

Next Generation Equipment Committee (NGEC)

Independent Review of NGEC Standardization Process

Standardization Mandate

- The 2008 PRIIA Act, Section 305 states, Amtrak shall establish a Next Generation Equipment Pool Committee
- The purpose of the Committee shall be to design and develop specifications for, and procure *Standardized* next Generation corridor equipment
- Amtrak and the States participating in the Committee may enter into agreements for the funding, procurement, remanufacture, ownership, and management of corridor equipment,

NGEC Technical Subcommittee

- The NGENC created several standing subcommittees, including a Technical Subcommittee comprised of Amtrak, FRA, States, and industry members representing railcar manufactures and system and component suppliers
- The Technical Subcommittee has successfully completed 3 vehicle and 1 locomotive technical specifications
- The bi-level coach technical specification is the first to enter the procurement phase which is in process, time is critical to meet RFP and NTP schedule

Standardization Working Group

- The NGECC created a Standardization Working Group (SWG) in January 2011 to address the standardization process
- The SWG was comprised of members from Amtrak, States, FRA, and a consultant facilitator
- SWG developed a detailed work plan that identified Objectives, Approach, Process, Staff, and developed a Pilot Program to verify the process

SWG Work Plan Objectives

- Embrace long-range effort to achieve commonality of systems or components
- Encourage vitality of US domestic railcar supply industry
- Identify potential candidates for standardization
- Develop a common process for evaluation technical and economic benefits
- Emphasize use of open and industry standards
- Determine process for revisions
- Establish schedule for periodic re-validation

SWG Identified Benefits of Standardization

- Reduction in life-cycle costs
- Reduction in parts inventory
- Reduction in worker training
- Reduction in tools and equipment for maintenance and manufacturing
- Consistency in design, manufacture, operation
- Improved sustainability of US railcar supply industry
- Reduces car builder risks, technical, delivery schedule

SWG Identified 3 levels of Standardization

- Standardization of technical specification layout
- Standardization of key interfaces so that components are interchangeable with common performance requirements
- Standardization of the design of a particular component or system resulting in identical components or systems

Implementation of Pilot Program

- SWG Pilot Program selected 7 candidates for standardization consideration:
 - Wheel sets –still in process
 - Brake Discs – Standard developed
 - Brake Shoes – Standard developed
 - Brake Valves – Rejected
 - Seats – Rejected
 - Windows – Still in process
 - HVAC – Rejected due to no interface baseline

Issues Found During Pilot Program

- Process took longer than expected, resulting in lengthy delays in developing Pilot Program Standards
- Lack of Subgroup member interest, only 25% participation
- For members who did participate, lack of urgency
- SWG determined it needed to understand lack of industry member participation
- NGENC Board believed potential bias may be introduced by having industry members make determination of system/component standardization

Independent Review of NGECE Standardization Process

- NGECE requested independent third party to perform independent review of Standardization Process
- Work Scope Tasks for Independent Assessor
 - Task 1-Review SWG process, performance, recommend changes or revisions on funding, independence, and productivity
 - Task 2 –Address Standards Development in context of current NGECE activities by considering the following questions:

Task 2 Scope of Work

- Task 2A-How can perceived barriers to standards development be overcome while maintaining involvement of industry representatives
- Task 2B-How should the concept of a standardized component be defined? Should standardization be focused on components or major systems or both?
- Task 2C-How can the question of when to standardize be resolved?
- Task 2D-How can/should the potential benefits of standardization be determined?
- Task 2E-What should be the process for re-evaluating decision to reject candidate

Historical Impediments to Standardization

- Older systems, NY, Chicago, Boston, have infrastructure that require custom vehicles
- Historical U.S. market is limited and erratic, tends to be for custom cars
- Market is infrequent, railcars have 25-40 year life
- Even newer systems favor designs of their own equipment, fleets were not designed with modularity or design re-use criteria
- Federal, State and local funding is scarce, competing interest for capital needs, orders are unpredictable

Public Agency Procurement Impacts on Standardization

- Procurement bid process, low bid vs. negotiated (two steps)
- Negotiated procurement may allow for Total Cost of Ownership evaluation (initial cost + life cycle cost) or best value approach- but may increase bid protests
- Low bid doesn't allow for TCO evaluation-recent trends to low bid, attractive prices to public agencies
- State and Local procurements often have full disclosure requirements, impacts supplier proprietary information, may limit number of proposals

