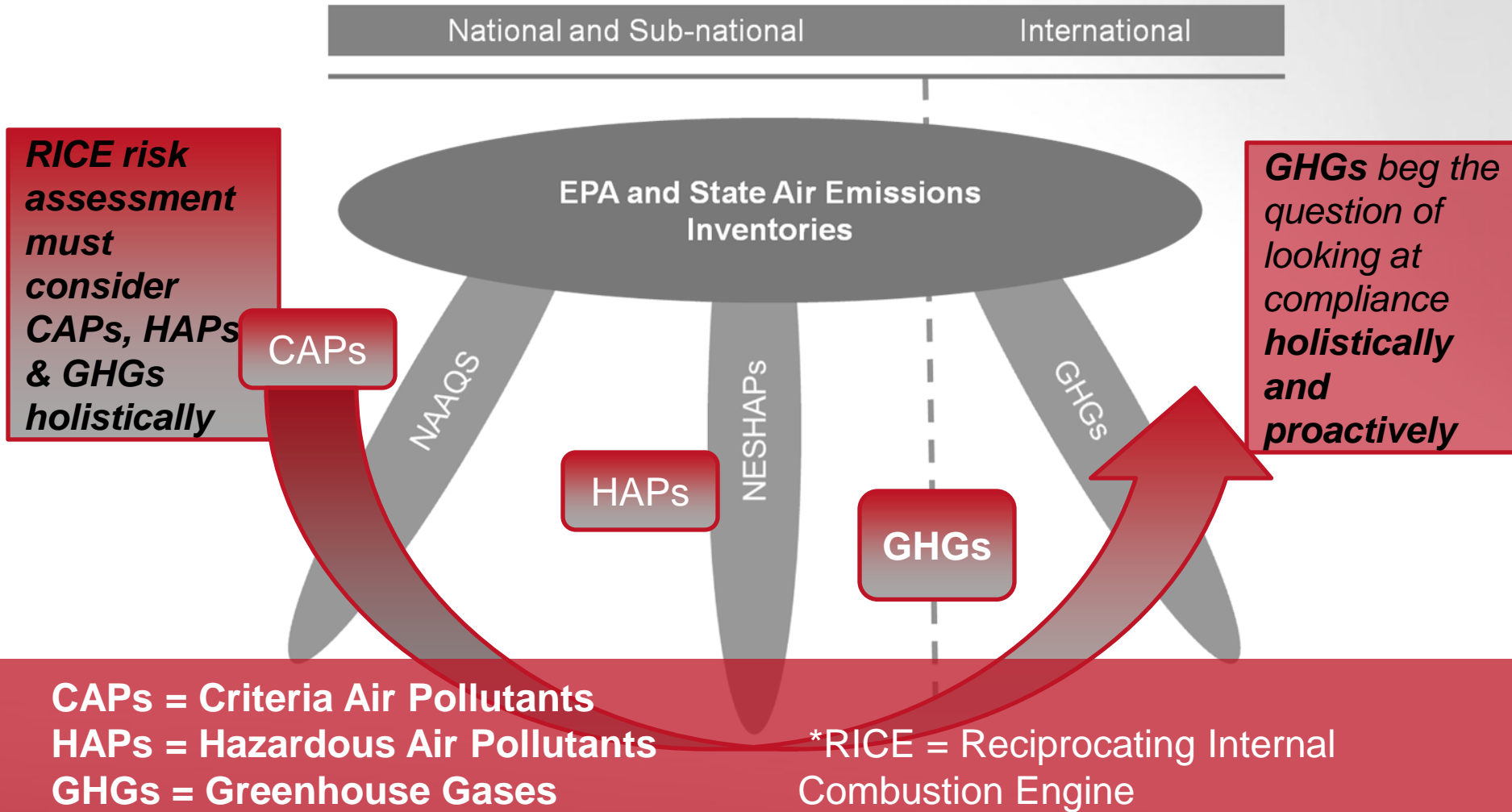




ComAp & SEC Oil & Gas Market Team

Gas/Electric Partnership Presentation
September 9, 2010

Connection of Combustion to Compliance





Emissions is Further Directed by Combustion:

- ***CI – Compression Ignition*** or Diesel Fueled
- ***SI – Spark Ignited*** or Natural Gas/Gaseous Fueled

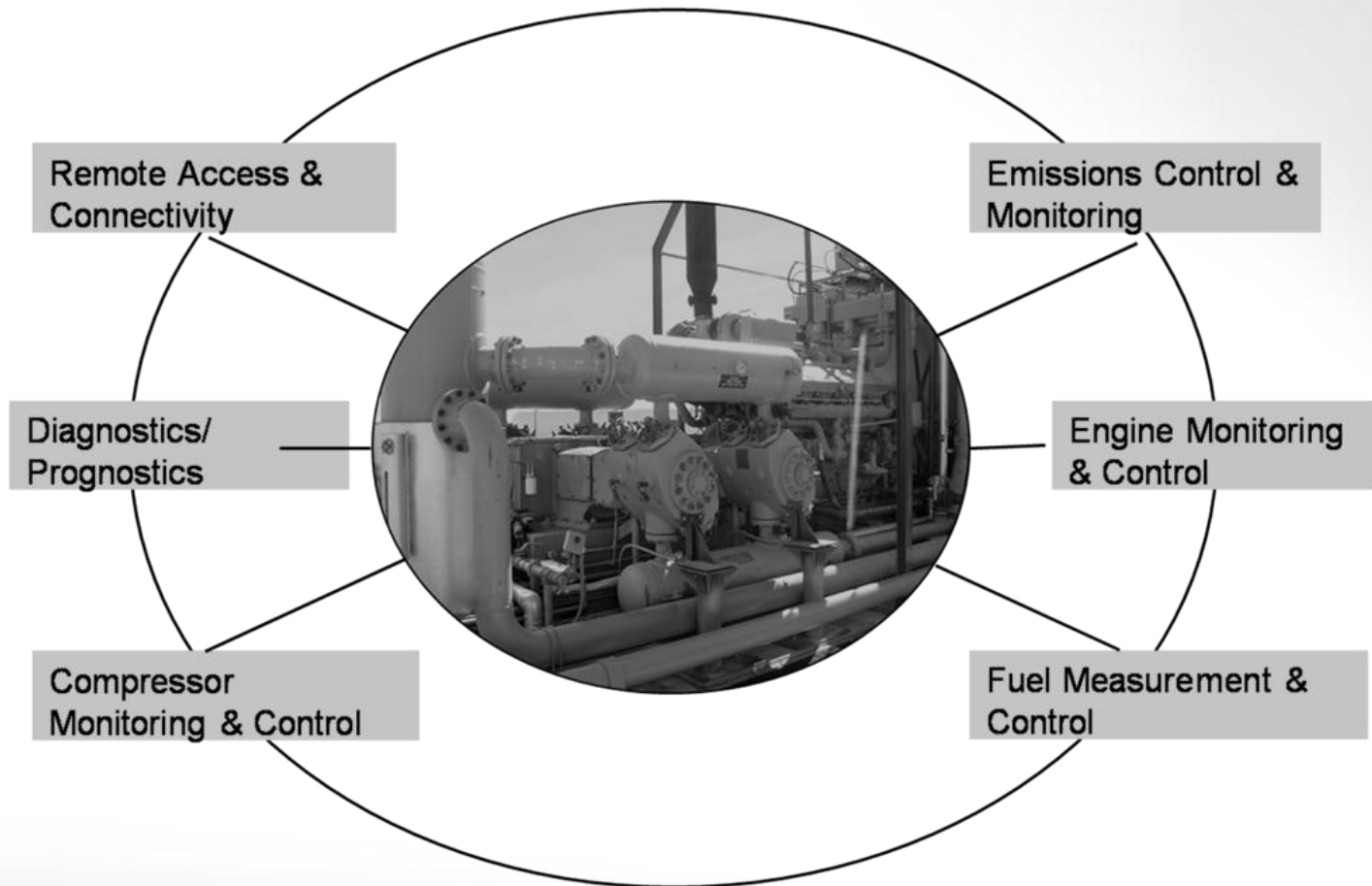


Example of Natural Gas Industry Specific Spark Ignited RICE Combustion Categories:

- **2SLB – 2 Stroke Lean Burn Spark Ignited Engine**
- **4SLB – 4 Stroke Lean Burn Spark Ignited Engine**
- **4SRB – 4 Stroke Rich Burn Spark Ignited Engine**

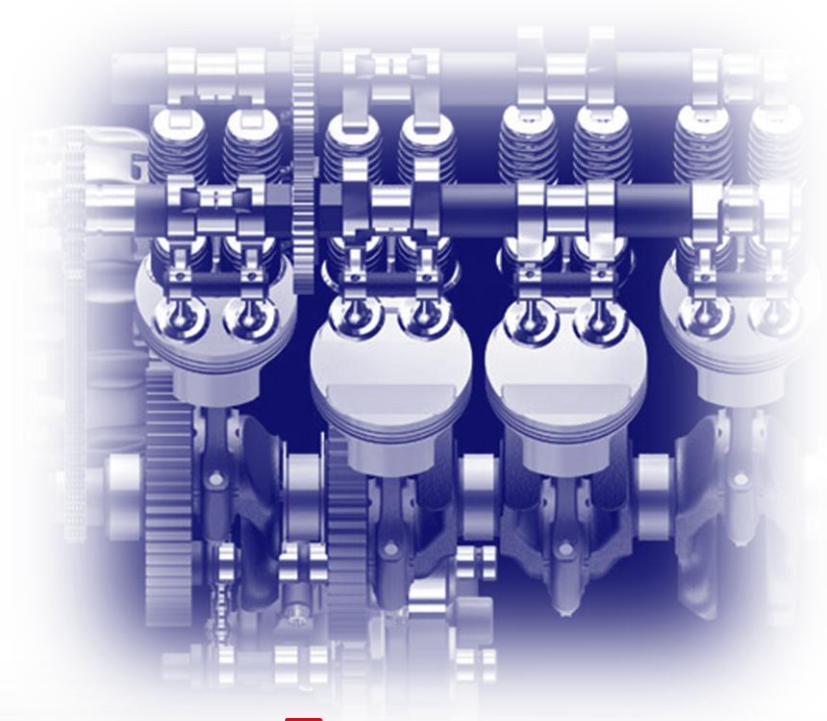


Combustion & Compressor Centric Approach



Value Chain Analysis

The base engine origin must be considered to capture value economics as they change according to engine profile – “larger = likely”

