



# Forecasting rural employment effects from unconventional gas in Australia

Presentation at ISSRM 2017

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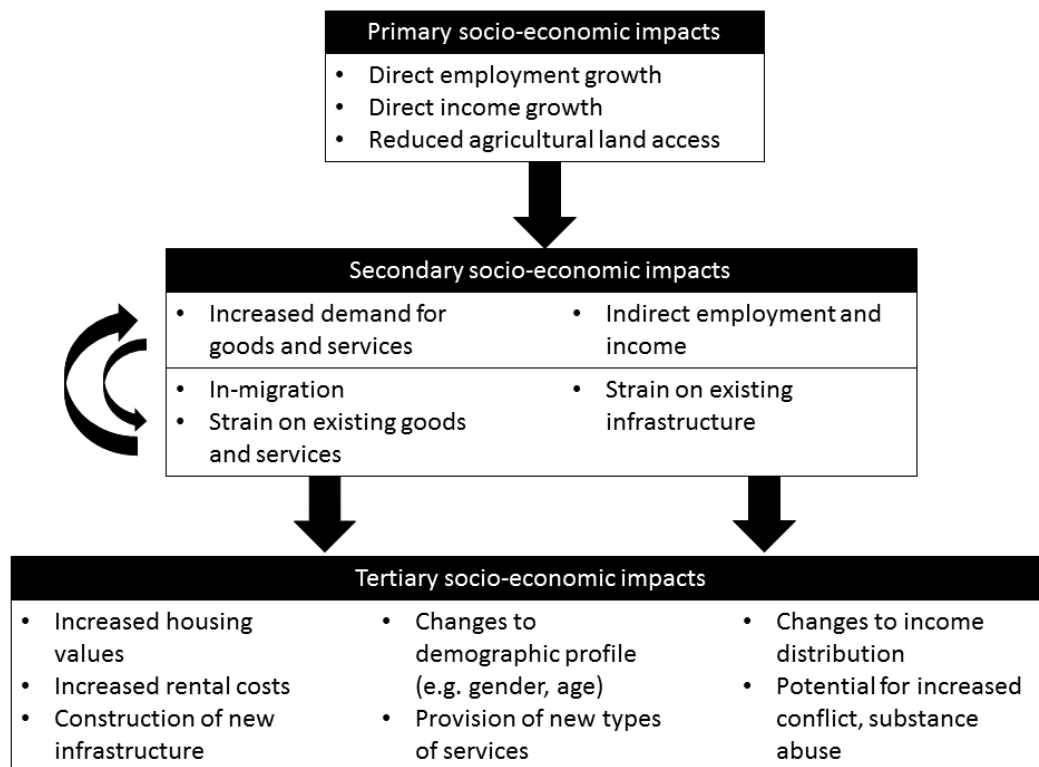


Gas Industry  
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# Local effects of unconventional energy extraction

- Expanding literature on this topic
- Sometimes represented as a hierarchy of effects
- The benefits are frequently over estimated by industry
  - E.g. Weber 2012, Marchand 2012
- We need more accurate forecasting



# Boom/bust cycles... and mini cycles

- The mining/energy literature emphasises ‘boom-bust cycles’
  - High prices lead to intense new investment
  - When prices drop it collapses
- A little different for unconventional gas
  - Distributed operations across large areas
  - Wells may need repeated fracturing to keep producing
  - The pace of the industry ebbs and flows
- More like mini-cycles (Jacquet and Kay 2014)



# Research objectives

- To develop more robust forecasts of indirect employment effects for Coal Seam Gas (CBM) industry in the Surat basin, Australia
  - Focusing on the operations phase (post construction)
  - Based on locally observed values
- Present forecasts under different scenarios
- Develop lessons for local businesses based on experiences so far
- Outreach: share with local communities and businesses

# Methods: forecasting component

- Started with estimates for direct jobs prepared by industry
- Estimated indirect jobs based on multiplier ratios we developed for a previous project
- Formed the basis of 10 plausible scenarios
  - Industry slow down (25%, 50%, 75%)
  - With reduced multipliers