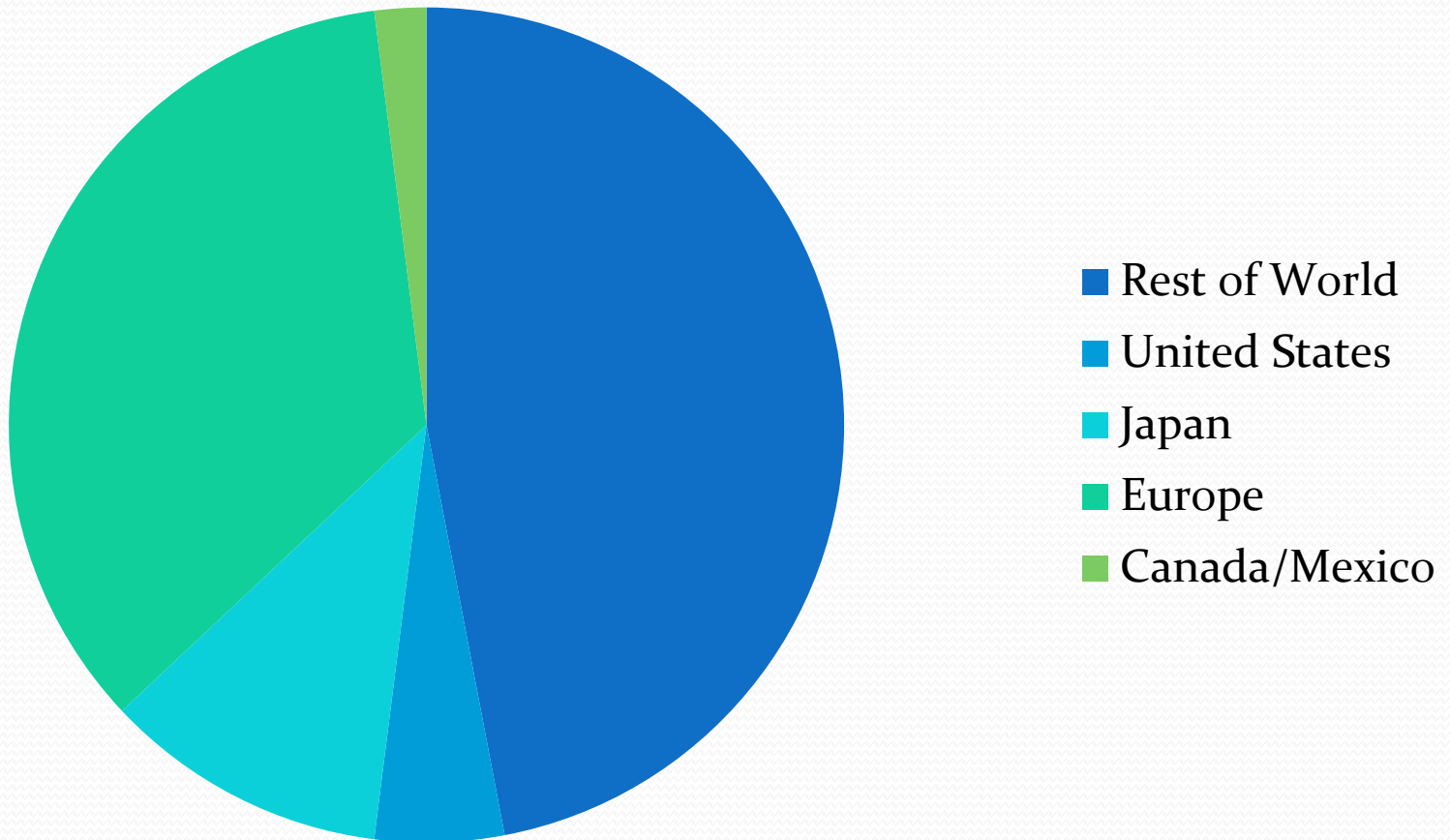
Railcar Manufacturers Participating in US Market

