Westinghouse AP1000® Plant

Supply Chain Approach for Nuclear New Build

Tom Weir December 10, 2020

Westinghouse Electric Company



AP1000 Typical Procurement Division of Responsibility

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- NI Equipment
 - -NSSS
 - -Valves
 - -Pumps
 - Heat Exchangers
- Safety and Non-Safety I&C
- Modules

Constructor

- Civil/Structural Commodities
 - -Rebar
 - -Embedment Plates
- Piping
- Cable
- Architectural Commodities
- BOP Equipment
- Consumable Materials



AP1000 Supply Chain Development

Phase 1 Evaluate Local Suppliers

- Identify candidate suppliers and initial potential commodity matches
- Desktop reviews and supplier visits

Phase 2 Finalize DOR and Prepare Offer

- Use "best athlete" approach to WEC/Constructor /Owner DOR
- Down select suppliers
- Solicit commercial proposals

Phase 3 Supplier Dev. and Qualification

- Supplier performance evaluation (verification of references, Audit, dry-runs, RFQ)
- Commercial evaluation

Phase 4 Execution of Procurement

- Supplier
 RFQ/RFP panel
 selection
- Procurement plans including supplier oversight
- Final supplier selection
- Final negotiations

Localization strategies are developed during early phases of project development



AP1000 Major Procurement Codes and Standards

- NQA-1
- 10CFR50 Appendix B
- 10CFR21
- ASME Section III
- ASME B31.1
- ASME Section XI
- ASTM material specifications

- ACI-349
- ASME NOG-1
- API 650
- ISO 9001
- AISC N690
- NCA 3800/4000

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Standards Applied Based Upon Design Requirements

Risk Informed Sourcing

High-Complexity Commodities

High-complexity commodities pose risk to the success of the project.

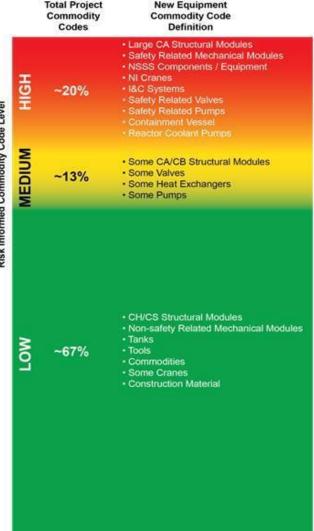
Typical Characteristics:

- Significant upfront investment
- Safety-related fabrications
- Significant lead times > 2 years
- Supplier prequalification > 6 months
- Requires long-lead material releases



Strong preference for incumbent suppliers





Risk Informed Sourcing

Medium Complexity Commodities

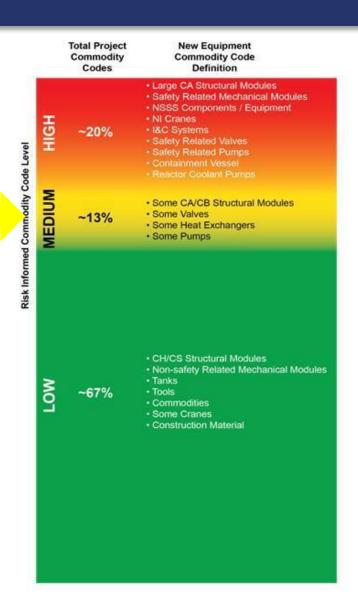
Medium complexity commodities carry more risk to the project and can have greater impact on the AP1000 plant schedule.

Typical Characteristics:

- Potential upfront investment
- Contain safety and/or non-safety fabrication
- Long lead times with minimal float
- Fabrication requires special tooling/processes
- Prequalification required for certain processes
- "Build-to-print" specifications

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Localization possible with concerted qualification effort



Risk Informed Sourcing

Low Complexity Commodities

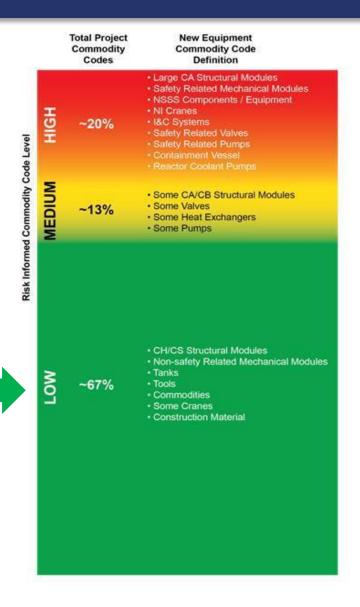
Low Complexity commodities are those for which localization can be achieved with minimal risk to the project.