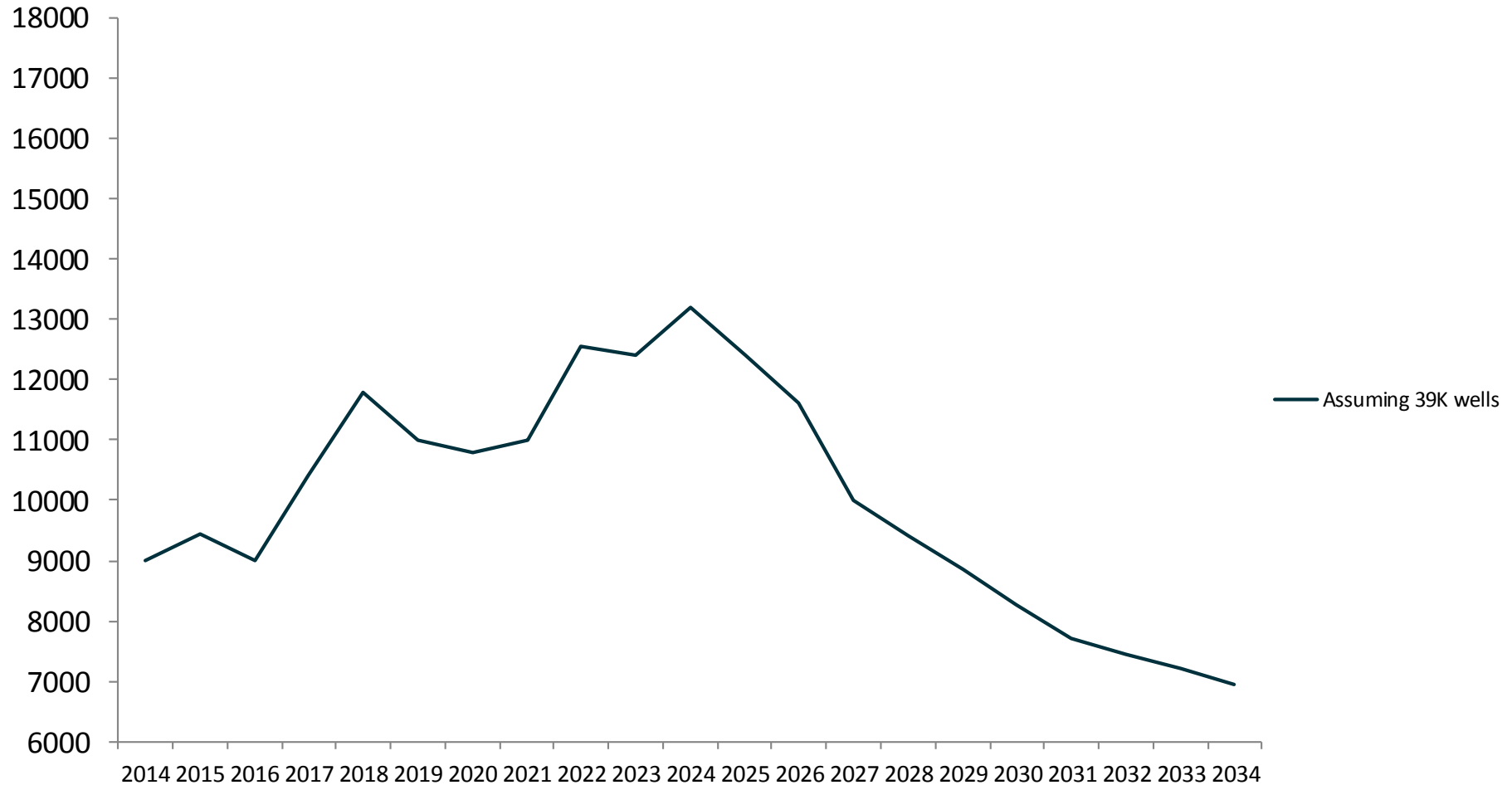


# Methods: experiences of local businesses

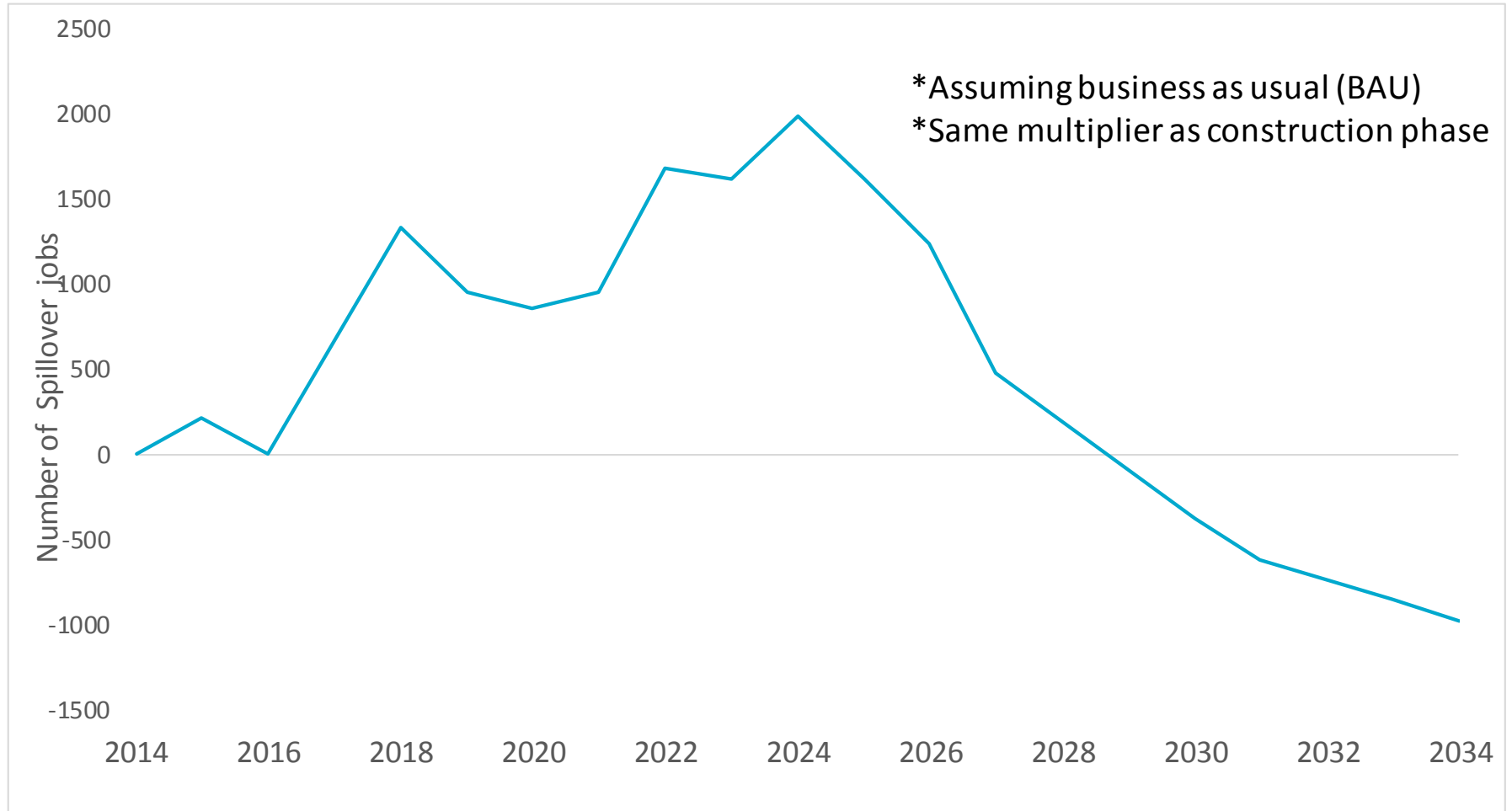
- Conducted 31 key informant interviews
- Interviews took place after first down turn (mini-bust)
- Total of 31 interviews
- Participants came from:
  - Medium scale businesses (around 20 staff)
  - Local government
  - Regional development groups
  - Chambers of commerce

