



U.S. Department of Transportation  
Federal Transit Administration

**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce



MANUFACTURING  
EXTENSION PARTNERSHIP  
National Network



# Buy America Transit Supply Chain Connectivity Forum



*APTA Annual Meeting and EXPO*  
*Houston, TX*  
*October 15, 2014*



AMERICAN PUBLIC TRANSPORTATION ASSOCIATION



MEP • MANUFACTURING  
EXTENSION PARTNERSHIP



# Agenda

8:00am	Registration/Continental Breakfast
8:30am	Welcome Remarks and Forum Introduction
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# TMAC in Texas



A federation of seven research organizations or universities (UTA, UTEP, UTPA, A&M-TEEX, TTU, UH, SWRI)

*Statewide coverage*

## MISSION

INCREASE THE GLOBAL COMPETITIVENESS OF THE TEXAS  
ECONOMY BY WORKING WITH THE EXTENDED MANUFACTURING  
ENTERPRISE (including product development, design,...etc.)



# TMAC Strategy Supports Profitable Business Growth



Strategy to increase manufacturers' capacity for innovation resulting in profitable sales growth

Reduce bottom line expenses through lean, quality, & other programs for plant efficiency –  
*Free up capacity for business growth*

Add to top line sales through business growth services focused on the development of new sales, new markets, and new products



# MEP/TMAC Measurements

**MEP System and centers are measured by our customers' success\***

- ✦ New sales and sales from new products
- ✦ Retained sales
- ✦ New jobs
- ✦ Cost savings
- ✦ Investment
- ✦ Clients and new clients

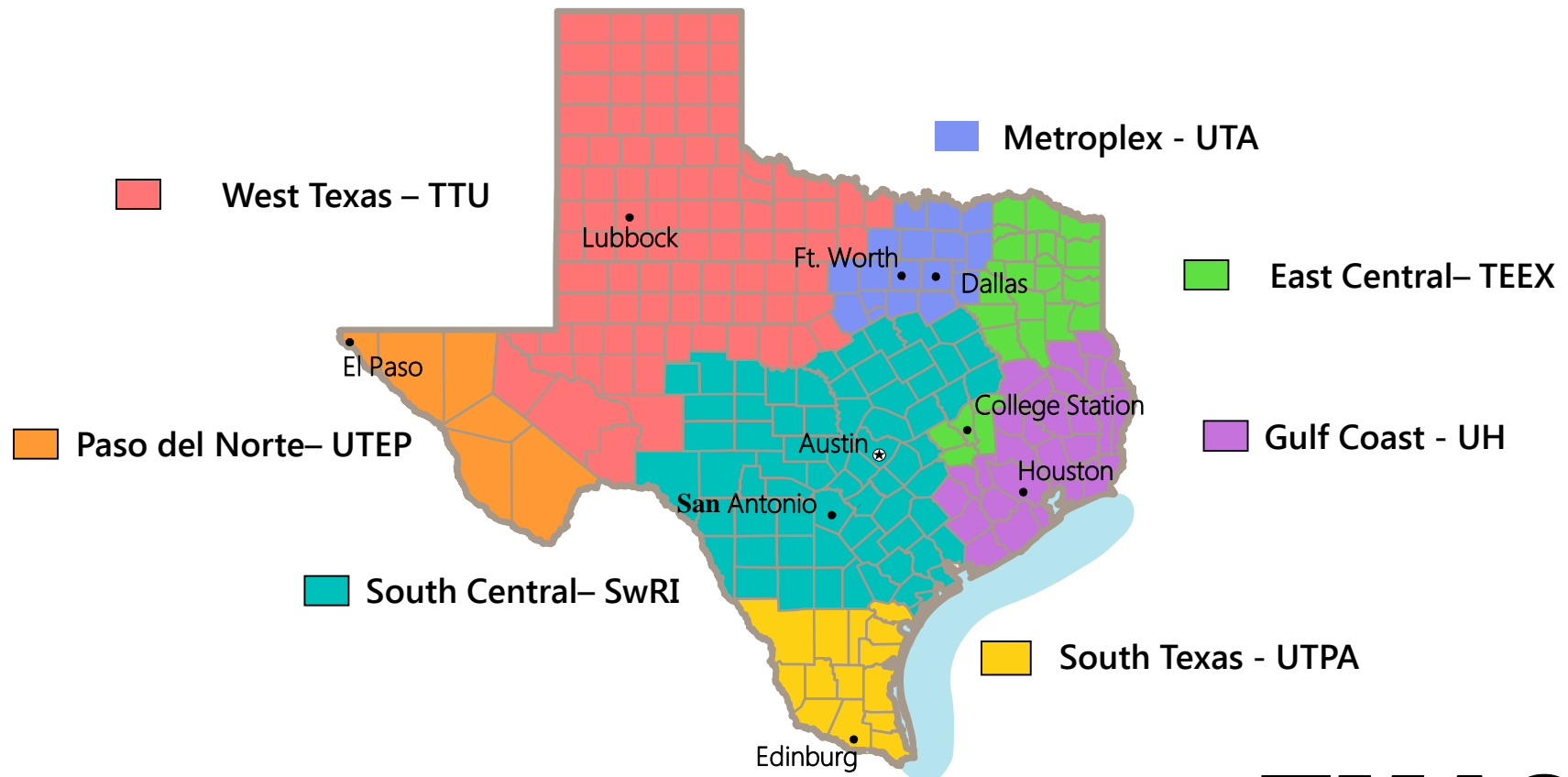
\*Collected by third-party research firm after project completion



# TMAC Customers Report Real Economic Benefits

## 5 years (2009-2013)

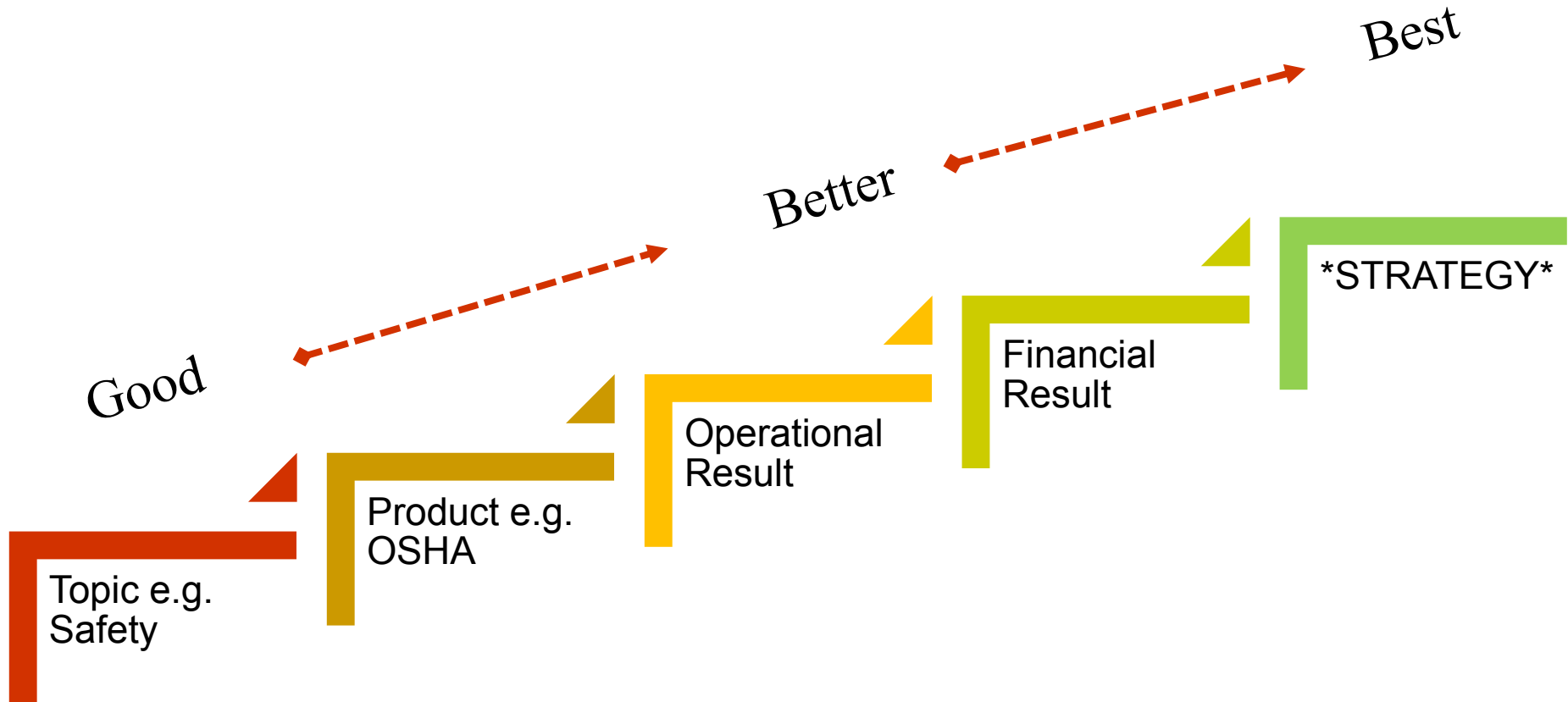
**New/Retained Sales: \$1.43 Bil. ★ New/Retained Jobs: 16,067**  
**Cost Savings: \$642.3 Mil. ★ Investments: \$504.9 Mil.**