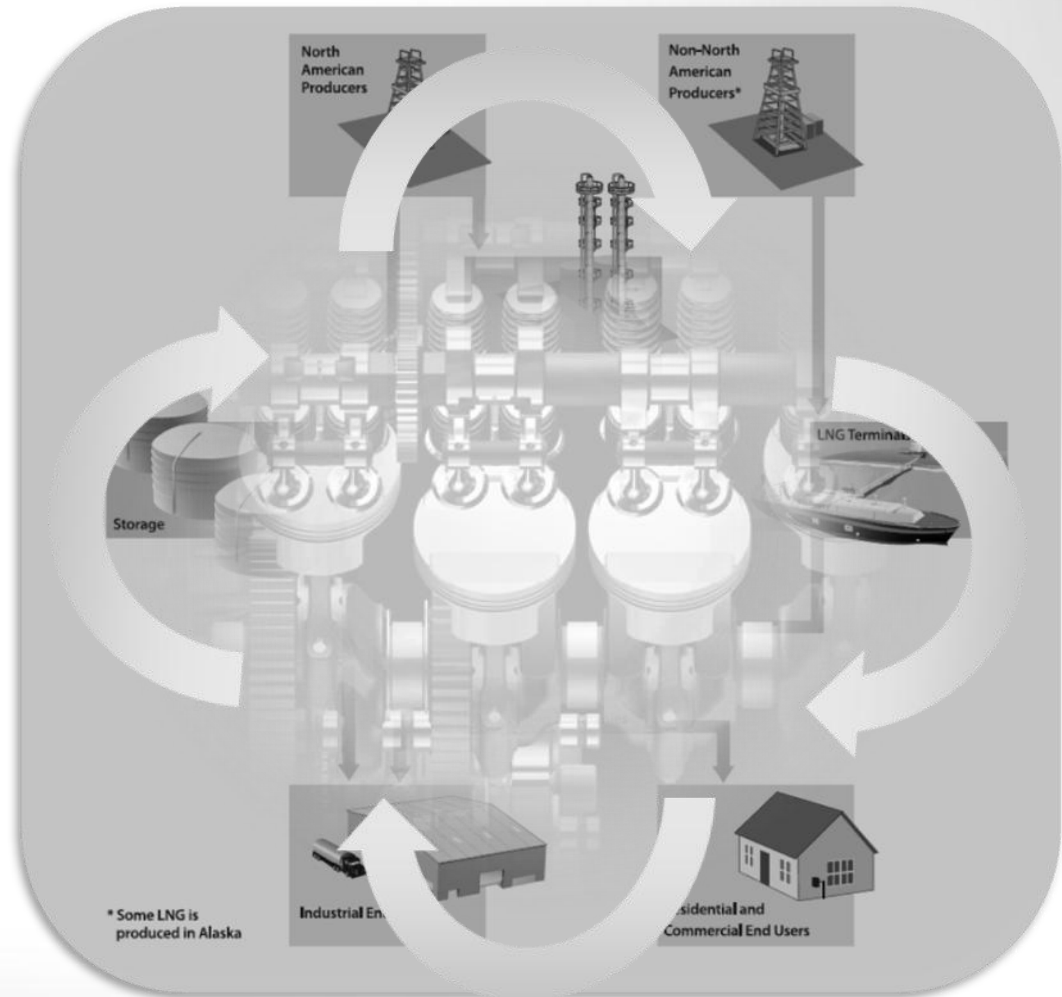
- 
- *Small industrial & automotive derivative engines*
 - *Diesel truck derivatives*
 - *High speed industrial diesel engines*
 - *Medium speed industrial diesel engines*
 - *Slow speed heavy fuel oil or legacy engines*
- Value Economics change by engine class



