
LNG - Transition Fuel Option for Yukon

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Yukon Energy LNG Workshop

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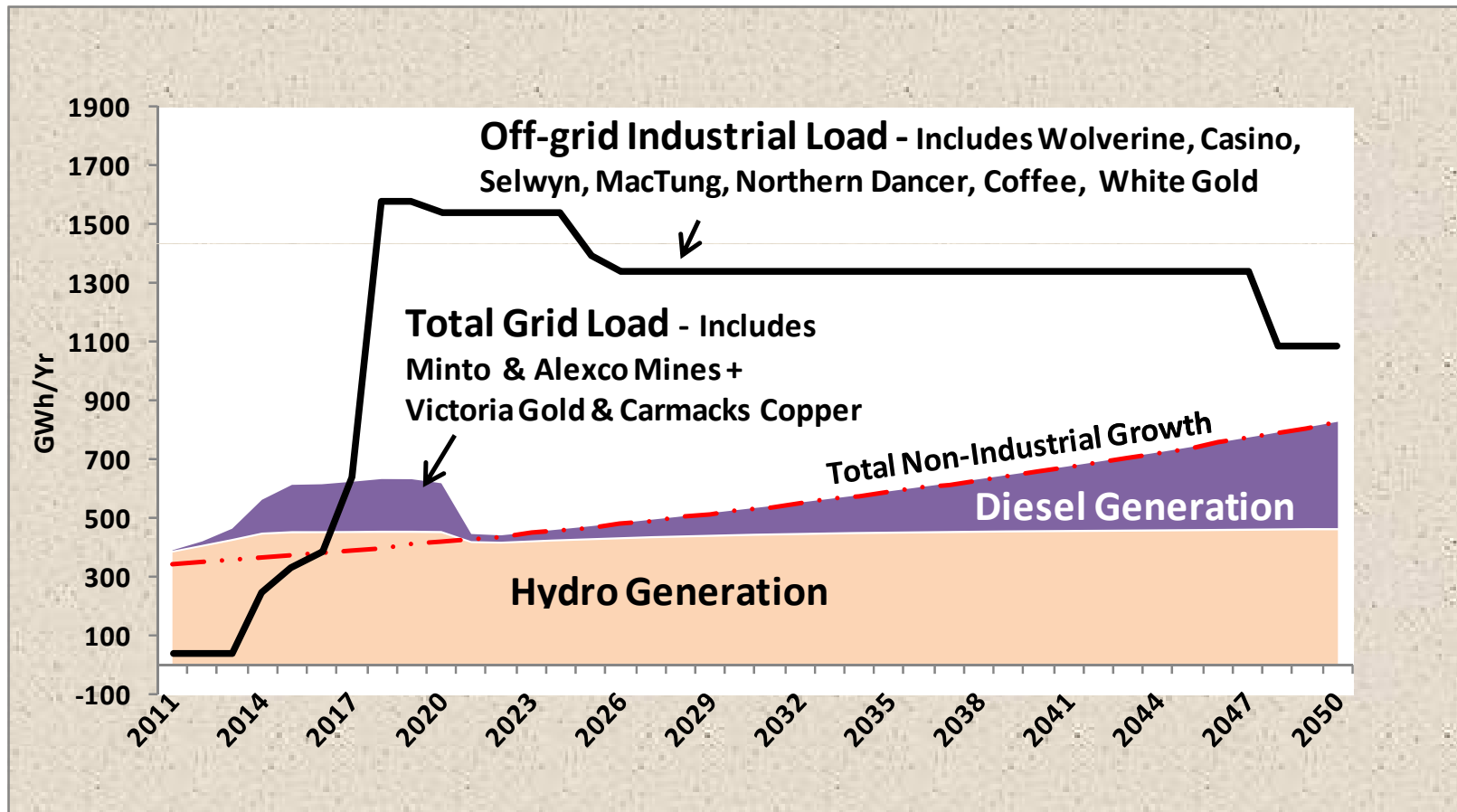
Outline of Presentation

- Forecast Yukon Power Requirements

- LNG Transition Option:
 - Near-term – LNG trucked to Yukon from northern BC by late 2014
 - Longer-term – Potential Transition to other resources within next 10-20 years

- Concluding Comment

Forecast Yukon Power Requirements



LNG Transition Option – Near term

- Near-term – LNG trucked to Yukon from northern BC by late 2014
 - Wavespec Supply Chain feasibility assessments
 - Supply potential far exceeds Yukon requirements
 - Options for Near Term LNG Supply
 - Kitimat or Fort Nelson
 - Trucked to Whitehorse for YEC grid generation
 - Trucked to off-grid sites for power generation
 - Existing & New Mines
 - YECL at Watson Lake