**Average Project Cost= \$9,353**

**Average Project Return= \$152,078 \*Reported by customers**

# Profit, Products, Process, People, Promotion



# Example: Miether Bearing

## CUSTOMER:

Miether Bearing Products

## SITUATION:

- Strong competition
- Need for shorter lead times
- Increase quality throughout the enterprise

## TMAC SERVICES:

- Intensive operational transformation
- Lean principles and techniques



## RESULTS:

- Lead time reduced in half. From 12 to 6 weeks
- 35% inventory reduction
- 20% revenue growth

*“...This has been the most hands-on and comprehensive improvement process I have ever been a part of.”*

**Mike Smith, President**

# Example: ProSource Industries

## CUSTOMER:

ProSource Industries

## SITUATION:

- Need to diversity its position in the wiring harness marketplace

## TMAC SERVICES:

- Strategic planning
- Business continuity planning
- AS9100C -Quality Mgmt System
- Safety planning
- 5S implementation



## RESULTS:

- \$700K business back
- 30% increase in on-time delivery
- Increased productivity by 30%
- Customer returns reduced from 6 per month to 0-1
- \$45k capital investment
- 5 New jobs created

***“If a company wants to improve all aspects of its business TMAC is the place to call. Manufacturing Specialist Mike White has been a tremendous help. There is a personal connection that’s nothing like your usual consulting project. A definite team feeling pervades: we are all in it together to drive ProSource to achieve its goals and be a better manufacturing facility. ”***

*Timm Hissam  
Vice President of Operations*

# Example: MedHab

**CUSTOMER:**  
MedHab, LLC



**SITUATION:**

- Early Stage Biomedical Startup
- Venture Funding
- FDA approval

**TMAC SERVICES:**

- Feasibility Study
- New Product Design
- Alpha Testing
- Site Evaluation & Selection
- Facility Layout
- Marketing Intelligence
- Customer Support Info

**RESULTS:**

- Active Patent Holder: 2 certified and 6 pending
- \$3.1M private investment secured
- HIPAA compliant
- Wireless monitoring cloud based for StepRite product
- New applications identified
- 5 new jobs created

*“TMAC provides a wealth of resources along the entire path of product commercialization. Their deep experience in industrial engineering and business growth provides us mature processes for delivering quality products without waste.”*

*We are about to embark on a successful launch of a great product and profitable business that will speed patient recovery more cost effectively with better results than anything currently found in the marketplace.”*

**Johnny Ross, Co-Founder & CEO**

# Example: Plastic Molding Technology

## CUSTOMER:

Plastic Molding Technology, Inc.

## SITUATION:

- Greater pressure from customers to adopt a sustainability initiatives

## TMAC SERVICES:

- Value Stream Mapping
- E3 training



## RESULTS:

- 187,725 kWh reduction
- 40,000 gallons of water reduction
- 56 tons of solid waste reduction
- 126 tons of CO<sub>2</sub> reduction
- \$200,000 in new sales

*“By participating in the E3 program, PMT management expects to have greater cooperation with customers and suppliers on mutually beneficial clean production, green packaging and shared environmental objectives. PMT would like to give special thanks to the U.S. EPA and TMAC for sponsoring this work and helping fund this project.”*

**Charles A. Sholtis, CEO**





# LEVERAGING A LEGACY

*Is your business ready for the future?*

65% of family-owned businesses will transition ownership in the next 5-6 years.

Only 30% or less will survive in the second generation.

Less than 5% will survive to the third generation.

TMAC works with you in preparing your business for successful ownership transition, offering you the ability to realize the vision of your exit strategy.

# TMAC Supports an Innovation Eco-System



## TMAC TOOLS AND SERVICES

- |                           |                           |                         |                           |                              |
|---------------------------|---------------------------|-------------------------|---------------------------|------------------------------|
| -ETF <sup>1</sup>         | -Tech Market Intelligence | -Market Analysis        | -Market Intelligence      | -IEMS <sup>2</sup>           |
| -IEMS <sup>2</sup>        | -Technology Scouting      | -Business Plan Dev't    | -Continuous Improvement   | -Supply Chain Dev't          |
| -NIM <sup>3</sup>         | -Product Design           | -Financing              | -Tech Acceleration        |                              |
| -AIM <sup>4</sup>         | -Development              | -Business Formation     | -Supplier Dev't           | -Make it in America Campaign |
|                           | -Proto-typing             | -Process Design         | -Workforce Dev't          |                              |
|                           | -Sustainability           | -Marketing/ Advertising | -Sustainability           |                              |
|                           | -Supplier Scouting        | -Supplier Scouting      | -Export-Tech              |                              |
| -Buy America <sup>5</sup> | -Design for Mfg           | -Supply Chain Dev't     | -Family Business Advisors |                              |
| -SBIR <sup>6</sup>        | -Automation / Robotics    |                         |                           |                              |

1) Emerging Technology Fund

2) Innovation Engineering Management System

3) National Innovation Marketplace

4) Asset Inventory Management System

5) Buy America Supplier Scouting

6) Small Business Innovation Research



# Connect with TMAC

 1-800-625-4876

 tmac@tmac.org

 [www.tmac.org](http://www.tmac.org)

# University of Houston College of Technology Overview

Dr. Raymond E. Cline, Jr.

Department Chair

Information and Logistics Technology

# College of Technology

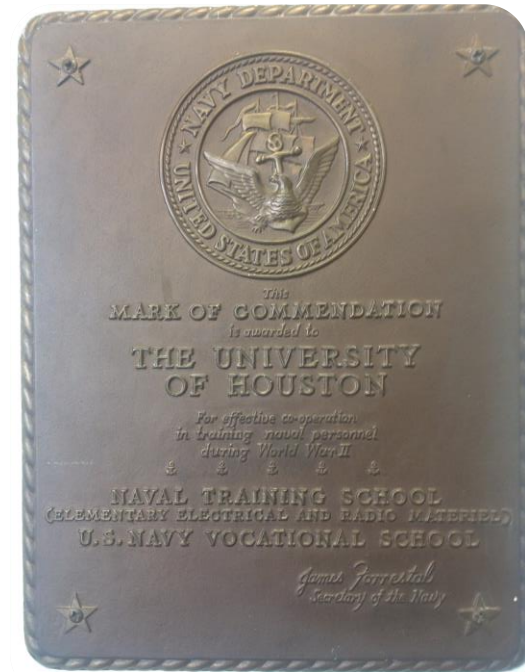
- We prepare capable and passionate technology leaders for the future.
- We have technically rigorous and diverse programs that prepare our students for future employment.
- We provide degrees in Engineering Technology, Construction Management, Human Development and Consumer Science, and Information and Logistics Technology,