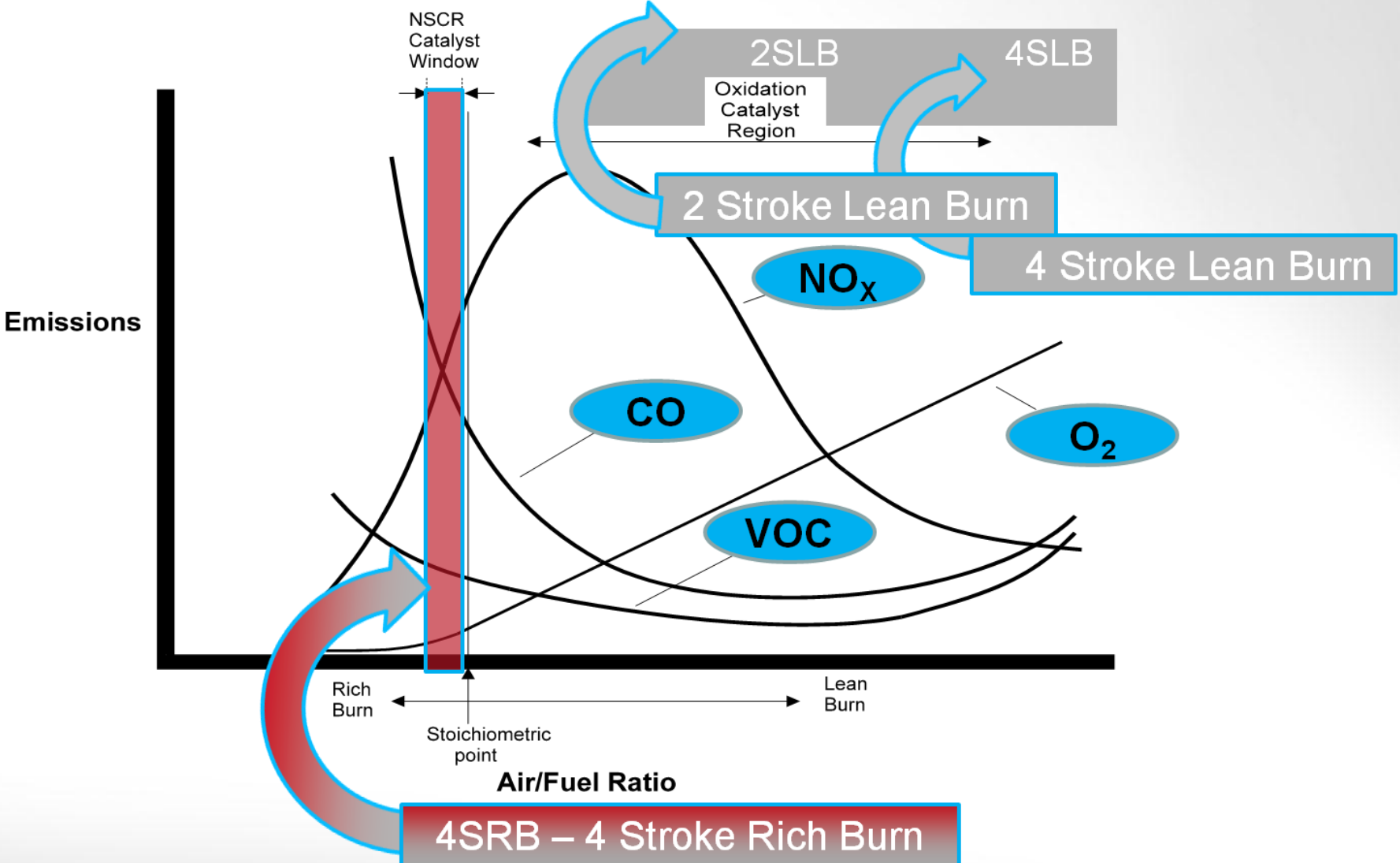
Combustion Centric Compressor Controls & Compliance Solutions:

The main economic drivers are:

- The Price of Gas \$\$\$
 - Money, Money, Money...
- The Legislative Mandates
 - Procedural Compliance
 - Actual Emissions
- The relationship of O&M:
 - Competitive Contracts
 - Operating Cost
- The Price of Gas
 - Historically \$4 mcf
 - Economic Activity \$5 mcf



