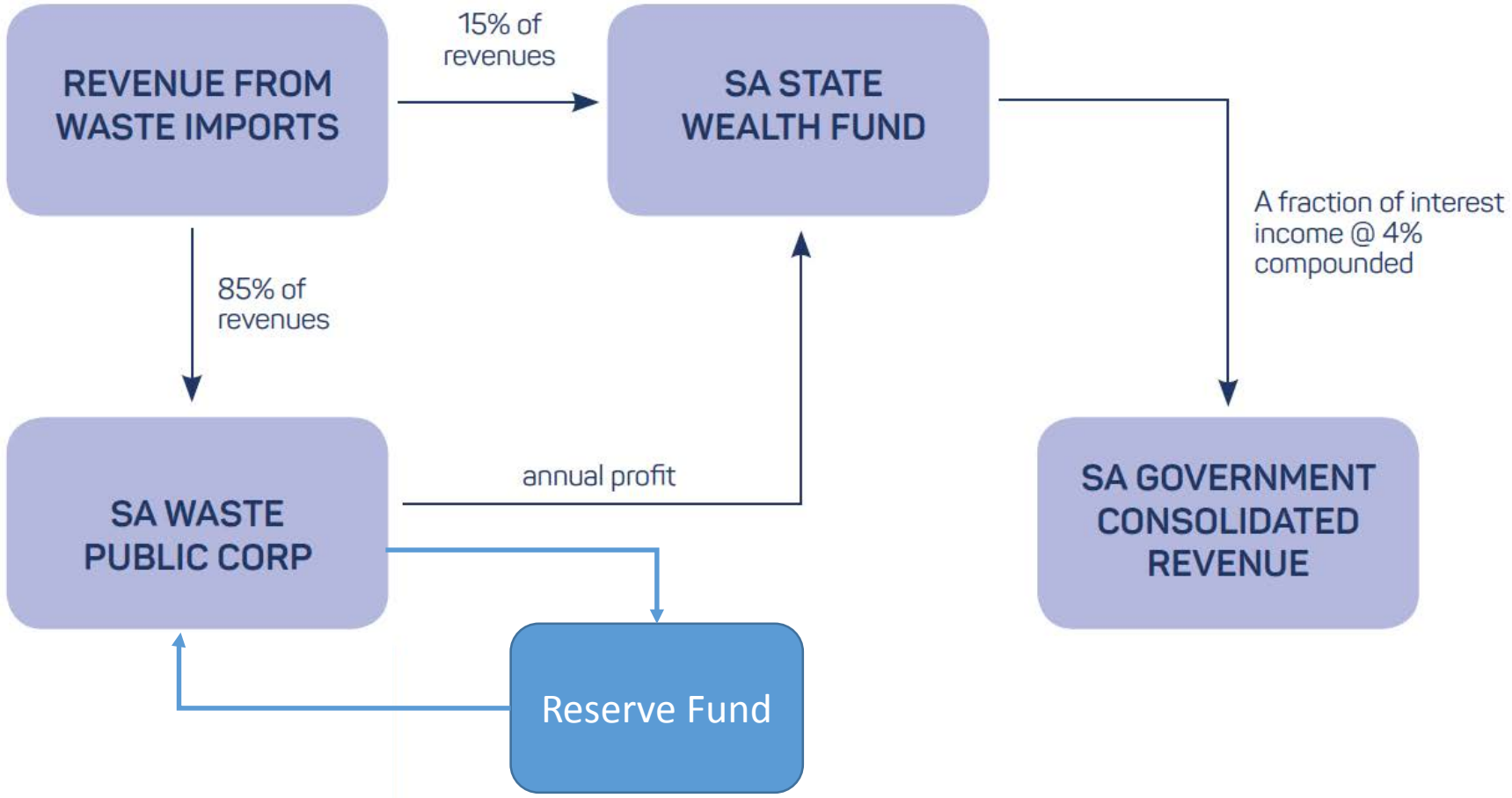
- There is a large amount of nuclear waste in the world and this stock will grow – even if nuclear power technology becomes redundant
- SA has a unique combination of economic, political and environmental stability advantages in radio-active waste storage
- Much of the world's nuclear waste is stored expensively and awkwardly at considerable risk. Those holding this waste should be interested in paying at least the average cost and theoretically the marginal cost of storage elsewhere
- SA could take advantage of this opportunity
  - The result could transform that state
  - Dynamic economic, environmental and social benefits are possible