## College of Technology

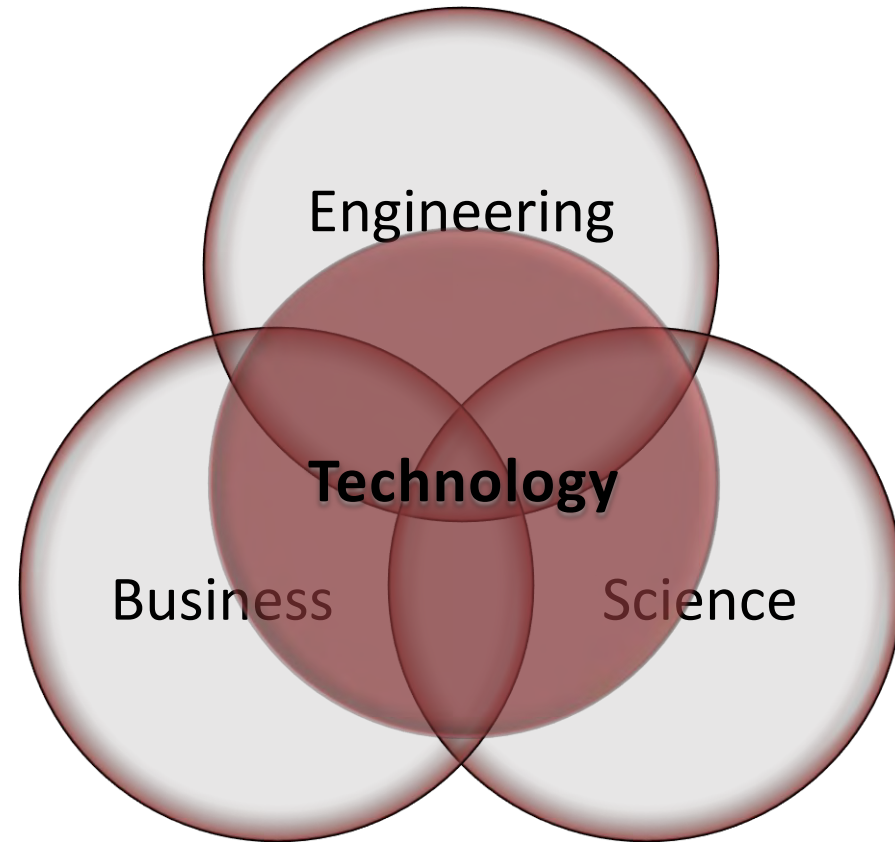
- Founded in **1941**, oldest College in the University, third permanent building on campus, grew out of WWII training programs (RADAR)
- **1<sup>st</sup>** Engineering Technology programs in Texas
- Current student enrollment of **4,878** (4,476 undergraduate; 402 graduate)
- Growth rate of **20%** since Fall 2013 (15% CAGR since 2006)
- **4<sup>th</sup>** Largest College within the University of Houston
- Research Expenditures of **\$1.86 million** (FY2014)



# Where we fit, What we do

## College of Technology

- Three departments and two programs:
  - Engineering Technology
  - Information Logistics Technology
  - Human Development and Consumer Sciences
  - Construction Management
  - Future Studies (Foresight)
- BS/MS degrees in all areas.
- We produce scholars of the practice. (If it is applied, it is us.)





# Top 50 Careers

## Our programs lead to **21** of them!

- |    |  |    |  |
|----|--|----|--|
| 1  | <b>Software Architect</b>                          | 26 | <b>Information Technology Business Analyst</b> |
| 2  | Physician Assistant                                | 27 | Director of Nursing                            |
| 3  | <b>Management Consultant</b>                       | 28 | <b>Information Technology Consultant</b>       |
| 4  | Physical Therapist                                 | 29 | Psychiatrist                                   |
| 5  | Environmental Engineer                             | 30 | <b>Test Software Development Engineer</b>      |
| 6  | Civil Engineer                                     | 31 | <b>Information Technology Network Engineer</b> |
| 7  | <b>Database Administrator</b>                      | 32 | <b>Senior Sales Executive</b>                  |
| 8  | <b>Sales Director</b>                              | 33 | <b>Information Technology Program Manager</b>  |
| 9  | Certified Public Accountant                        | 34 | Primary Care Physician                         |
| 10 | Biomedical Engineer                                | 35 | <b>Computer and Information Scientist</b>      |
| 11 | Actuary  | 36 | Hospital Administrator                         |
| 12 | Dentist  | 37 | <b>Programmer Analyst</b>                      |
| 13 | Nurse Anesthetist                                  | 38 | Applications Engineer                          |
| 14 | <b>Risk Management Manager</b>                     | 39 | Research & Development Manager                 |
| 15 | Product Management Director                        | 40 | <b>Regional Sales Manager</b>                  |
| 16 | Healthcare Consultant                              | 41 | Project Engineer                               |
| 17 | <b>Information Systems Security Engineer</b>       | 42 | <b>Training Development Director</b>           |
| 18 | <b>Software Engineering / Development Director</b> | 43 | <b>Human Resources Consultant</b>              |
| 19 | Occupational Therapist                             | 44 | Speech-Language Pathologist                    |
| 20 | <b>Information Technology Manager</b>              | 45 | Business Development Analyst                   |
| 21 | <b>Telecommunications Network Engineer</b>         | 46 | Physical Therapy Director                      |
| 22 | Environmental Health & Safety Specialist           | 47 | Structural Engineer                            |
| 23 | <b>Construction Project Manager</b>                | 48 | Nursing Home Director                          |
| 24 | <b>Network Operations Project Manager</b>          | 49 | <b>Systems Engineer</b>                        |
| 25 | Emergency Room Physician                           | 50 | Healthcare Services Program Director           |

UNIVERSITY of HOUSTON  
COLLEGE of TECHNOLOGY

WHERE DO OUR  
COOGS GO?



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# U.S. Department of Transportation

## Federal Transit Administration

**MATTHEW WELBES, EXECUTIVE DIRECTOR**



MEP • MANUFACTURING  
EXTENSION PARTNERSHIP





# WELCOME



**Michael Melaniphy**  
**President**



**MEP • MANUFACTURING  
EXTENSION PARTNERSHIP**



[www.nist.gov/mep](http://www.nist.gov/mep)



[mfg@nist.gov](mailto:mfg@nist.gov)



[\(301\)975-5020](tel:(301)975-5020)







**BREAK**





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# Transit Original Equipment Manufacturer and Tier 1 Supplier Panel

- Alstom Transport
- BAE Systems
- BYD Motors
- Gillig
- Motor Coach Industries
- New Flyer Industries
- Nova Bus
- Proterra
- Thermo King

