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Renewable Dispatch

Ministry of Energy

IESO00003503.1
SO0003503.1

October 11, 2011

Agenda

- Recap
- Required Timeline
- SBG Scenarios, Solutions and Their Costs
- OPA Contract Curtailment Provisions
- OPA Proposed Contract Amendment
- Next Steps



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Bottom Line

- Last spoke in Spring 2011
- Without wind dispatch to manage SBG, we have incurred significant market and operational inefficiencies and contract costs
- SBG will persist and is expected to increase
- The occurrence and management of SBG will remain a prevalent story and will be highlighted going forward
 - Auditor General Report
 - FIT Review
 - IPSP
- SE-91 is continuing but wind dispatch is required before it will be completed
- We are targeting hourly wind dispatch for the December holiday period
- Going Forward – assume we will not get wind dispatch rules through without a contract amendment offer, without a fight at the technical panel and the OEB

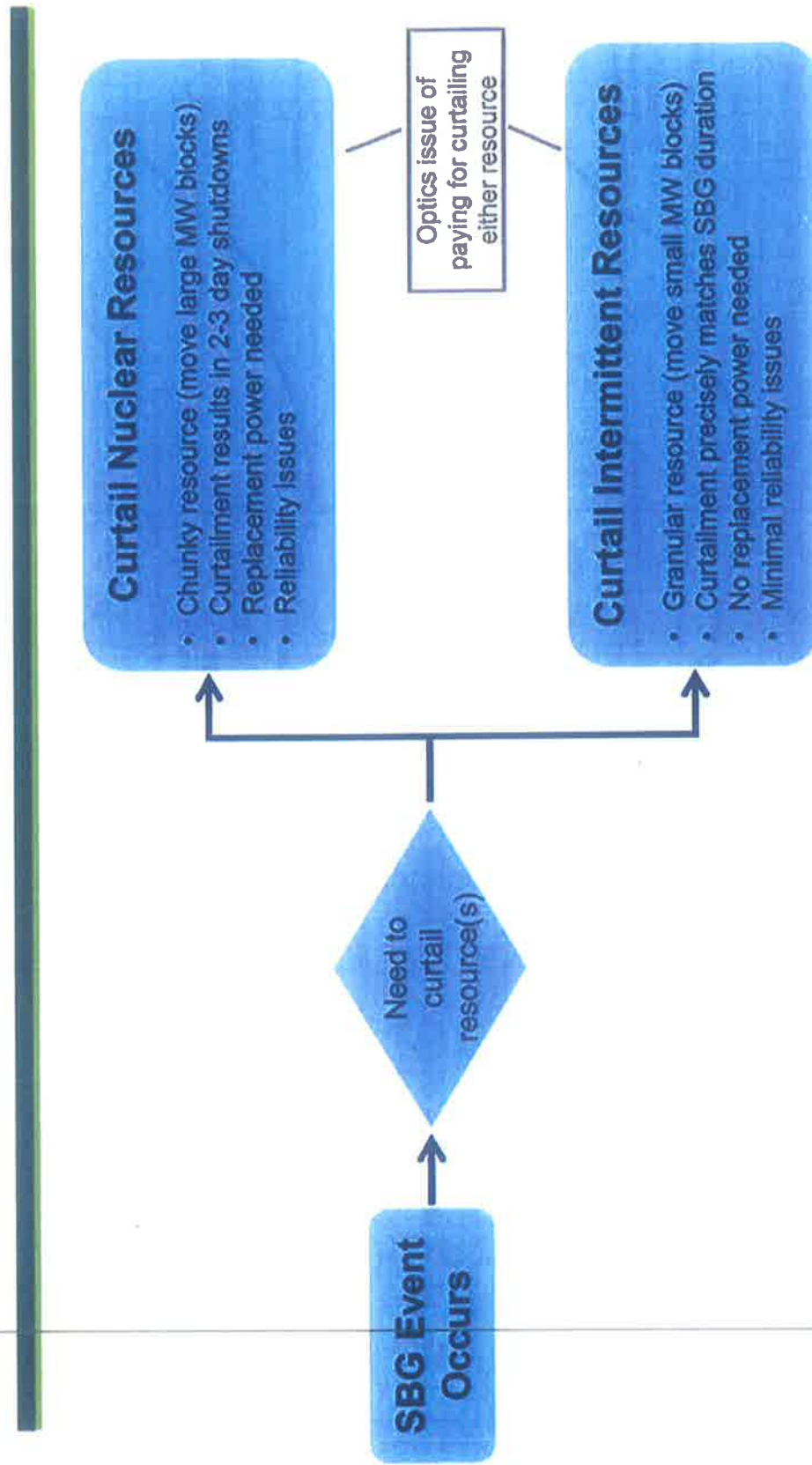


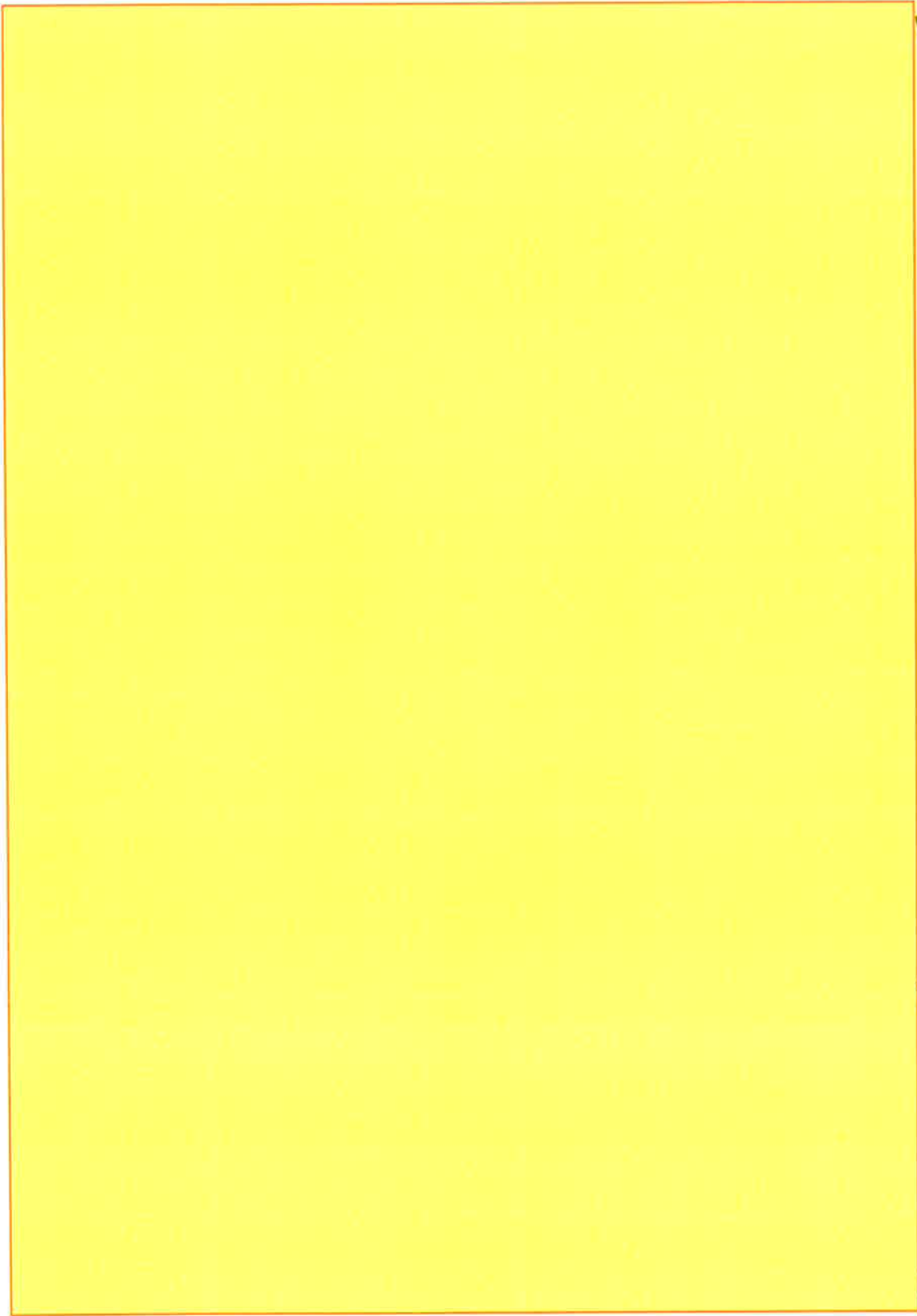
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Timeline for Wind Dispatch by December