Typical Characteristics:

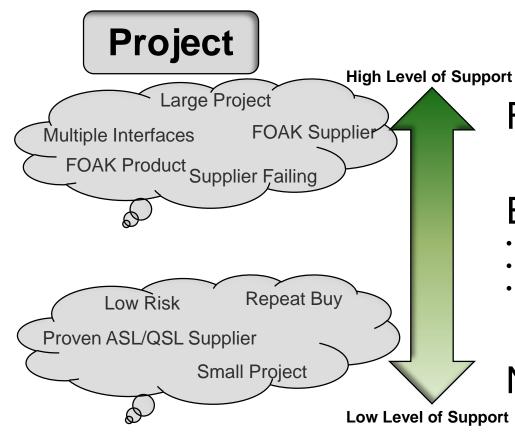
- Low upfront investment by the supplier
- Non-safety or commercial fabrication requirements
- Lead times that allow for schedule float
- Commercial or typical quality requirements

Low complexity (67% of commodities) corresponds to strong localization potential





Supplier Performance Execution Strategy



SPE Engagement

Full Time Supplier Performance Engineer

Execute to Supplier Oversight Plan

- W/H Points
- Critical Process Steps
- Periodic status validation

No Supplier Performance Support Needed

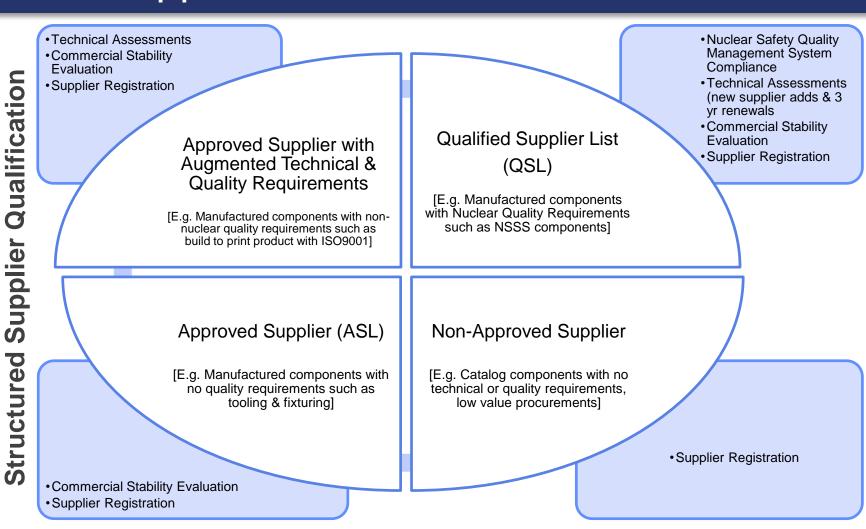


Supplier Performance Support Structured to Match Project Needs

Supplier Performance & Supplier Qualification

- Westinghouse maintains a list of "Approved" and "Qualified" suppliers
- Manage size of supply base to influence strategic relationships
- Leveraging AP1000 experience in China and US Vogtle Projects
- Schedule and cost responsibility for procurement
- Boots on the ground validation of supplier status
- Supplier Qualification and Technical Assessments
- Triage for poor performance

Technical & Quality at the Source





Complexity of Product/Service

Modular Construction

Modular construction means more work done in parallel

Factory production of modules

On-site module assembly





Transport Modules



Plant Operation

Plant Order

Site Survey and Preparation









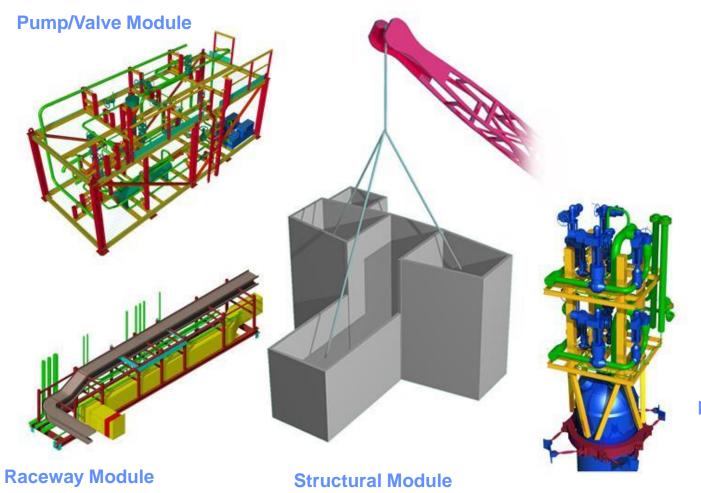


Shorter schedule – increased safety – improved quality



The AP1000 PWR: A Case Study

Modules Designed into the AP1000 Plant From the Beginning



<u>Module Type</u>	<u>Number</u>
Structural	122
Piping	154
Mechanical	55
Electrical	11
TOTAL	342

Depressurization Module



Thank You