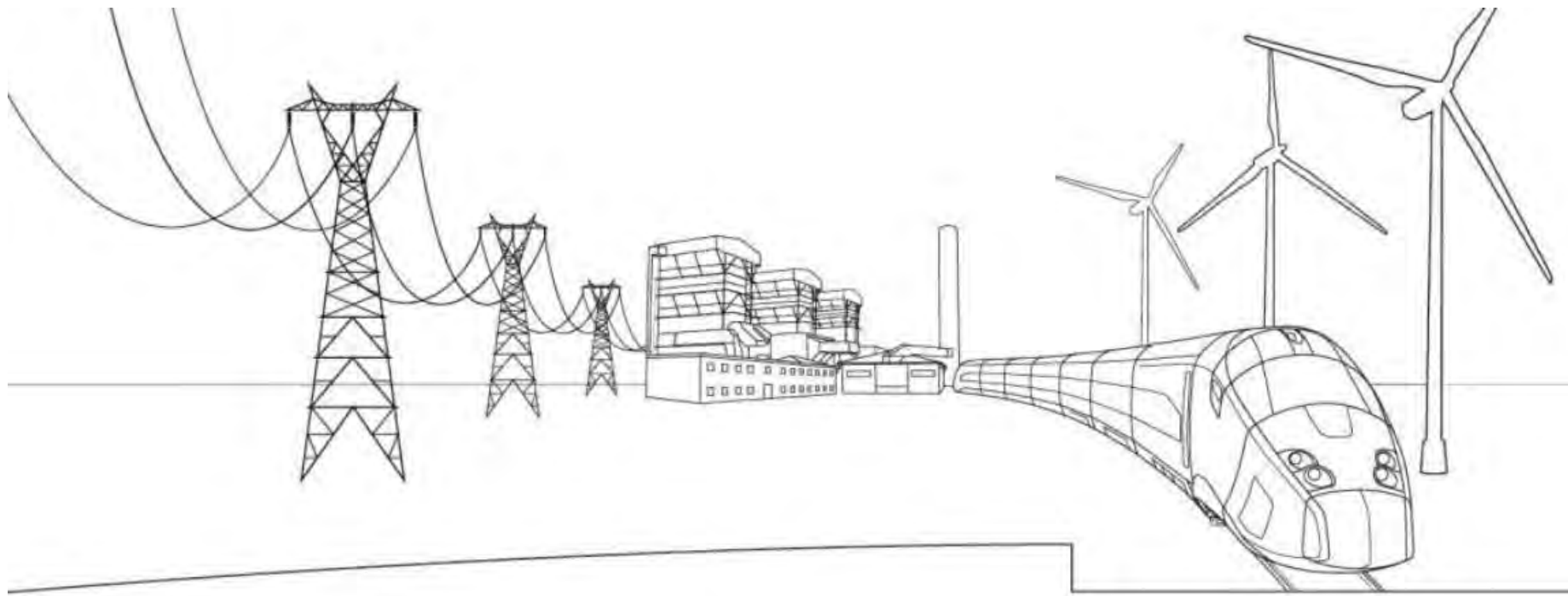


MOTOR COACH  
INDUSTRIES



NOVABUS





# Alstom Transport

MEP Forum | APTA 2014

Ian Brodie, Bid Manager NAM



# The Alstom Group: 3 main activities in 4 sectors

93,000 employees in 100 countries



**Thermal Power and Renewable Power sectors**  
Power generation

**Grid sector**  
Electrical grid

**Transport sector**  
Rail transport

**41%**

**15%**

**17%**

**27%**

**Total Alstom sales 2013/14**

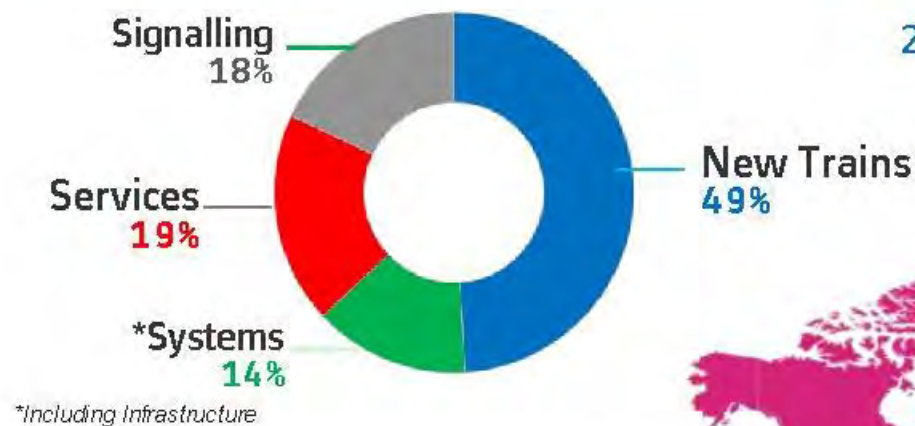
**\$27 bn**

**ALSTOM**



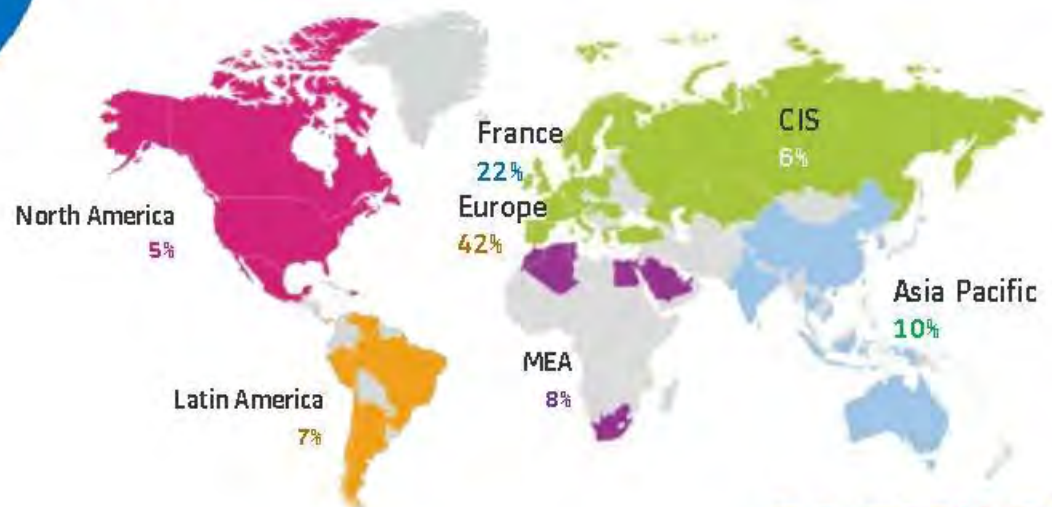
# Transport Sales Per Product Line, Region

## 2013/14 Sales Breakdown



2013/14 Transport Sales

**\$8 bn**



# Alstom Services US & Canada – Main Sites

## 100+ years of ALSTOM history in USA

### Ottawa, Canada

Train Assembly for Ottawa LRV



### Mare Island, CA

Renovation and Wreck Repair Center



### Hornell, NY

Renovation Center



### Chicago (Naperville), IL

TLS US & Canada Headquarters

### Washington, DC/Boston, MA

Amtrak - Acela Supply Chain Solution,  
Technical Assistance, Warehouse  
Management

WMATA – 2k3k6k Warranty Support

### Newcastle, DE

Amtrak – AEM/HHP Supply Chain  
Solution, Technical Assistance,  
Warehouse Management

# Transport Main Product Lines: New Trains

The largest range of the market: from tramway to very high-speed train...

DISTANCE





# Transport Main Product Lines: Services

- Maintenance
  - **400+** tram & **1,700** metro cars maintained
- Spare Parts & Repairs
- Train Modernisation
- Support services



## Main activities in USA

- Modernization
- Overhaul
- Spare Parts, 3<sup>rd</sup> Party Sales
- Running Maintenance
- Full Materials or Warehouse Management



## Full Service maintenance, BNSF (434 Locos)

- **Contract: 7 years; 2003 to 2010**
- **Rolling Stock:** Manufactured by EMD
  - 434 x SD70MAC Diesel Electric A/C Locomotives
- **Scope:**
  - Maintenance of 434 locomotives in Alliance, Nebraska
  - Provide all inclusive Price per mile rate offer for 12 years
  - 100% management of BNSF direct labor force
  - With ALSTOM core competency in Reliability Centered Maintenance, utilize condition-based techniques to improve life cycle costs
  - Implement comprehensive labor training/certification programs
  - Remote monitoring of locomotives in service used as internal ALSTOM tool
  - Replace EMD Technical Representative dependency through RCM Specialists to increase employee skill base
  - Implement RailSYS (ALSTOM shop-floor support systems)



**Increase reliability and decrease life cycle costs**



## R-160 Project for NYCT, 602 Cars

- **Rolling Stock:**

- 602 Cars for Alstom (First Release of 360 cars) ,
- The R160B cars are used on MTA subway lines on the New York metropolitan area.
- Stainless Steel Subway Car
- Car Weight : 85,200 lbs
- Max. Service Speed : 55 mph



**Repair, Overhaul and Upgrade Systems for Extended Vehicle Service Life**

## MARTA CQ310 & CQ311 Series, 218 Cars

- **Contract:** 2003 - 2009
- **Rolling Stock:**
  - 98 CQ310 A & B cars built by Franco Belge
  - 120 CQ311 A & B cars built by Hitachi
- **Scope:**
  - Design for repairs, overhauls and new systems
  - Inspect the carbody structure & repair as needed
  - General repairs and replacements as needed
  - Upgrade windows, ADA equipment, floors, floor heaters, stanchions, signage, mechanical couplers, master controller, door operators, HVAC, lighting, aux power, DC to AC propulsion, air compressor, communication equipment, ATC controls and the Fault Identification & Monitoring system
  - Test systems and vehicles prior to returning to revenue service