Date	OPA	IESO
October	OPA/IESO to meet with Ministry.	OPA/IESO to meet with Ministry
October	OPA/IESO to meet with Ministry. OPA to gain approval from Ministry on contract amendments	OPA/IESO to meet with Ministry
Oct 31	Issue contract amendment offers to RES Suppliers. Issue invitation for stakeholder engagement to all FIT suppliers	Issue draft rules to Technical Panel
Nov 8		Post rules for Stakeholder comment
Nov	Negotiate with all Suppliers	
Dec 1		Seek IESO Board approval
Dec 2		21 day OEB Review Period
Dec 22		Provided Rules are not challenged at the OEB, Market Rule amendment goes into effect, IESO begins hourly dispatch

SBG Event





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OPA Contract Cost Comparison of Nuclear vs Wind Dispatch for SBG < 900 MW



- The following table outlines the curtailment costs under each scenario, if wind was available to dispatch and was paid their contract price for their foregone energy.
- The calculation is based on an average weighted contract price of the current RES fleet

SBG < 900 MW	Number of Curtailed MWhs	OPA Cost
Nuclear Manoeuvre		
Wind Dispatch		
Difference		
Difference In OPA Cost per Year		



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OPA Contract Cost Comparison of Nuclear vs Wind Dispatch for SBG > 900 MW



- The following table outlines the curtailment costs under each scenario, if wind was available to dispatch and was paid their contract price for their foregone energy.
- The calculation is based on an average weighted contract price of the current RES fleet

SBG > 900 MW	Number of Curtailed MWhs	OPA Cost
Nuclear Shutdown		
Wind Dispatch		
Difference in OPA Cost		
Difference in OPA Cost per Year		