- Market dominated by multinational railcar companies, US owned companies exited industry 1970-1990, no barriers to entry
- US market witnessed large turnover, but 10 multinational companies compete today, but not in all market segments
- Worldwide, more car builder manufacturing capacity than demand, same in U.S., exerts downward pressure on margins
- Multinational companies have different US strategies, some have permanent US facilities, other use temporary assembly facilities for local contracts
- Bid price levels are erratic, low bid process generates price differentials of 25% from low bid, commercially not sustainable without government support

US Railcar Market by Mode

Vehicles by Mode	Quantity	Fleet Avg. Age	% of Total Vehicles
Heavy Rail	11,461	22 years	51.9%
Light Rail	2,068	16 years	9.4%
Commuter Rail	6,941	17 years	31.5%
Intercity-Amtrak	1,510	26	6.8%
State Corridor	108	20	0.4%
Total	22,068		100.0%

Worldwide Transit Railcar Fleet by International Location



US Industry Generally Supports Standardization

- Industry supports key interfaces with common performance requirements
- Defined as design to form, fit, and function that allows for inter-changeability of components/systems
- Car builders support “Modular” or top down approach
- Suppliers not prone to give up intellectual property rights, key interface definition meets this commercial issue, provides customer with standardization
- Car builders that support standardization prefer negotiated procurements, low bid procurement preferences do not support standardization

Task 1 Independent Analysis

- Task 1-Review the SWG process, performance
- Recommended Changes:
 - NGEC request bi-level procurement RFP to request prospective car builders to develop Standardization Plan as part of technical proposal evaluation
 - Car builders use “Modular” or top down approach, integration with suppliers and vehicle design critical
 - NGEC identify major candidate systems for inclusion, Doors, HVAC, Seats, Couplers, etc.

Task 1 Independent Analysis

- Task 1 Recommended Changes:
 - Decision required whether to include TCO (initial cost + life-cycle cost) as part of evaluation process-requires financial/economic resources
 - SWG can provide procurement assistance, evaluations as Subject Matter Experts to procurement process
 - Owner/successful car builder will require close working relationship through design phase, final decisions made at Preliminary Design Phase (30%)

Task 2A Independent Analysis

- Task 2A-How to overcome perceived barriers to standardization
- Recommendations:
 - Utilize negotiated (two steps) procurement process
 - Standardization should focus on two major cost drivers, high dollar systems and high usage components over useful life of component
 - Assumes use of TCO for evaluation
 - Car builder utilizes “modular” approach to standardization , form , fit, function, with key interfaces electrical, mechanical, pneumatic defined

Task 2B Independent Analysis

- Task 2B-How should concept of standardization be defined, components or systems or both?
- Recommendation:
 - Use key interface standardization definition
 - Car builder uses “modular” approach, defines space, weight limits, key interfaces for elect., mech., pneumatic
 - Identify high dollar systems and high usage components as candidates
 - Define components to lowest level possible

Task 2C Independent Analysis

- Task 2C-Question of when to standardize? Will standardization impede technological innovation?
- Recommendation:
 - Ideal time to standardize is concurrent with development of technical spec
 - Start with “clean sheet of paper” a platform from which all vehicle architecture is developed
 - Apply the modular design concept, top down integration
 - Standardization implementation should enhance technological innovation, suppliers can orient their engineering resources to product development, both product design and manufacturing process improvements

Task 2D Independent Analysis

- Task 2D-How should potential benefits of standardization be determined?
- Recommendation:
 - Integration of standardization process into the procurement process
 - Require prospective car builders to propose Standardization Plan
 - Utilize technical suitability (form, fit, function) and TCO (initial cost + life cycle cost) to calculate total cost benefit analysis
 - TCO will require management resources and continuity for both bid evaluation and for monitoring data from warranty claims, operations, maintenance, and overhaul

Task 2E Independent Analysis

- Task 2E Process for reviewing rejected candidates
- Recommendation:
 - If Standardization Process responsibility shifts from SWG to car builder Standardization Plan, car builder should suggest process
 - SWG Flow Chart documents sound process for evaluation, and should be modified to interface with car builder Standardization Plan, especially the procurement evaluation process and the Preliminary Design Review Phase (30% level)

Conclusions

- Shift Standardization Process to car builder, only way meaningful standardization can happen
- Negotiated (NGEC) procurements offers opportunity for integration of standardization into process, low bid process will be major inhibitor.
- SWG can provide meaningful evaluation and ongoing monitoring resources to standardization process
- Standardization process can only become meaningful if funding for continued orders (volume) materialize