LNG - YEC Planning Principles

- LNG features similar to Diesel
 - Reliability
 - Flexibility
 - Diversity
- LNG features superior to Diesel
 - Affordability
 - Environmental Responsibility

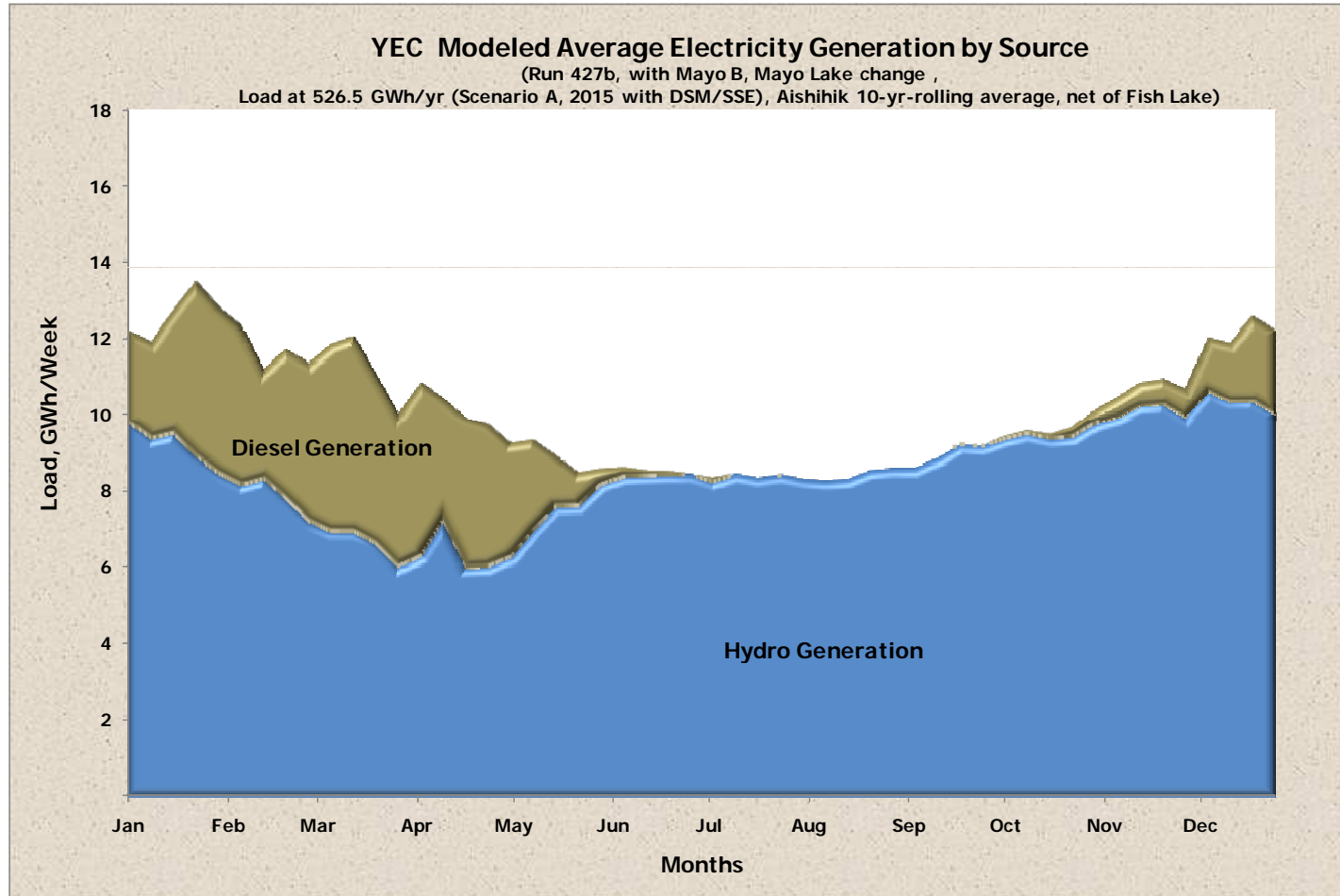
Reliability, Flexibility & Diversity

- LNG similar to Diesel
 - Units permitted, purchased, installed within short period
 - Locate near load centres on & off grid
 - Reliably operate for 20+yrs
 - Low capital costs per MW - flexibility re: scale & operation – fuel is the major cost
 - Flexibility re: mine load uncertainties
 - Diversity of Yukon end use opportunities, e.g., transportation, direct heating, district heating