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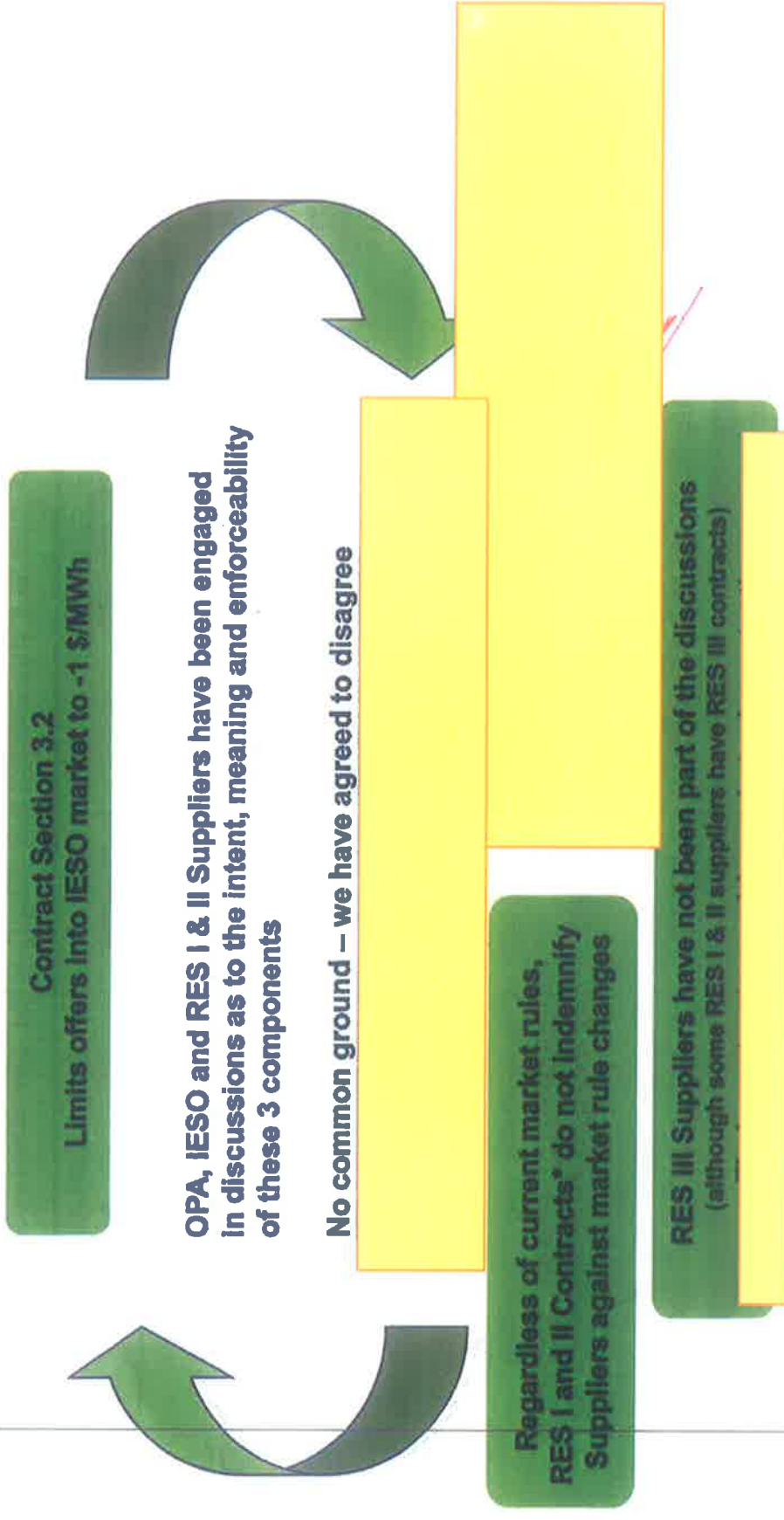
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OPA Contracts



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OPA RES Contracts



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Costs of Compromise Approach

- The following table outlines the curtailment costs under the compromise approach based on various SBG scenarios

Annual Number of Curtailment Hours	Cost of Nuclear to Ratepayer
300 hrs (180 local + 120 global)	
600 hrs (360 local + 240 global)	
1,000 hrs (600 local + 400 global)	

- Assuming negotiations with RES Group are successful, the total cost of the compromise approach will depend on:



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*values are estimated based on scenarios presented