**Repair and Modernize for Extended Vehicle Service Life**

## WMATA 2000/3000 Series, 364 Cars

- **Contract:** 2000 - 2009
- **Rolling Stock:**
  - 364 Breda Built A&B Cars
- **Scope:**
  - Design for repairs, overhauls and new systems
  - Overhaul - Couplers, Doors, HVAC, Brakes, Trucks & Communication
  - New - ATC & VMS, Aux. Inverters, elastomers, floor panels, insulation, liners, wiring, switches and operator console
  - Upgrade Existing DC Propulsion with New AC Propulsion and Lighting for 120 VAC Operation
  - Test systems and vehicles prior to returning to revenue service



**Renovate and Modernize for Extended Vehicle Service Life**



## MBTA Green Line (86 cars) MBTA Bi-level (74 cars)

- **Contract:** 2012 - 2015
- **Scope:**
  - Overhaul - Interiors, Doors, HVAC, Brakes, Trucks & Communication
  - Upgrade of propulsion, climate control, door controls
  - Production rate of 4 cars per month
  - Test systems and vehicles prior to returning to revenue service



**Renovate and Modernize for Extended Vehicle Service Life**



## MTA Baltimore LRV, 53 cars

- **Contract: 4 years from October 2013 to May 2018**
- Dynamic testing
- New propulsion
- Upgraded interiors, including CCTV, seating, floors
- Warehouse management at multiple locations .
- Full use of Supply Chain tools and techniques



**Constant Availability of all needed parts for regular maintenance**

## Amtrak ACELA Full Materials Management, 20 Trainsets

- **Contract: 10 years from October 2006 to September 2016**
- Supply Chain Solution for all materials
- Technical Engineering support available 24/7
- Integrated ERP/Rail-SYS systems with Customer
- Full use of Supply Chain tools and techniques



## SFMTA, 2 years

- **Contract: 2 years from November 2013 to September 2016**
- Supply Chain Solution for all materials
- Reverse engineering & engineering support
- Warehouse management at multiple locations .

**Constant Availability of all needed parts for regular maintenance**

# We buy a LOT of parts...

---

In 2013, ALSTOM had:

- > **3000+** suppliers engaged globally
- > **800+** North American suppliers used regularly





# ALSTOM supplier experience

- **Lots** of involvement
- Documentation
- Expectation of trust, accountability

## So why do it??

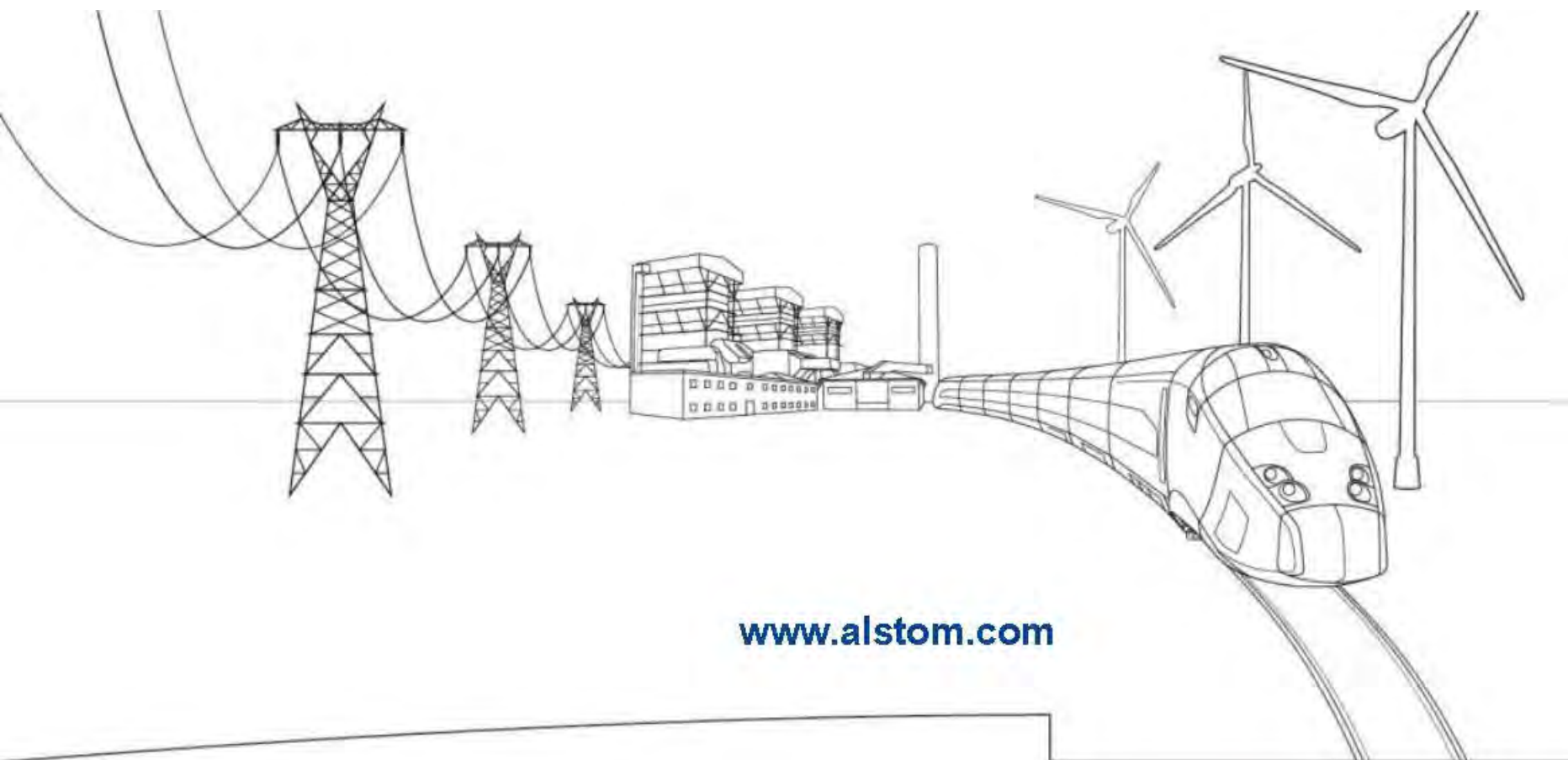
- Project-based work
- Access to resources
- **Security of repeat business**



# Current Needs in Sourcing for Alstom

- Suppliers compliant with BAA (FTA and FRA both)
- SBE, DBE, Veteran-owned
- Suppliers that have:
  - An established Quality System
  - Dedicated manufacturing site
- High demand:
  - Metal fab/machine/welding
  - Electrical
- Low demand:
  - FRP/Plastics





[www.alstom.com](http://www.alstom.com)

**ALSTOM**  
*Shaping the future*



## **NEW** HybriDrive® Series-E *The Electric Drive System*





## Who we are

### BAE Systems

A global defense, aerospace and security company employing 93,500 people worldwide. Our wide-ranging products and services cover air, land and naval forces, as well as advanced electronics, security, information technology, and support services.

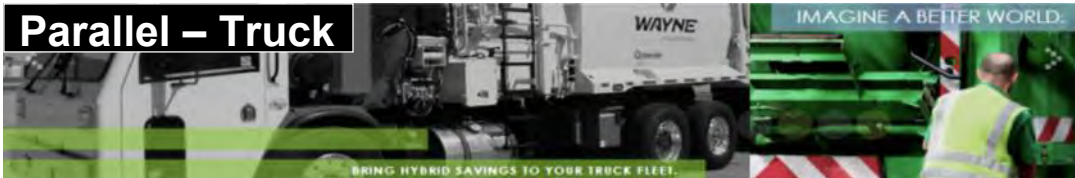
### Cutting-Edge Hybrid Technology

*Evolved from 20+ years of investment in aircraft technology*

#### Series – Bus



#### Parallel – Truck



#### Power Gen



#### Marine / Rail



### Commitment to Market

- 600 million miles of revenue service
- Saved 38 million gallons of diesel fuel
- Prevented the release of more than 520,000 tons of CO<sub>2</sub>