Emission Trends for Spark Ignited Engines

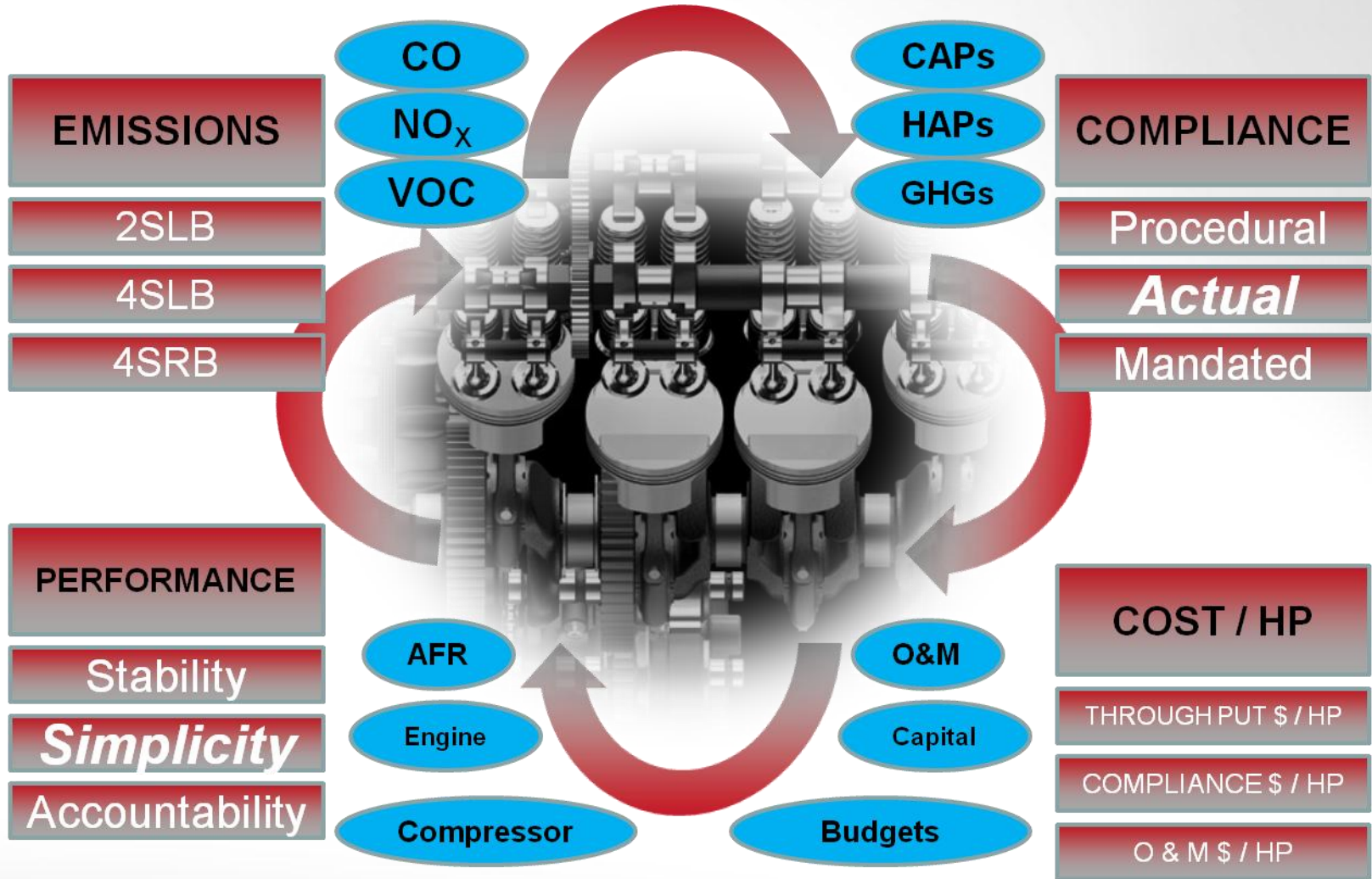


Catalysts & CAPs (Criteria Air Pollutants)