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OPA FIT Contract Provisions

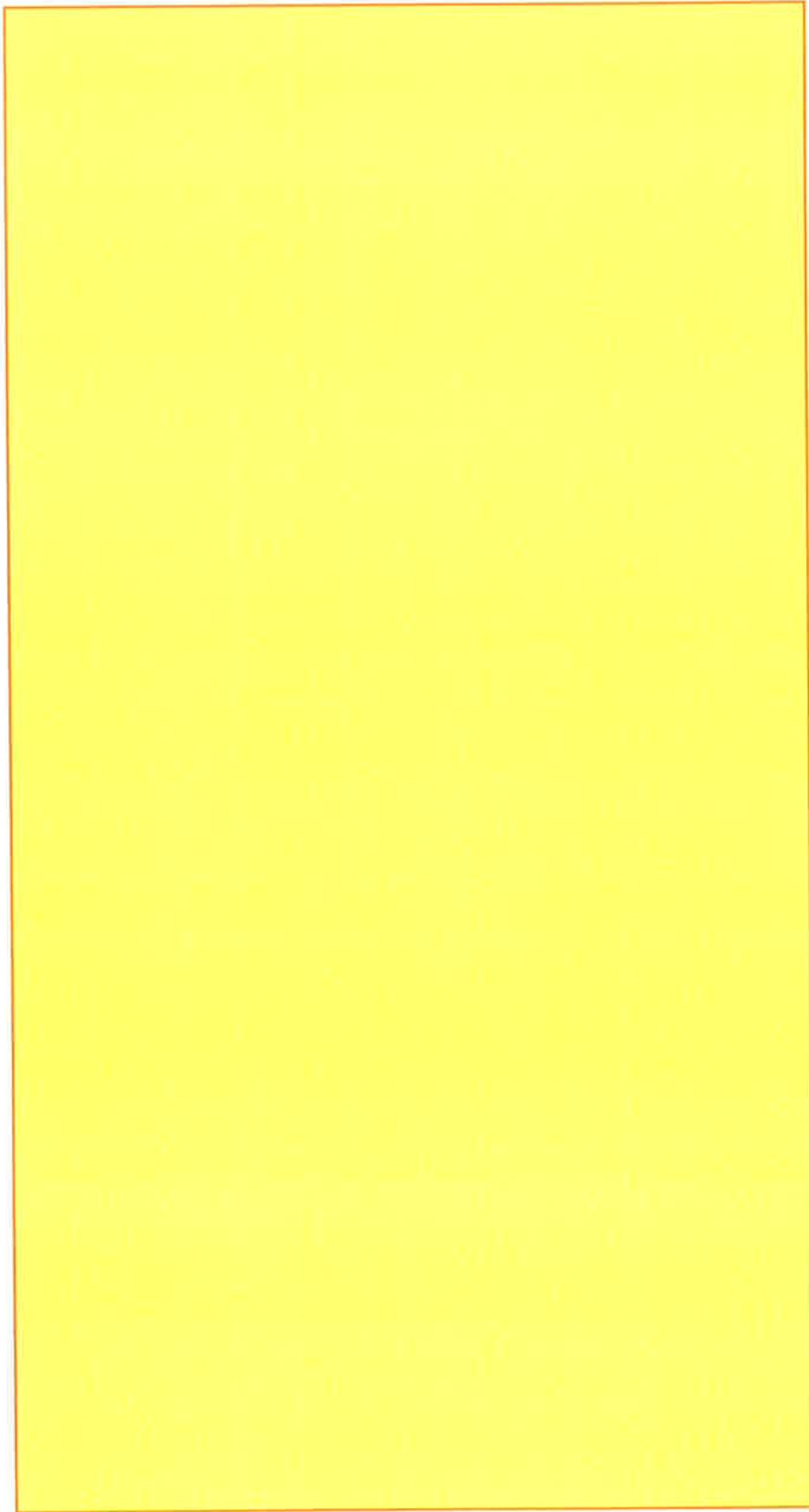
- FIT suppliers get paid for every MW that they generate
- There are contract provisions which incent them to curtail during global SBG and negative prices.
 - When FIT suppliers operate during a negative priced hour, their contract price is reduced by the negative market price
 - If they change their offer price to signal a willingness to go off and are curtailed they will receive their contract price.
- There is currently no provision in the contract for curtailment during times of local SBG, when the market price is positive.

- This proposal remains significantly more efficient than the current state of dispatching nuclear



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Contract Amendment Recap



Next Steps



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Mitigation Options for Increasing Future SBG

The following options are still being considered and pursued to manage increasing SBG in the future, but are not a solution to the current operational state

- IESO Integrating Renewables (SE-91)
- Planned Outages to preserve nuclear life
- Re-contracting NUGS
- Load Management
- Timing of new wind contracts