Reliability, Flexibility & Diversity (2)

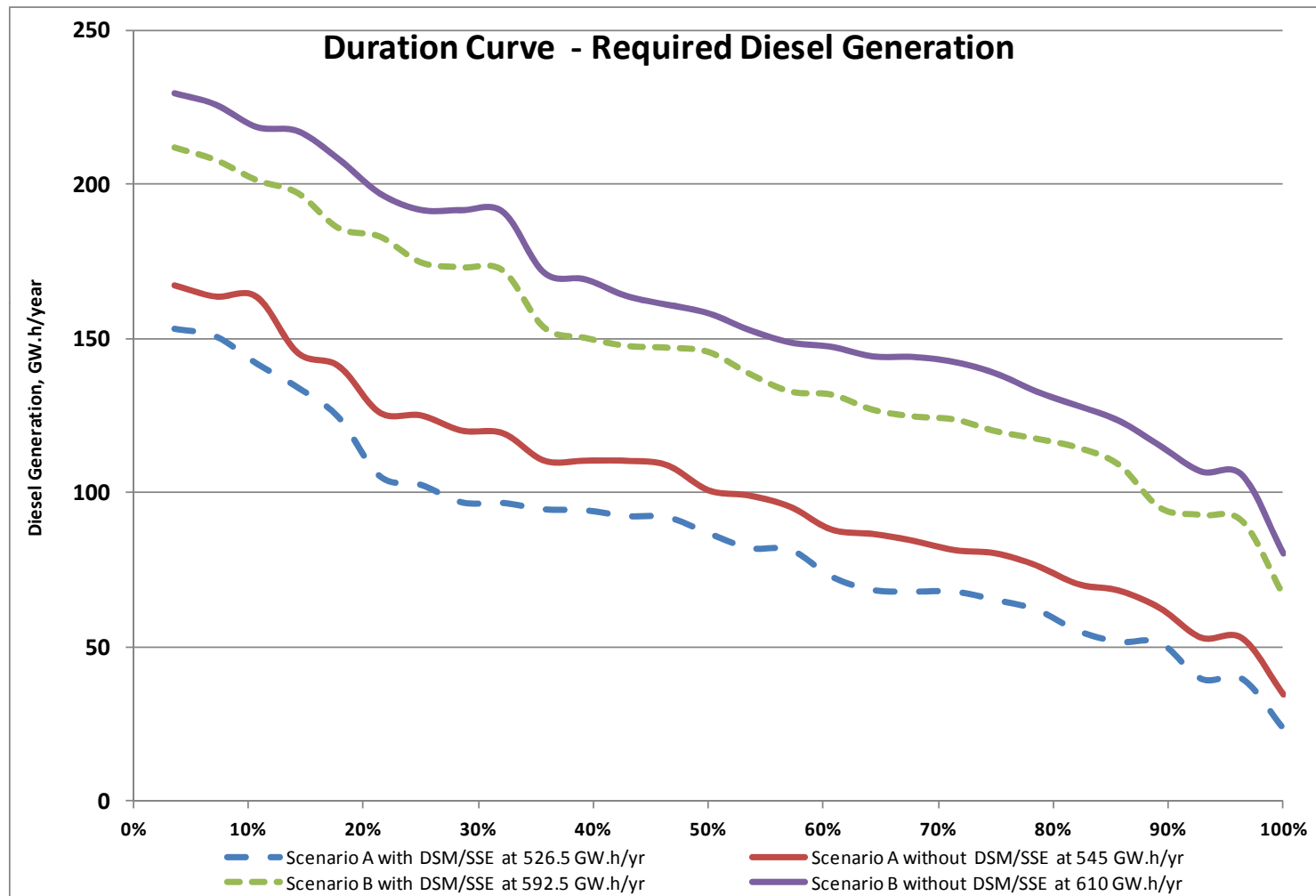
- LNG flexibility for meeting Yukon hydro grid requirements
 - Isolated grid
 - Firm reserve capacity and peaking,
 - Winter seasonal use,
 - Annual water flow variability,