# Direct employment: Energy Skills QLD 2015

Assuming 39K wells – State-wide workforce

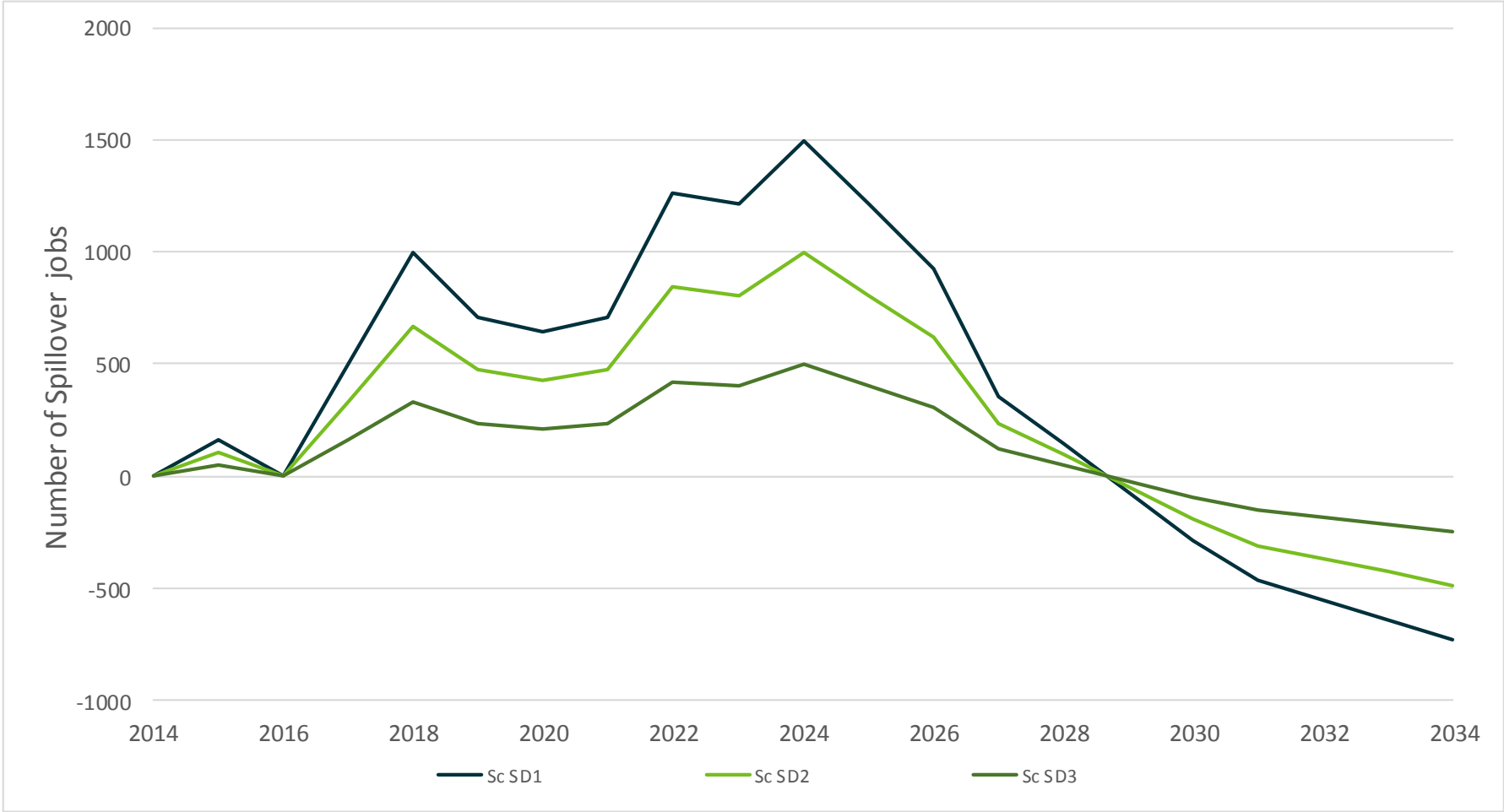


# Results: indirect local