### Supplying Leading OEMs

NOVABUS

**GILLIG**

**IVECO**

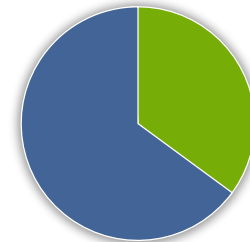
**ALEXANDER  
DENNIS**

**NEW FLYER**

**DAIMLER**

### Market Leader

Hybrid Transit Bus Propulsion Providers  
North America and Europe



HybriDrive Solutions

Others

# HYBRIDRIVE SERIES-E: THE ELECTRIC DRIVE SYSTEM



Carrying  
693 million  
passengers  
each year



4,200  
HybriDrive  
powered buses



Annually  
reducing  
100,000 tons  
of CO<sub>2</sub>



Saving  
9 million  
gallons of  
diesel fuel  
annually

CS-14-C12

# Global Hybrid Propulsion Leader



DAIMLER



GILLIG



NEW FLYER



ALEXANDER DENNIS



IVECO



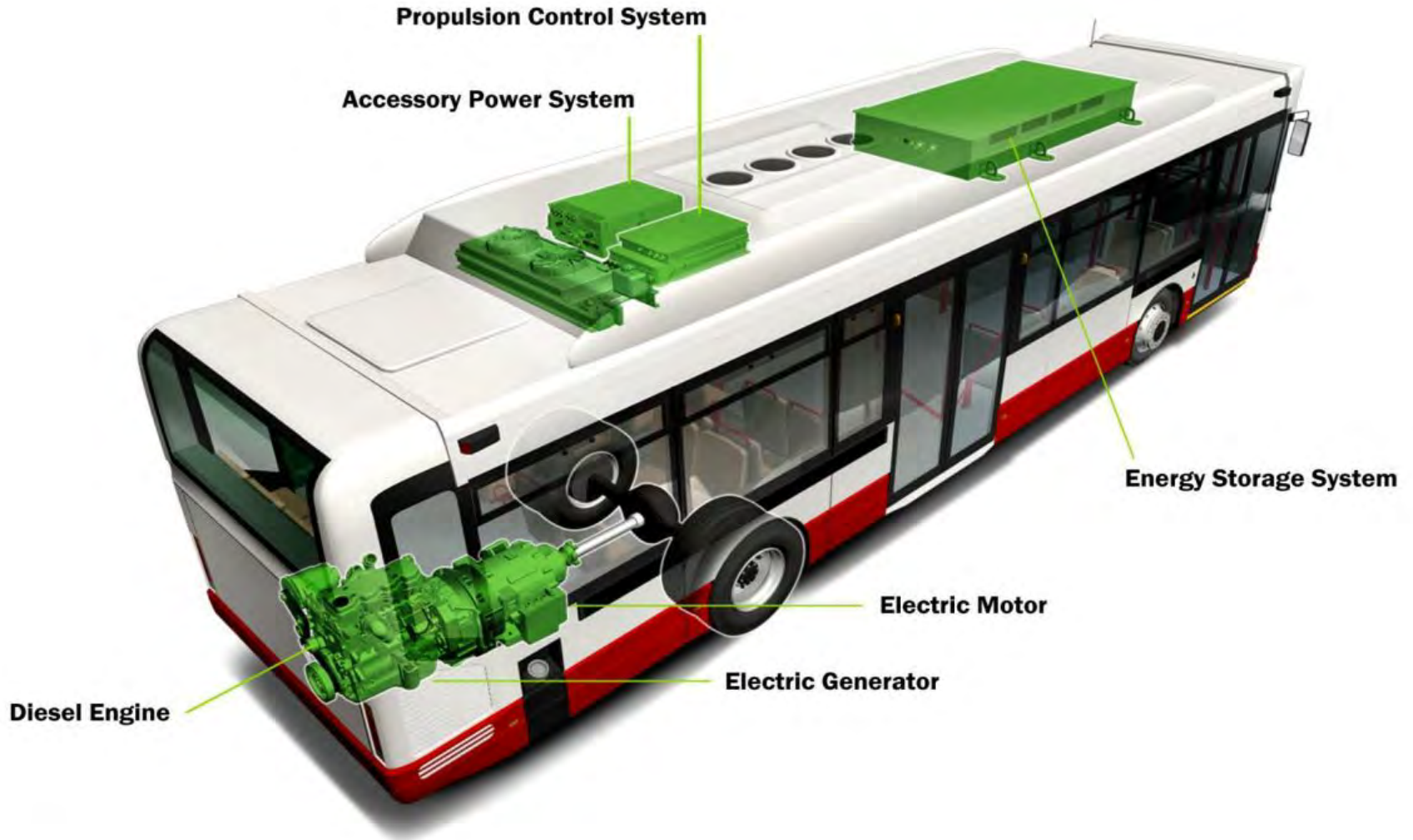
NOVA BUS



**4,200 Units - 6 OEMs - 3 Continents**



# HybriDrive Propulsion Systems



## **BAE SYSTEM's Contacts:**

**Steve Marusich – Subcontract Program Manager**  
**Telephone Number (607) 770-3721**

**Lynne Crisafi – Director of Procurement Subcontracts**  
**Telephone Number (607) 770-3903**

# BYD Provides Best ZEB Solutions





# Who is BYD?

## Automobiles



## New Energy

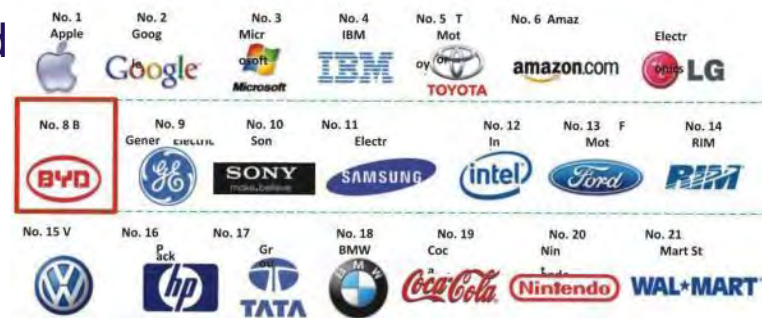


## IT

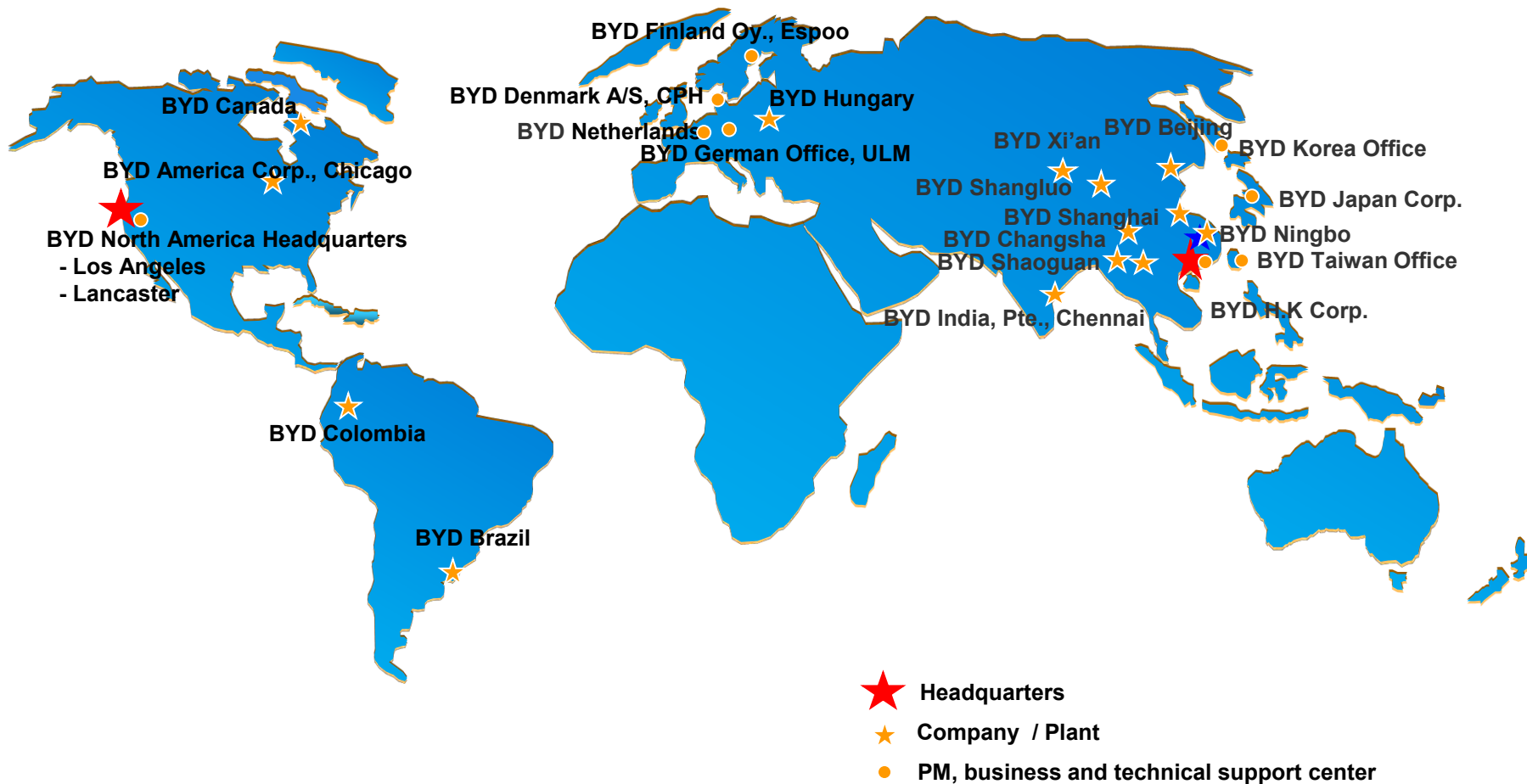


- ◆ USD 8.2 billion revenue in 2013, with 15,000 research engineers and 180,000 employees worldwide;
- ◆ 50% Public Share (Berkshire Hathaway owns 10% since 2008),
- ◆ No.1 rechargeable battery manufacturer in the world
- ◆ No.1 Electric Bus manufacturer in the world.
- ◆ No 2 cellphone, tablets and laptop components manufacturer in the world.