The core proposition

South Australia

1. Accepts nuclear waste that
   - has been decaying for more than 10 years
   - is and can be stored in large canisters
2. Insists on 100% payment before delivery
3. Places initial 15% of all revenue received plus all profits in a Wealth Fund
4. Transfers all profits from the *publicly owned and operated* business into the an independently managed Wealth Fund
5. Use separate dedicated infrastructure
6. Transports the canisters to a safe interim storage facility
7. When cool enough to allow deep storage, places the canisters to a well-sited, deep disposal facility
8. Once all the waste is the deep disposal facility, fill it in

Proposed Revenue Flow Structure



Economics of Storage and Disposal

- Over a 120 year project timeline, the current best economic estimate suggests waste storage and disposal would produce
    - $257 billion in gross revenue and incur $145 billion in costs, over 9,600 jobs
    - Discounted at 4%, the net revenue stream is worth $51 billion
      (State debt is around $2.5 billion)
- A State Wealth Fund should be able to grow the money received into assets worth
    - $445 billion by 2090 – assuming interest accruing at 4% p.a.
    - Between 2028 and 2050 – transfer $1.2 billion per year to State Government
- The money that flows to the community is equivalent to
    - A new Royal Adelaide Hospital every two years
    - A benefit of $3,000 pa per person per year
    - Would grow State Product by 4.7%

Socio-economic Modelling and Assessments Advisory Committee Advice to Royal Commission

- Extreme conservatism in assumptions on critical determinants of viability
  1. Assume no more nuclear stations commissioned in the world
  2. Assume UK, France, USA, China, Russia, India and other countries with planned facilities dispose of their own waste
  3. Assume the State accepts 50% of world's accessible supply – 13.8% of world's total waste
  4. Build dedicated infrastructure to handle waste (port, road, railway, etc.)
  5. Discount project costs at 10% and investments at 4%
  6. Work out break-even costs and conduct sensitivity analyses
- Investment triggers
  7. Don't accept <u>any</u> waste until enough has been contracted to pay for its storage
  8. Require up-front payment before delivery
  9. Place 15% of each payment and all profits straight into a State Wealth Fund
  10. Require 50% of Wealth Fund profits to be re-invested
  11. Establish a separate Reserve Fund to pay for contingencies
- Other advice
  13. Keep economic assessments separate from consideration of non-market considerations (environment impacts, etc.)
  14. Assume a Government, not a private business, venture
  15. Ensure independent, arm's length management of the State Wealth Fund
  16. Public release of all Commission reports