jobs, Surat Basin

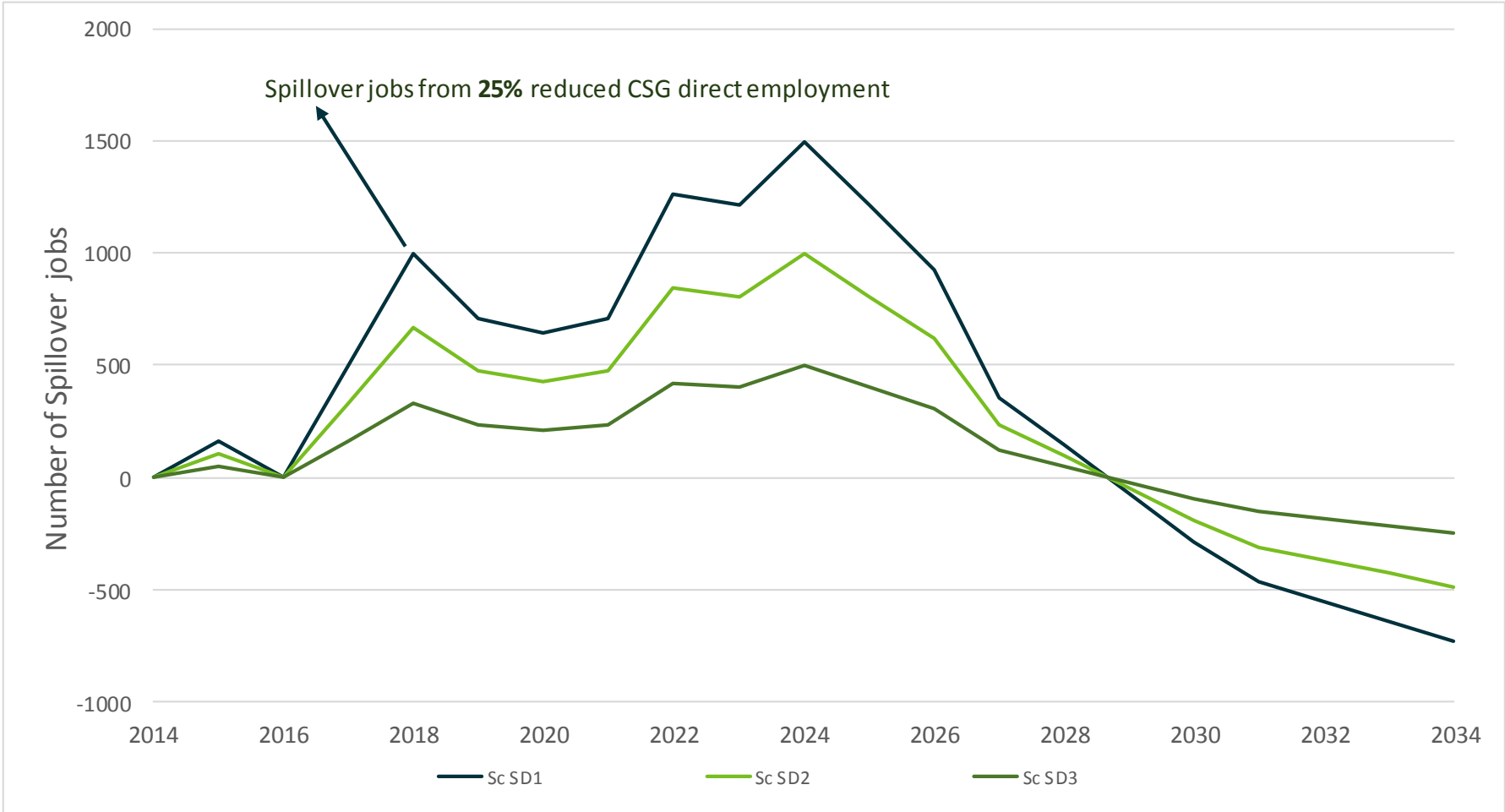




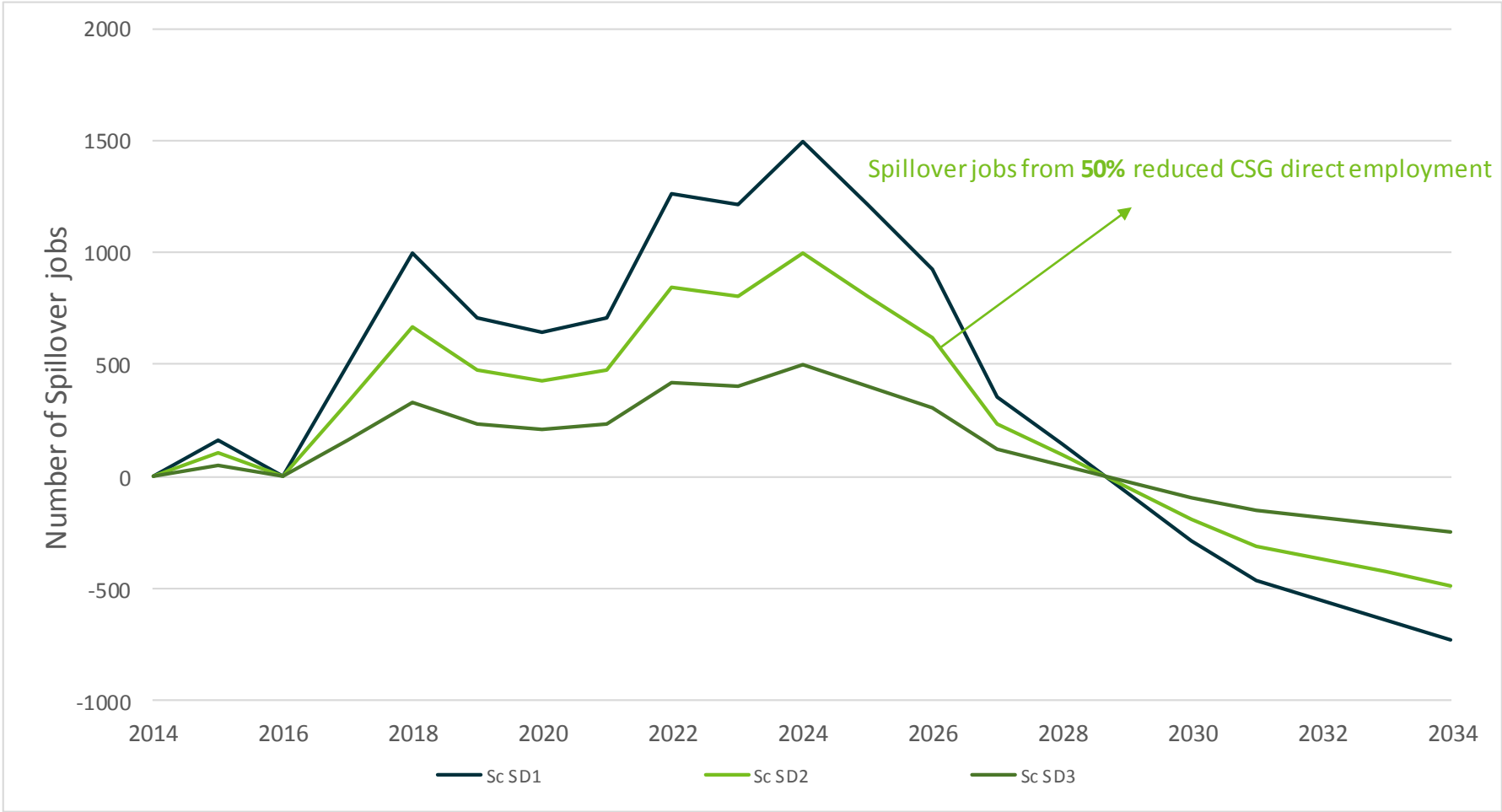
# Slow down scenarios



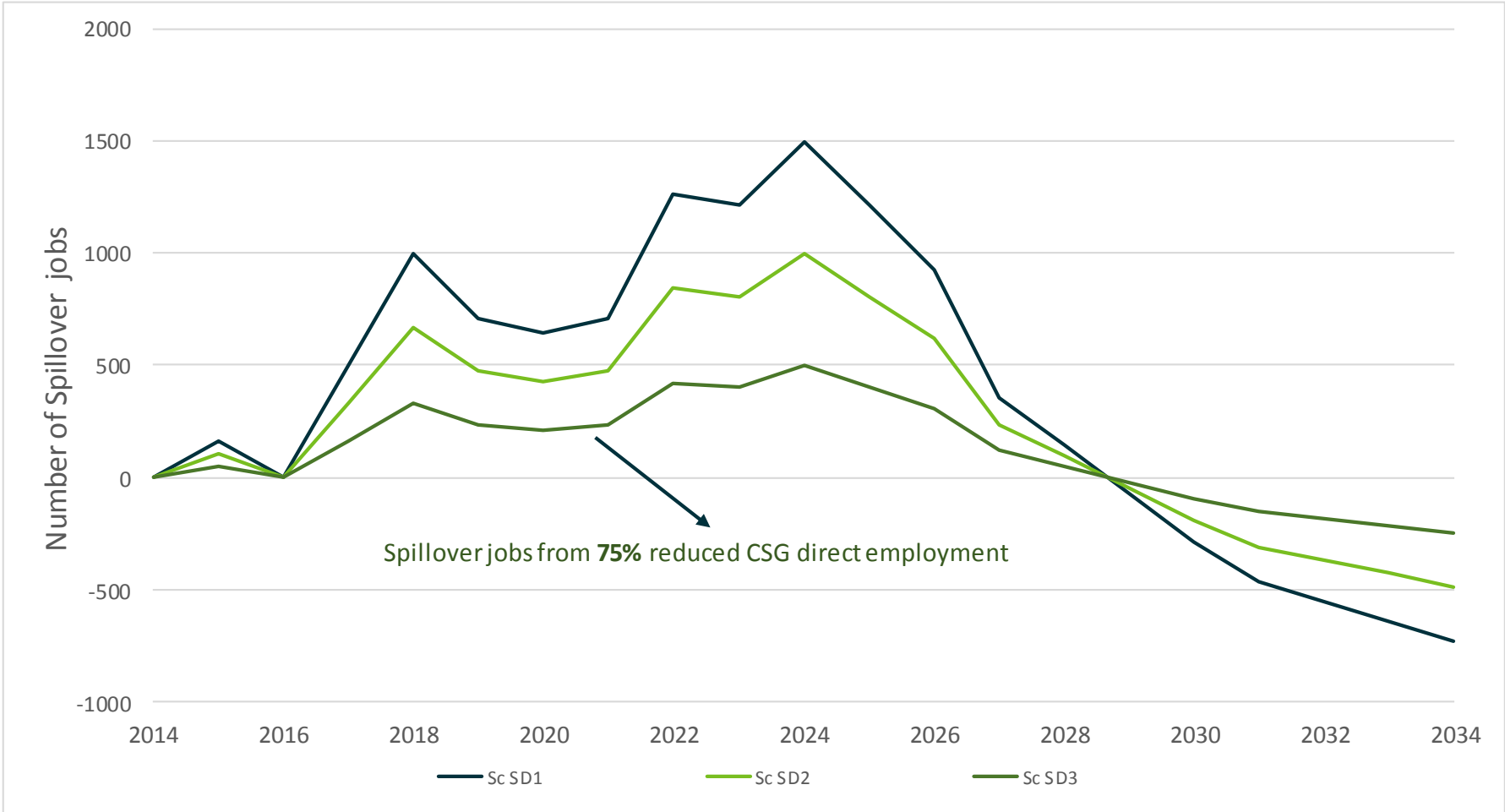
