ALIGNMENT OF WORK PHASE TERMINOLOGY

IPA Project Phases Company Work Phases Scoping FEL 1 – Business Planning Order of Magnitude Cost Estimate at **Business Case** +/ 40-50% Cost Estimate +/- 30% **Milestone Schedule Objectives Engineering at 1%**` **Engineering at 1% <u>FEL 2</u>** – Facility Planning **DBM or Pre-FEED (3-9 Mos) Develop Project & Preliminary Cost Estimate at** +/- 25-30% **Finalize Process Concepts** Cost Estimate +/- 20% Engineering at 5-10% **PFD's Done PFD's (Process Design Frozen) Engineering at 5% Project Execution Planning Preliminary Schedules <u>FEL 3</u>** – Project Planning EDS or FEED (6-8 Mos) **Detailed Engineering** Project Cost Estimate at +/- 15-20% Cost Estimate +/- 10% Engineering at 25% Engineering at 25% **P&ID's Completed P&ID's Done Project Schedules Project Authorization Funding Authorization Detailed Engineering (9-12 Mos) Detailed Cost Estimate at +/- 5-10% Construction Drawings (IFC) Project Implementation Definitive Estimates** Engineering at 90-100% **Detailed Schedules**

Construction Mgmt (12-18 Mos) Final Cost Estimate at -3% to 5% Final Schedules Engineering Completed Mechanical Completion Start-up & Commissioning



Start-Up & Operation