*The 25 Most Innovative Companies 2010*



# BYD Global Footprint



# BYD Electric Bus Series 2014



- ◀ 40 ft transit electric bus
- ▶ 30 ft midi-size electric bus
- ▼ 60 ft articulated electric bus





# BYD 40 ft Electric Bus US Cases



Stanford



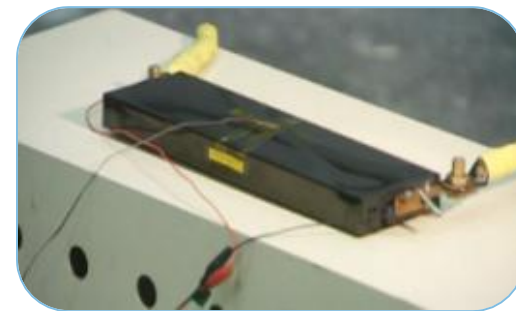
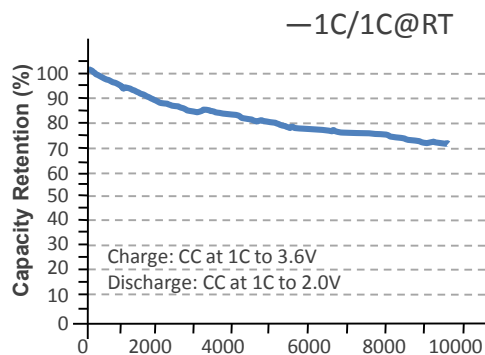
AVTA



# World's Safest & Long Cycle Life Fe Battery

## BYD Lithium-ion Iron-Phosphate (Fe) Battery Safety Tests

### Life Cycle Tests



**Short Circuit**



**Strike**



**Pierce**



**Flames**



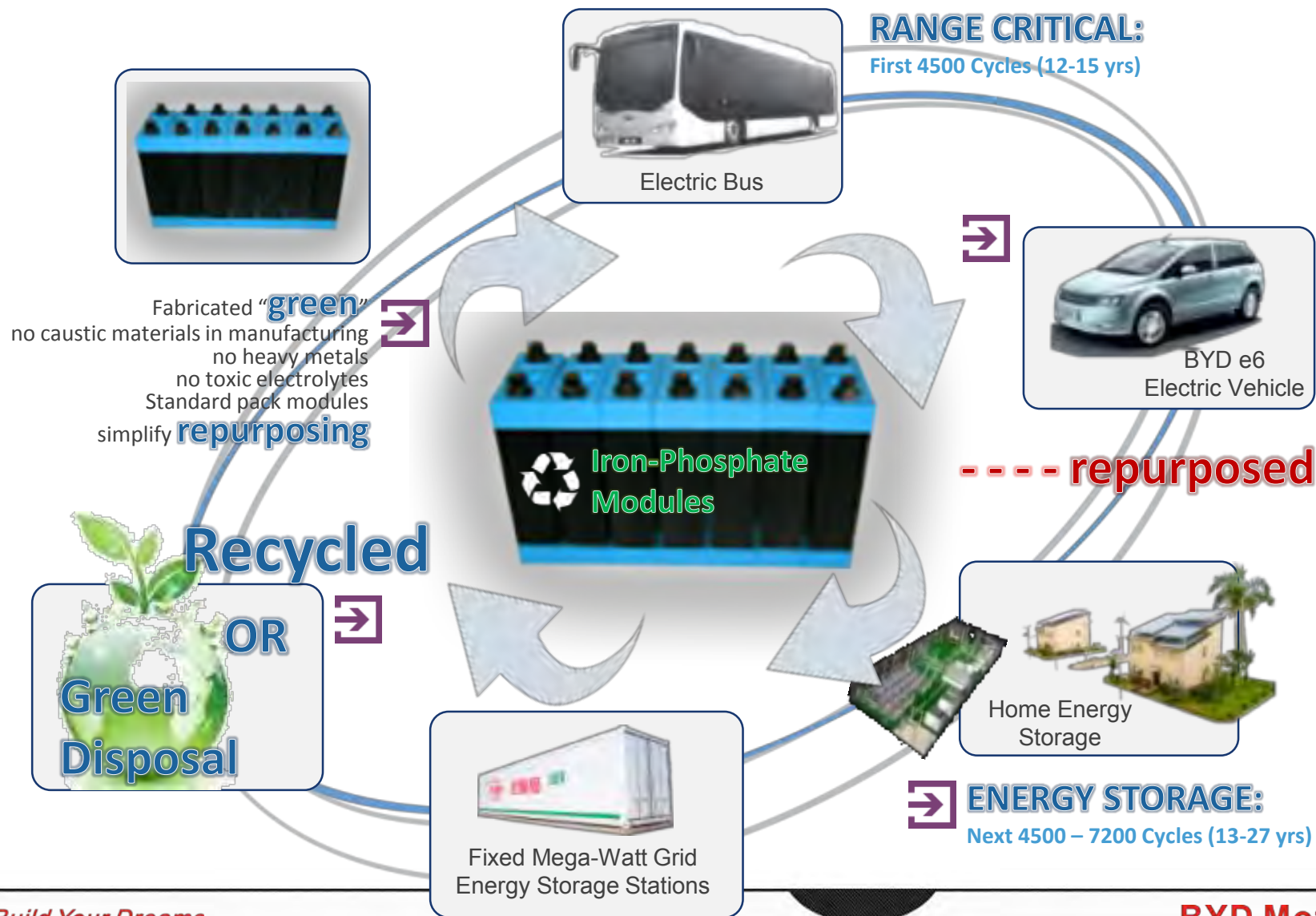
**High Temperature**



**Extrusion**



# Cycle Life of BYD Fe Battery Modules





# BYD Supplier Qualification Query:

- BYD requires suppliers to qualify with local / regional laws and regulations.
- Once qualified, suppliers are evaluated on how well they can supply to BYD's specifications with steady and sustainable supply capabilities, while meeting the quality requirements set forth by BYD.
- BYD requires the supplier to remain accountable for the agreed-upon delivery dates.
- After delivery, BYD also evaluates suppliers' communication and support, including first-time installation and warranty.

## Suppliers BYD is Looking For:

- DBE's & Prime suppliers that work with DBE's.
- Metal fabrication, electrical harness suppliers, fiberglass / lightweight composites manufacturers are specific examples of suppliers BYD is currently seeking.