# Slow down scenarios



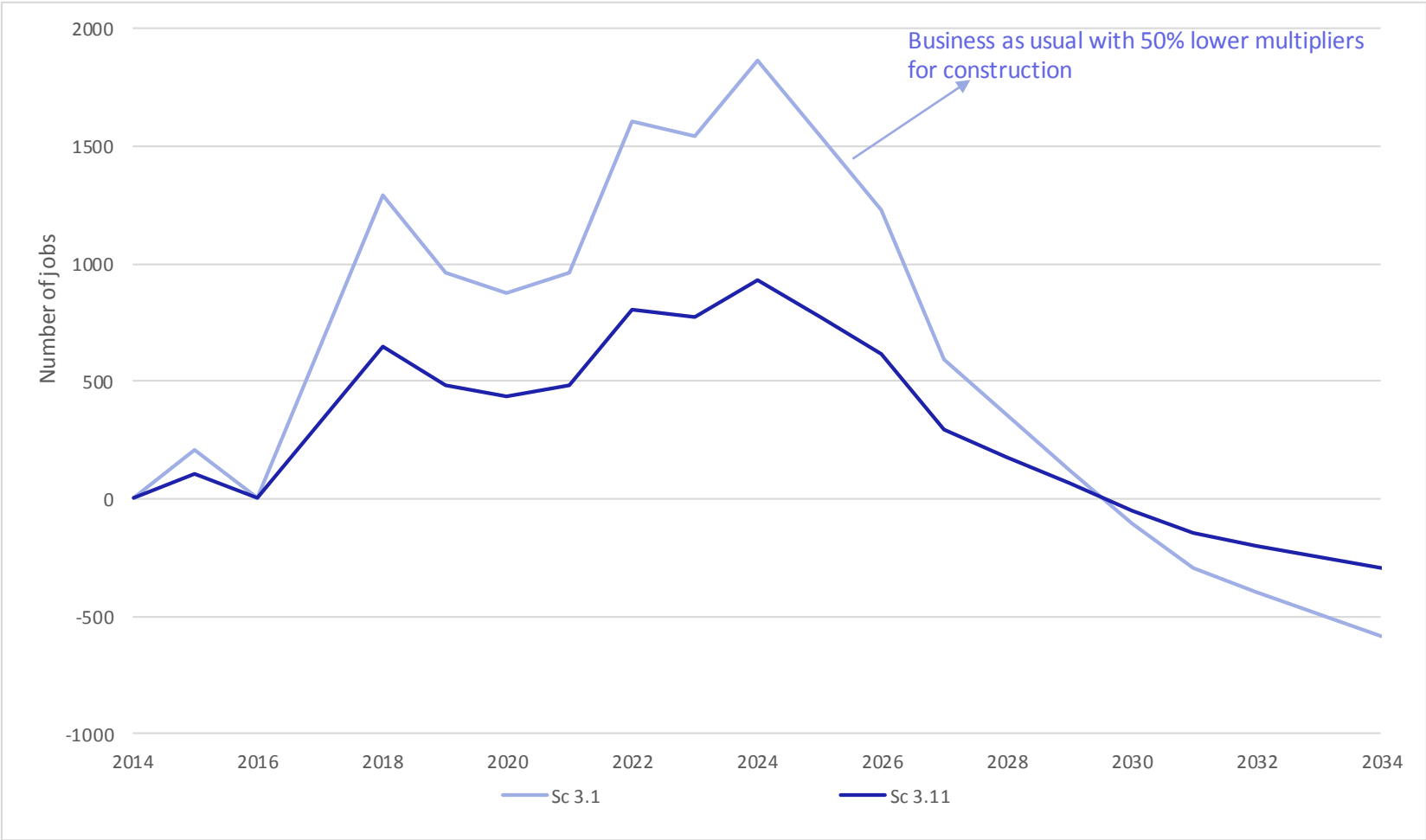
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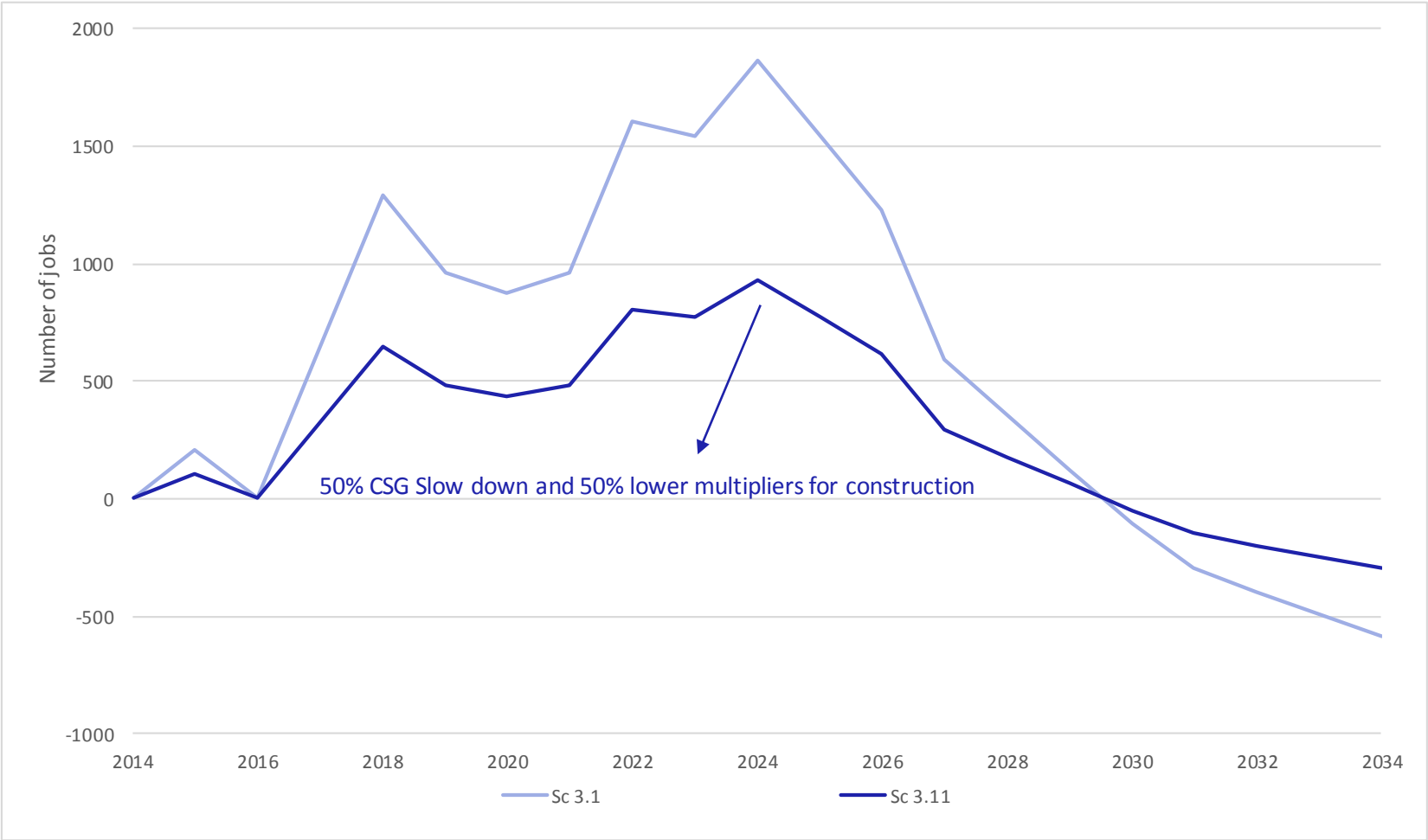