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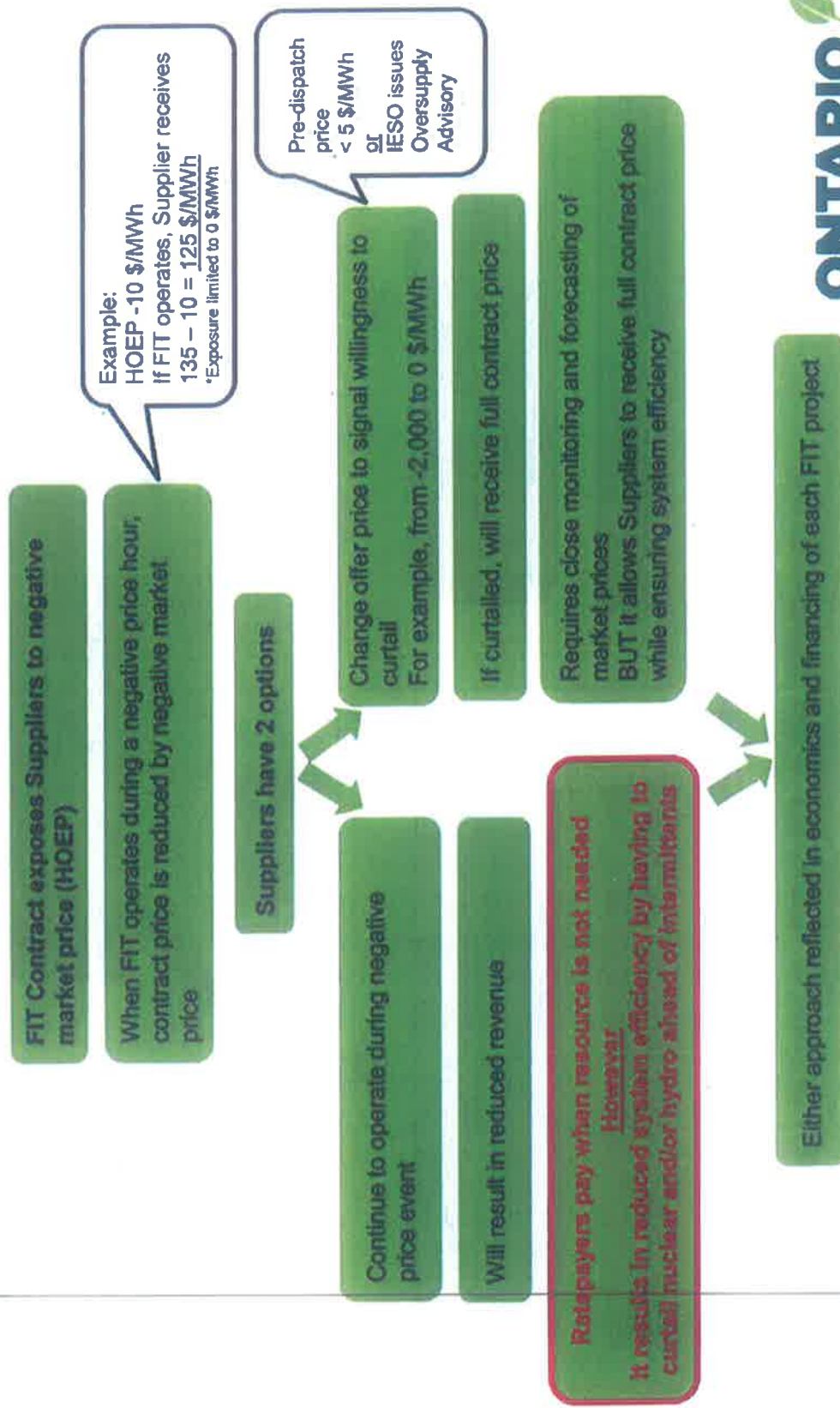
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Appendix