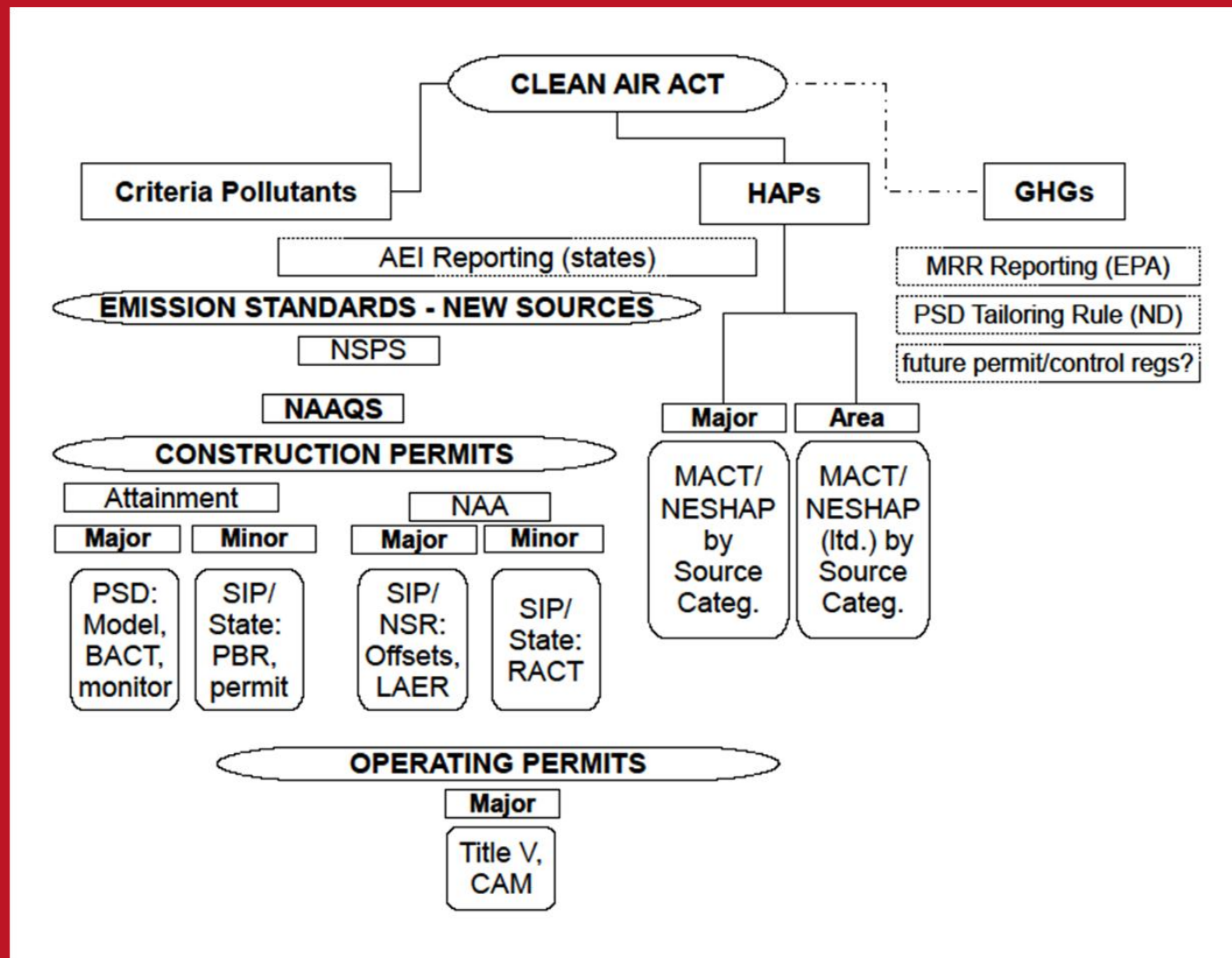
CAPs		NO _x	CO	VOC	PM	PM
		>90%	>90%	/VOCs 50-90%	0-40%	80-90%
SI	SI, Rich-Burn (4SRB)	• <i>3-way system</i>	• <i>3-way system</i>	• <i>3-way system</i>	N/A	N/A
	SI, Lean-Burn (2SLB & 4SLB)	• <i>SCR system</i>	• <i>Oxidation catalyst</i>	• <i>Oxidation catalyst</i>	N/A	N/A
CI	Diesel (CI or compression Ignition)	• <i>SCR system</i>	• <i>Diesel oxidation catalyst</i> • <i>Catalyzed filter</i>	• <i>Diesel oxidation catalyst</i> • <i>Catalyzed filter</i>	• <i>Oxidation catalyst</i>	• <i>Filter</i>



Combustion & Compliance Value



The RICE Compliance Equation



Connection of Combustion to Compliance