Hydro Grid Seasonal Generation



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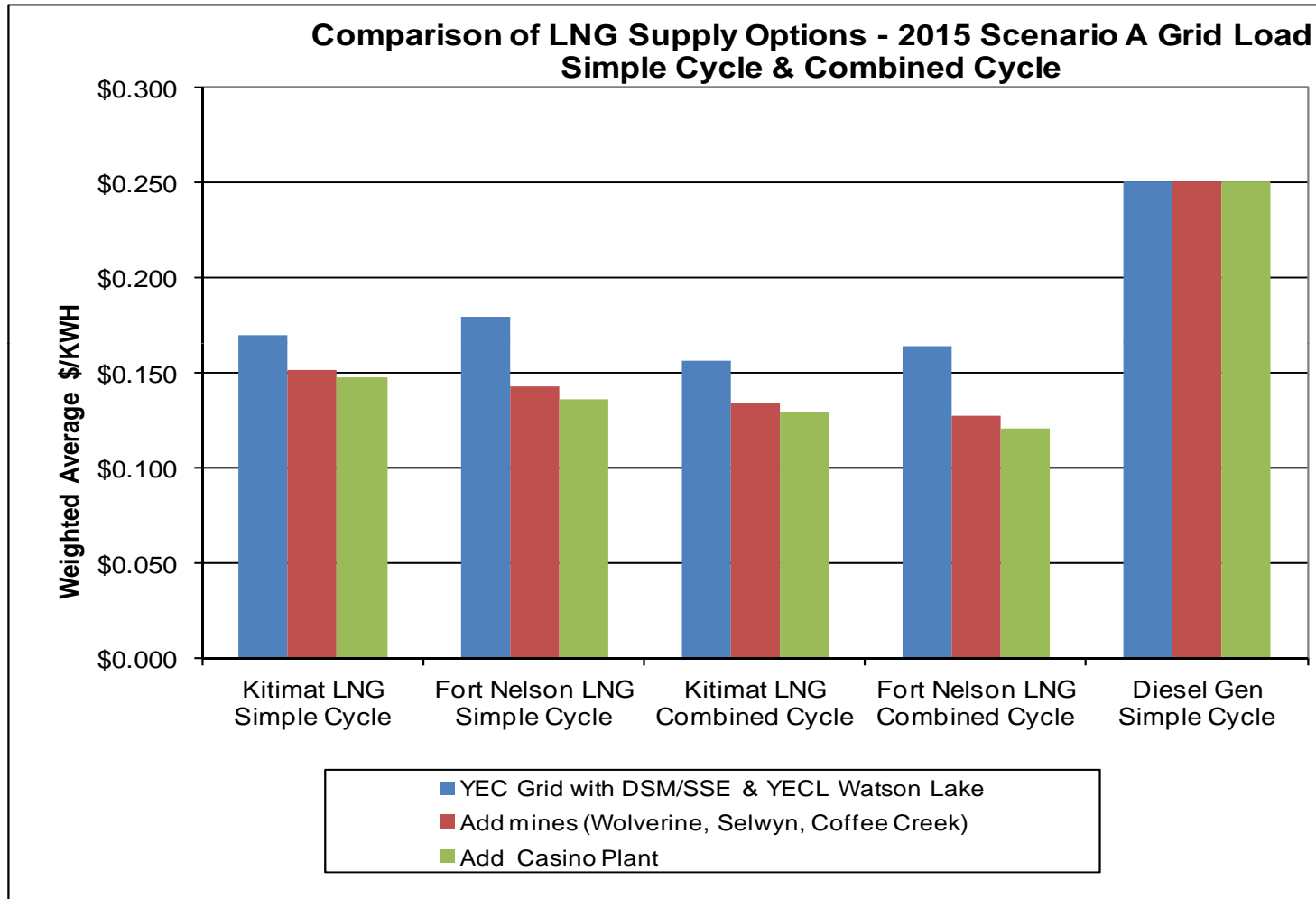
Hydro Grid Annual Water Variability