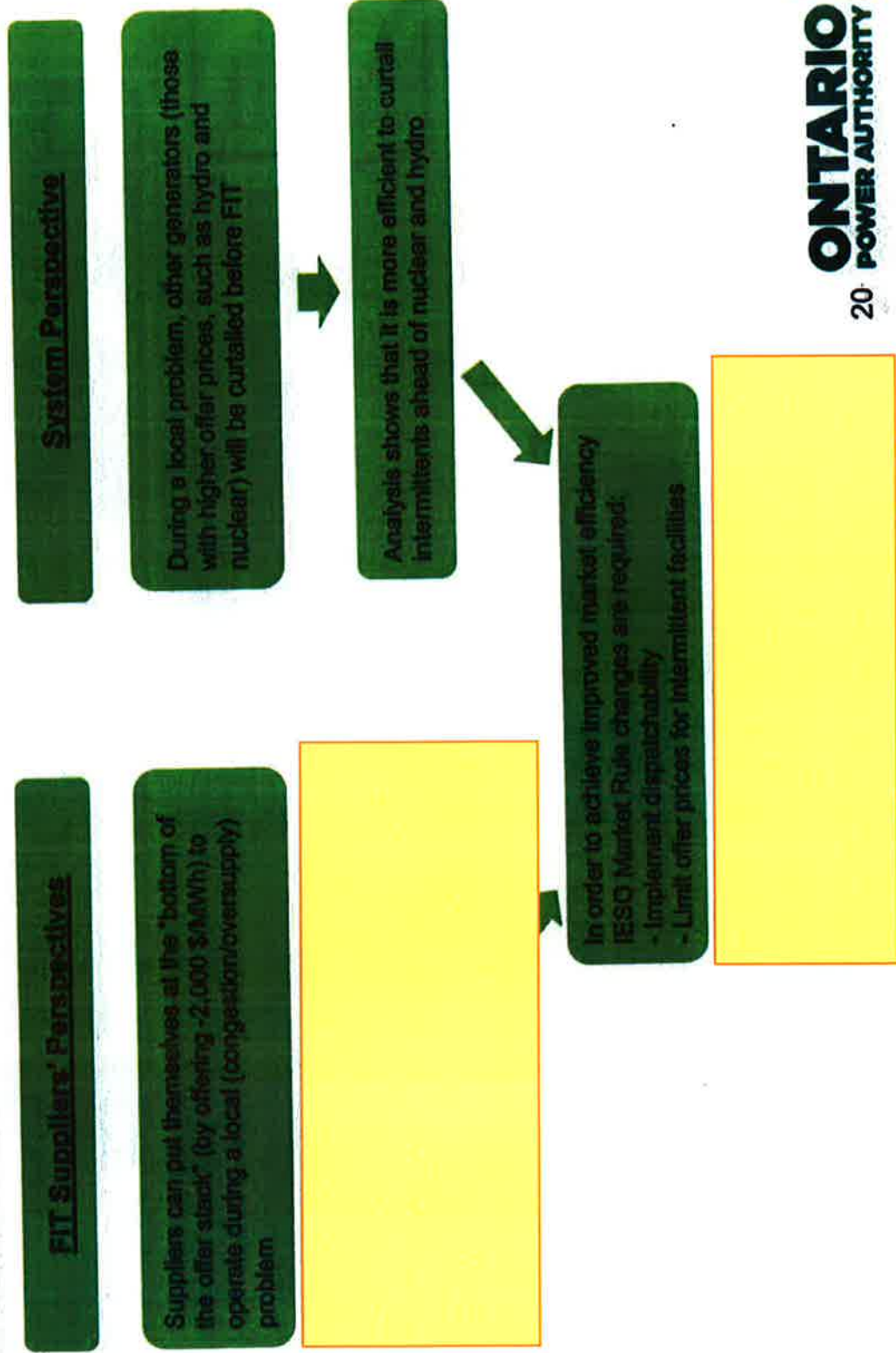


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FIT Contract Provides Incentives to Curtail During Global Oversupply or Negative Prices