The project is viable over a wide range assumptions

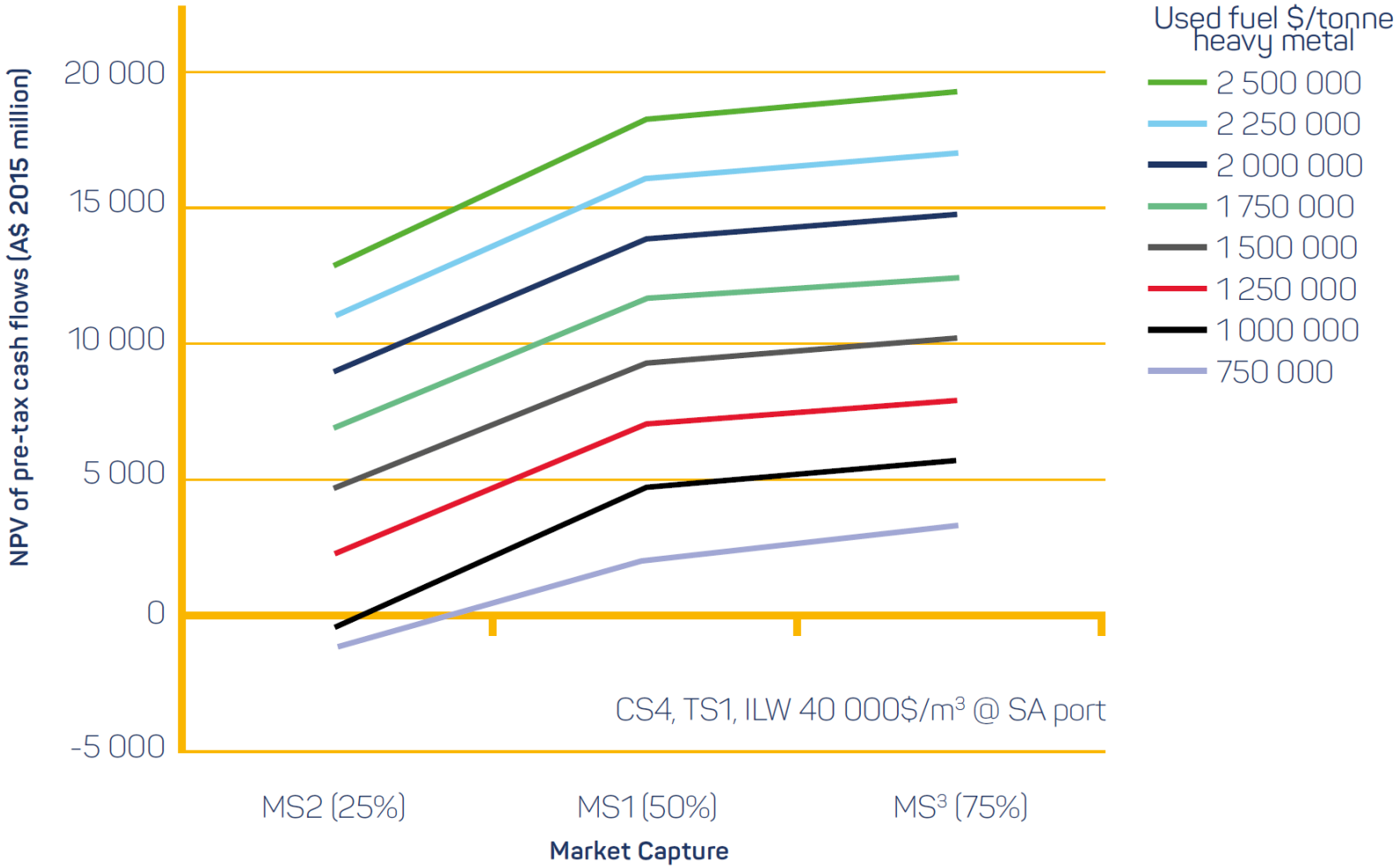


Figure J.6: Sensitivity of baseline scenario viability to lower and higher accessible market capture scenarios (see Table J.4 for details) and to lower and higher prices charged per unit used fuel

Nuclear Economics Consulting Group Assessment

- **Jacobs MCM Report:**
  - **Is: A Preliminary Opportunity Assessment**
  - **Is not: An Actionable Business Plan**

  - Is an acceptable starting point for further detailed, in-depth analysis.
  - It would be premature to decide on the commercial viability of this Project based only on the Jacobs MCM Report.
  - Informed decision making will require a more extensive assessment that includes what was explicitly excluded in the Jacobs MCM Report

Nuclear Economics Consulting Group - NECG

- **Jacobs MCM Report**
  - **Is: Preliminary Opportunity Assessment**
  - **Is not: Actionable Business Plan**

"NECG finds that the Jacobs MCM Report:

- Provides a useful indication that the Project … could be profitable under certain conditions and assumptions"
- Is an acceptable starting point for further detailed, in-depth analysis."

- "NECG considers it would be premature to decide on the commercial viability of this Project"
- "Informed decision making will require a more extensive assessment ..."

Citizens' Jury Process

- Felt to me like the most biased public process I have ever experienced
- Very biased recruitment of jurors
- Agenda designed to drown out objective information and build emotion
  - Jurors selected all but two of the speakers
  - Too many (350) participants for careful consideration of issues