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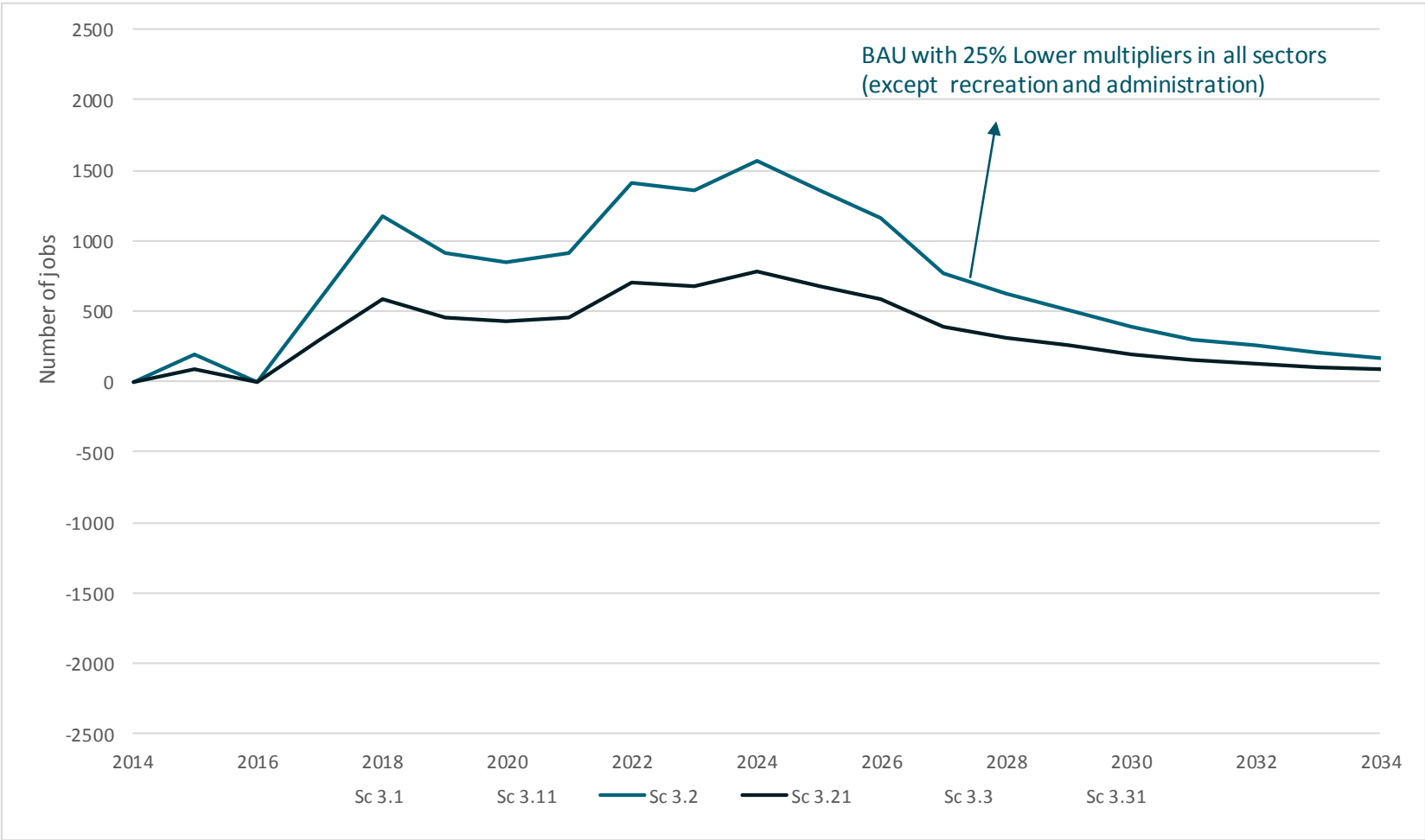
# Scenarios with reduced multipliers