FIT Operation: Local Perspective

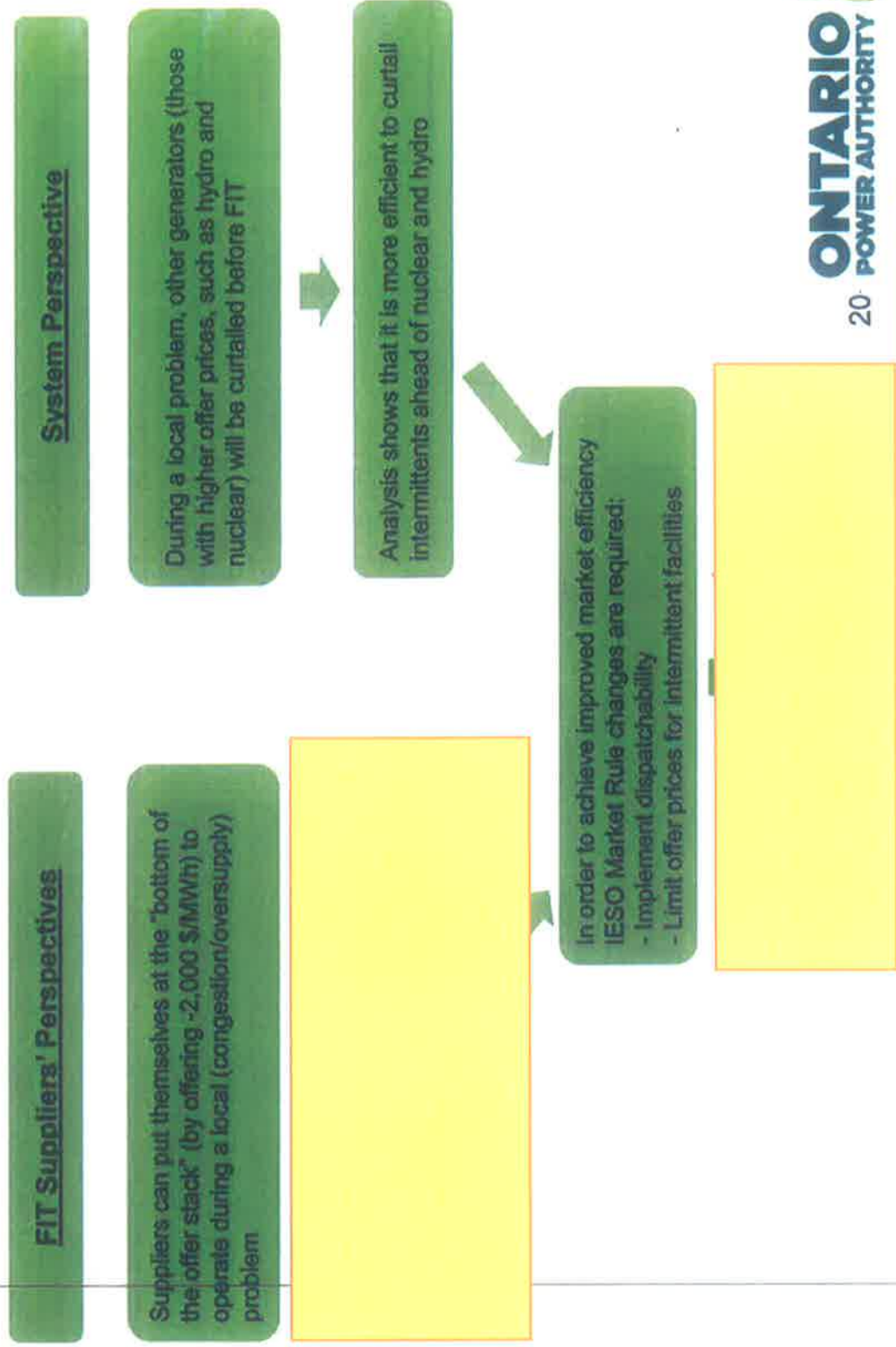


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FIT Operation: Local Perspective



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FIT Economics: Current vs. Future

Current

1. Regular conditions: FIT can produce whenever the wind blows and receive full contract price
2. Global Oversupply: Offer price can be adjusted to curtail and still receive full contract price
3. Local Issues: Avoidance of local issues through a low offer price, resulting in continued operation and receipt of full contract price
4. Residual Risk: Some minor residual risk