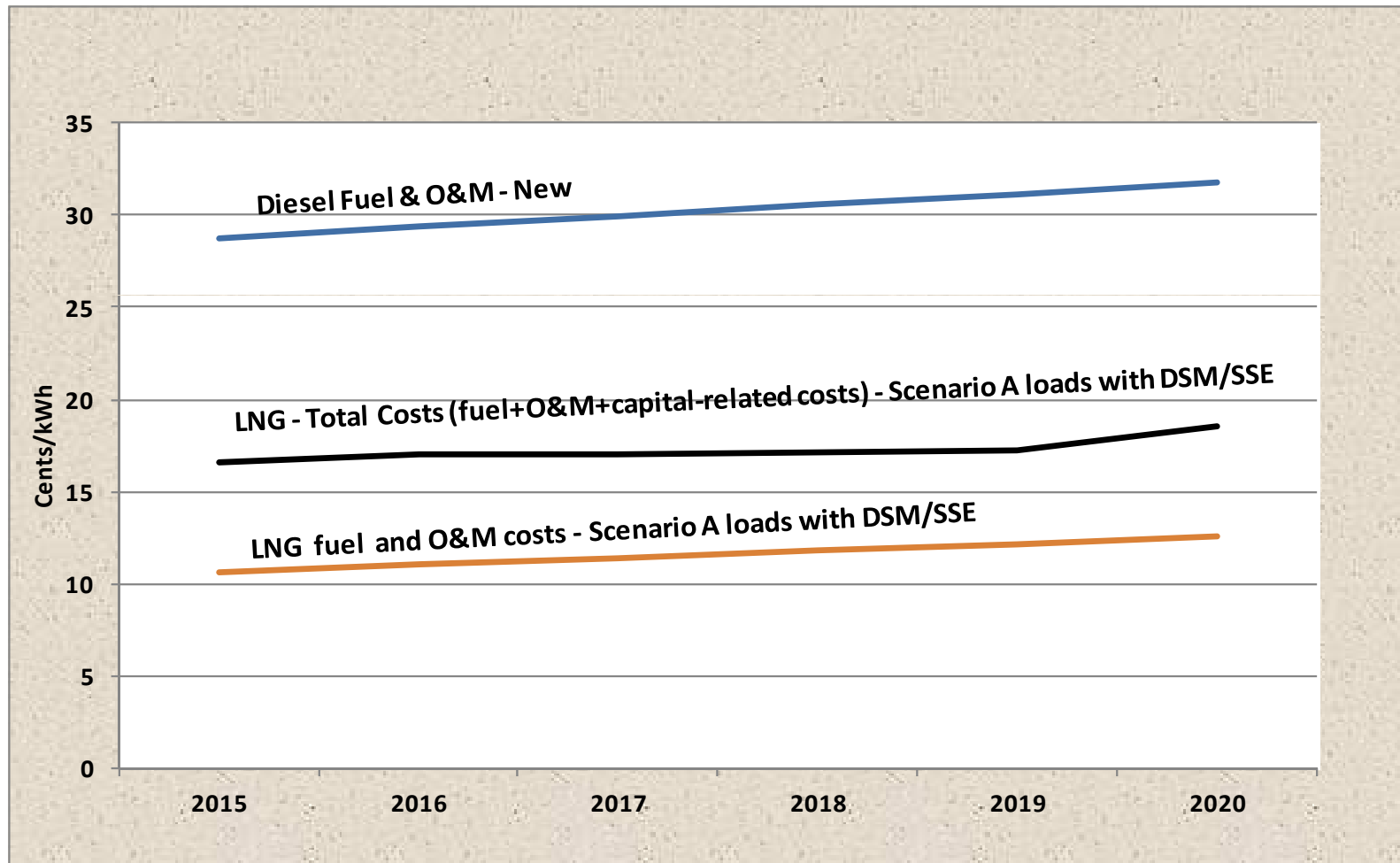
Affordability & Environmental Responsibility

- LNG superior to Diesel
 - Lower costs (fuel cost savings > 50%)
 - Lower emissions (36% to 48% lower)
- LNG can potentially replace diesel as Yukon default power fuel option
- LNG potential for cost savings & emission reductions in other Yukon sectors (transportation and heating)

LNG – Less Costly than Diesel



LNG - Less Costly than Diesel



LNG Transition Option – Long term

- Longer-term – Potential Transition to other resources within next 10-20 years
 - Potential Transition to Future Local Natural Gas Supply
 - Potential Transition to New Renewable Resource Development Opportunities.

LNG - Longer Term Transition

- Potential transition to future local natural gas supply
 - Alaska Highway Pipeline Project – potential in service 2020-21 – much lower fuel costs (expect 6-7 cents/kWh in 2010\$), or
 - Yukon gas supplies, e.g., Eagle Plain.

LNG - Longer Term Transition

- Potential transition to new renewable resource development options
 - Lower cost & lower emission Yukon hydro, wind, geothermal
 - Subject to connecting new grid loads that can fully utilize new renewable resources over 20-30 or more years
 - Potential opportunities related to new off grid major mine loads with expected lives of 20+ years

LNG Transition - Conclusions

- Near-Term – Trucked in Supply
 - Replace diesel as Yukon default power fuel option
 - Ample potential supplies
 - Lower costs
 - Lower emissions
 - Diversity of sector uses
- Longer-term – Potential Transition
 - Yukon natural gas supply
 - Yukon hydro or other renewable resources