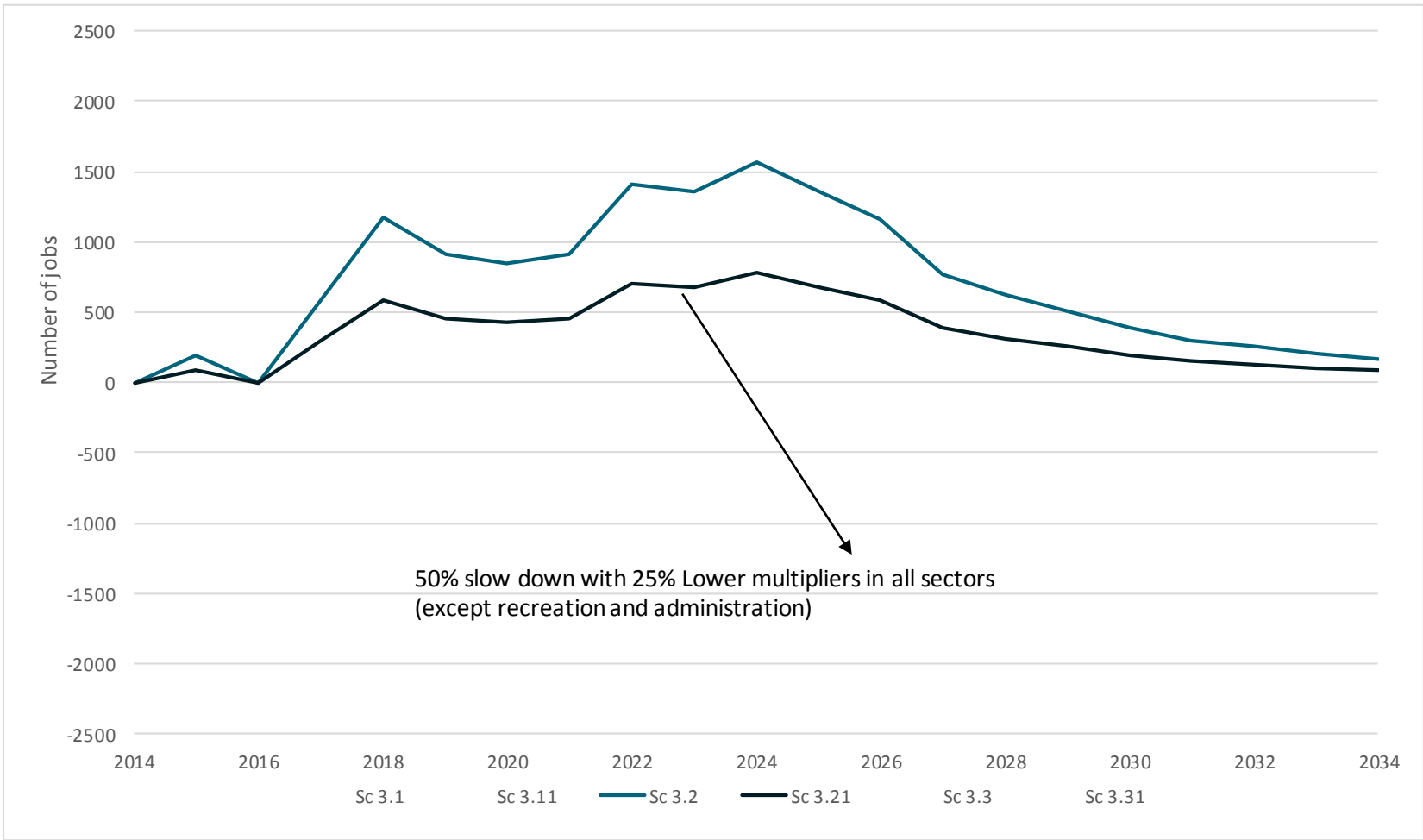
# Scenarios with reduced multipliers



# Gradually reducing dependence on CSG over time

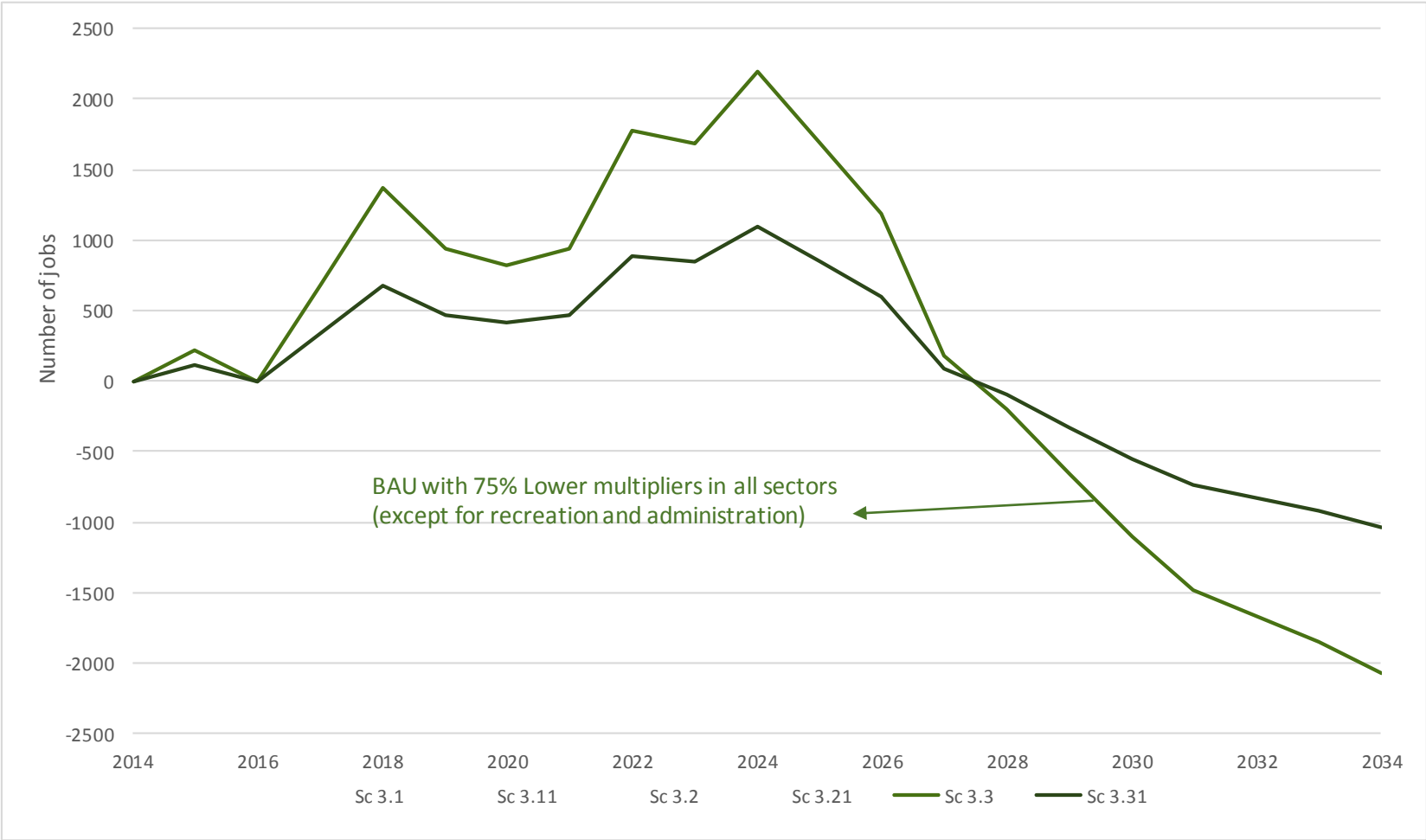


# Gradually reducing dependence on CSG over time





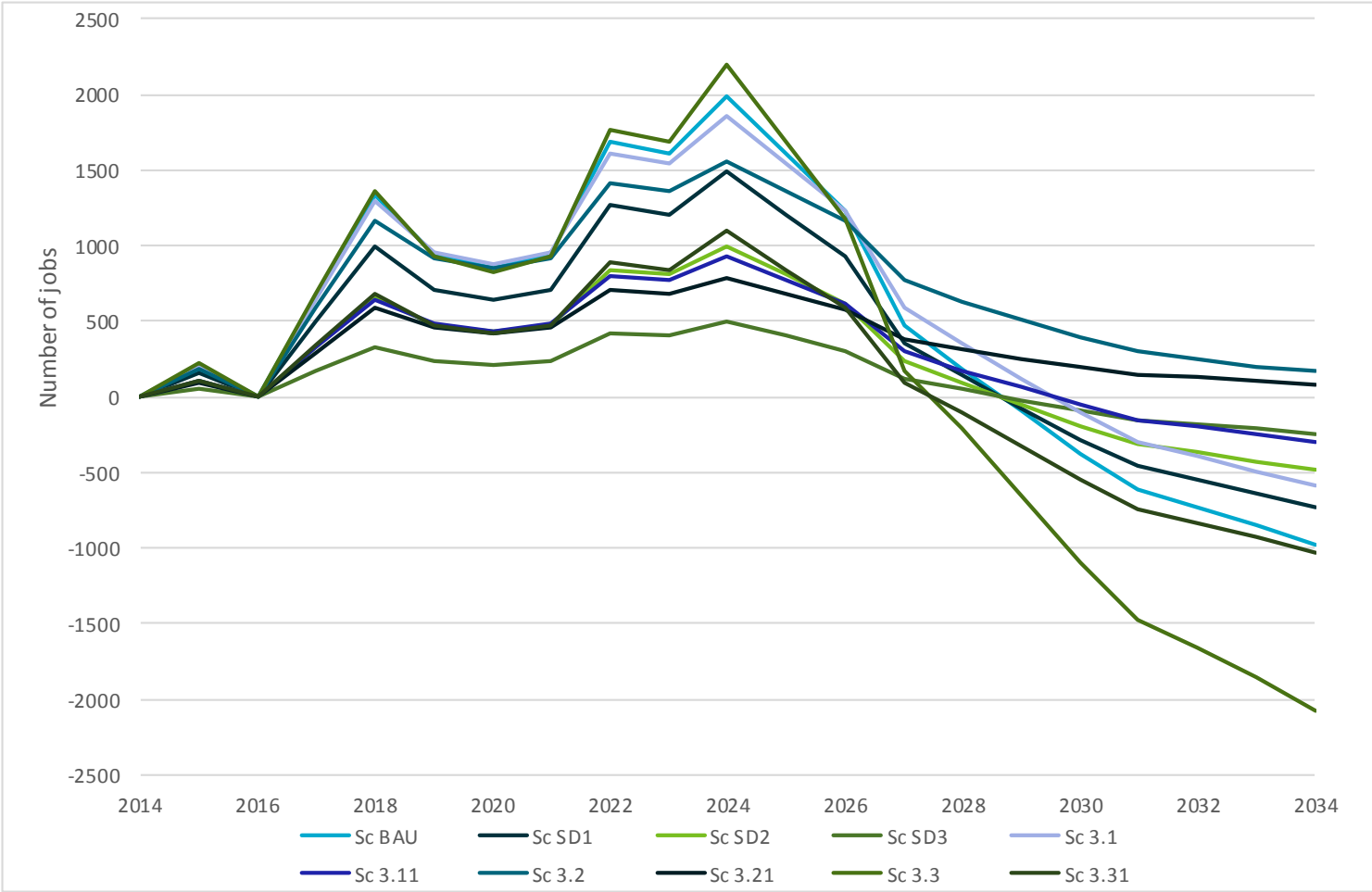
# Abrupt de-link from CSG



# Abrupt de-link from CSG



# All scenarios on same screen



# Projected changes by sector

Industry sector	2006 jobs	2011 jobs	2014 jobs	Jobs from Scenario BAU 2034	Jobs from Scenario SD2 2034	Jobs from Scenario 3.3 2034
Electricity, gas, water and waste management services	591	798	1,250	1,167	1,209	↓ 1,002 ↑
Construction	3,577	4,350	6,650	6,291	6,470	6,769 ↑
Accommodation and food services	2,679	3,215	2,950	2,623	2,787	↓ 1,971
Arts and recreation services	196	303	225	243	234	243 ↑
Other services	1,694	1,919	2,725	2,572	2,649	↓ 1,809 ↑
Administrative and support services	711	847	900	830	865	↓ 830 ↑

# Results: summary of the lessons...

- **1. Look after core customers**

- Maintain existing loyalties
- Short term price gouging is risky in the long run

- **2. Diversify**

- Companies which re-focus exclusively on gas were more exposed during down-turn

- **3. Understand the industry 'ecosystem' and where you fit**

- Supply chains are more complicated (multiple tiers of sub-contracting)
- Large multi-nationals think/act differently from

- **4. Stay connected**

- Draw on resources available: e.g. regional development groups

# Summary of the lessons...

- **5. Beware of possible risks**
  - Contract conditions may be complex or unfamiliar
- **6. Be careful not to overcapitalise**
  - Vehicles, equipment, IT and accounting systems...
- **7. Seek business advice early**
  - People may not want to know what you're hearing
- **8. Check that your information is reliable**
  - Be wary of spin
- **9. Consider personal implications**
  - A boom/bust context isn't for everyone
- **10. Position yourself ready for upturns**

Video: <https://www.youtube.com/watch?v=uLWouow5ts8>

# Conclusions

- Mini-booms and busts can vary under different scenarios
  - Particularly during the first 10 years (while still drilling)
  - Longer term upward and downward trends still visible
- Modest multipliers outperform higher multipliers in the long run
  - Effect of diversification
- Local businesses need:
  - Improved understanding of industry dynamics
  - More accurate information
- This poses challenges for governance processes
  - Better education of these issues
  - Correction of mis-information

# Thank you

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