# BYD Supply Chain Contact Information

- **Jonathan Chavez-** Procurement Manager  
Email: [Jonathan.chavez@byd.com](mailto:Jonathan.chavez@byd.com)  
Mobile: 213-379-3499
- **Jenny Jing-** Procurement & Logistic Manager  
Email: [Jenny.jing@byd.com](mailto:Jenny.jing@byd.com)  
Mobile: 213-822-2716
- **Greg Davis-** DBELO  
Email: [Greg.daviswelch@byd.com](mailto:Greg.daviswelch@byd.com)  
Mobile: 661-400-6247



- Champion Bus is located in Imlay City, Michigan
- Champion was founded in 1953. Champion began producing Commercial buses in 1981. Champion Bus is one of the Largest Custom Manufacturers of Small to Mid Sized Buses. Experienced, Innovative and Specialized in Light-Medium Duty Cutaways, Low Floor and Rear Engine Coach Products. Our Parent Company is Allied Specialty Vehicles.
- State of the Art Facility with over 194,000 square feet of manufacturing space and over 300 dedicated employees, Champion is able to produce over 1,400 mid-size buses per year. Onsite Advanced Downdraft Climate Controlled Paint and Graphics Facility
- Champion has been ISO certified and is currently registered as ISO 9001:2008 and has been ISO certified since 1999
- Champion was the first bus company to be QVM certified by Ford Motor Company
- Fully Staffed Customer Service and On-Site Training & Maintenance Support



# LINE UP OF CHAMPION

*Challenger*



*M2 Freightliner*



*Crusader*



*CTS-FC*



*Defender*





# MARKETS

Transit  
Tour and Charter  
Parking Shuttles  
Hotels  
Churches

# SUPPLIERS

DBE suppliers are the most needed  
Domestic suppliers

# Contact Information

- ▣ Ron Vandeputte Purchasing Manager
- ▣ 810-724-6474
  
- ▣ Larry Mabery DBE Liaison Officer
- ▣ 810-724-6474
  
- ▣ Darin Hill Assistant Engineering Manager
- ▣ 810-724-6474

# GILLIG





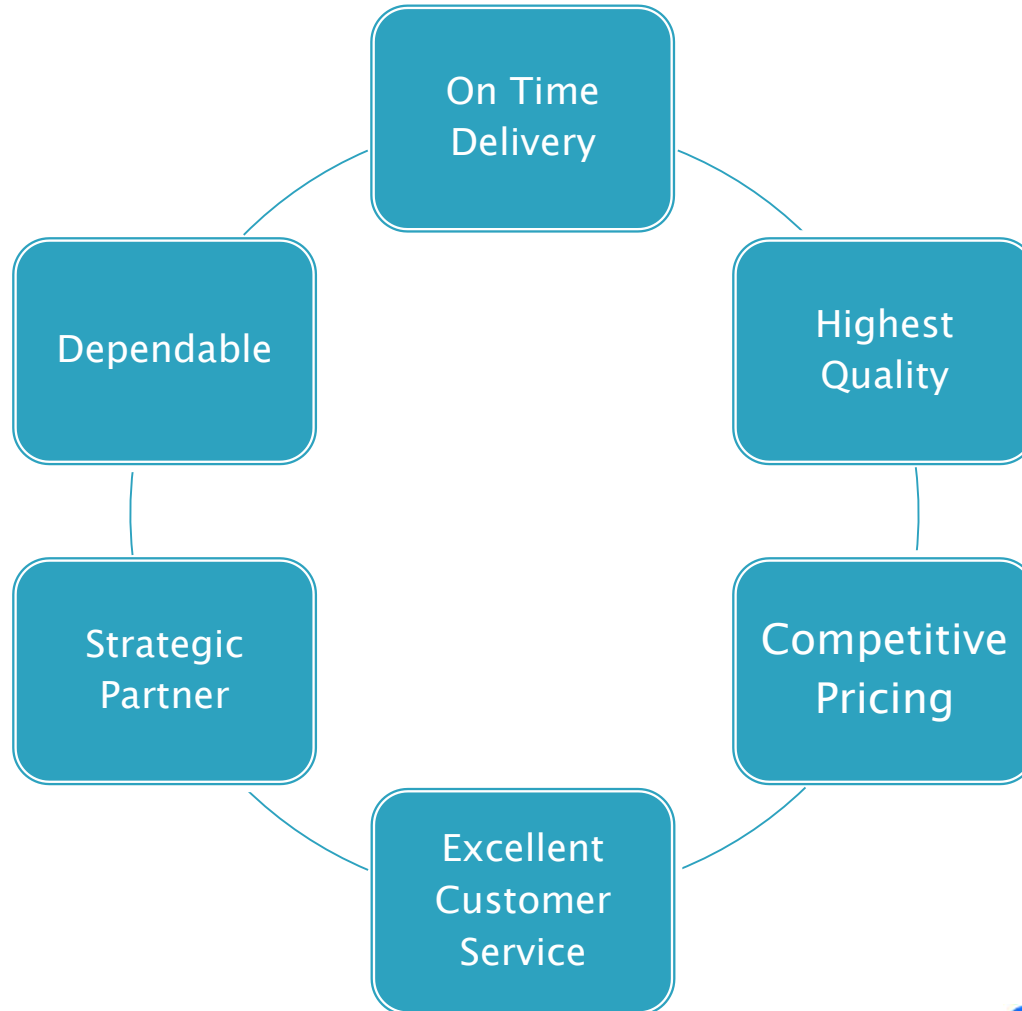
# Company Overview



- ▶ Located in the San Francisco Bay Area since 1890
  - Current location of Hayward, CA since 1968
- ▶ Exclusively build heavy duty transit buses
  - Produce >1,500 buses per year
  - 40ft, 35ft & 29ft lengths
  - Diesel, CNG & Hybrid Electric
- ▶ 100% US presence from initial design through final assembly



# Attributes of a Gillig Supplier



# Suppliers Gillig is searching for:

## **AD FRAMES**

Advertising Frames, Interior And Exterior, Aluminum Extrusion

## **CABLES**

Power Cables, Battery Cables, Antenna Cables, Communication Cables

## **DOOR GLAZING**

Custom Cut Flat Glass, Laminated and Tempered

## **FAN BLADES**

Balanced Resins Fans For Radiator Cooling Applications

## **FIBERGLASS**

Custom Molded Fiberglass Shapes

## **FIRE EXTINGUISHERS**

## **FIRST AID KITS/SAFETY TRIANGLES**

## **FOAM TAPES**

## **GAS SPRINGS**

## **HARNESSES**

Large And Small Custom Harnesses, Wire Leads (Compliant Ipc-a-620)

## **HINGES**

Stainless Steel Continuous Piano Hinges

## **INSULATION**

Thermal And Sound Insulation

## **LOCKS & LATCHES**

Southco Or Equivalent

## **METAL FABRICATORS**

For Many Different Types Of Metal

## **RUBBER PRODUCTS**

Masticated And Extruded

## **SCHEDULE HOLDERS**

Both Plastic And Metal

## **SPEAKERS**

Both Interior And Exterior

## **SUN SHADES**

For Driver's Area, Windshield And Side Windows

## **TRANSITION DUCTS**

## **VISORS**

For Windshield Area

## **WIPER/WASHER KITS**

Also For Windshield Area





## ► Basic Supplier Requirements:

- W-9
- Warranty Agreement
- Aftermarket Supply & Support
- Good Credit Standing (i.e. D&B rating)
- DBE, SBA, Buy America certifications where applicable
- Product Liability Insurance
- Products meet required Engineering specifications





▶ **Gillig LLC: Original Equipment Manufacturer of U.S. Transit Buses**

- Based in Hayward, California
- <http://www.gillig.com/>

▶ **Supply Chain Contact Information:**

- Purchasing Managers: (510) 785-1500
- Address: P.O. Box 3008  
Hayward, CA 94540-3008



**Reliability Driven™**

# Who We Are

- **Leading builder** of the best-selling **MCI J4500** and workhorse **MCI D-Series** coaches in the U.S. and Canada
- 2 primary business segments include **public sector transit agencies** with focus on commuter express service and **private coach operators**.
- **Pre-owned coach** inventory plus warranty, **maintenance and repair** available at **seven MCI Sales and Service locations**
- **Largest aftermarket parts network** through MCI Service Parts, Louisville, KY
- Serving tour, charter, scheduled and curbside service and commuter transit
- More than 1,700 employees in manufacturing, sales and support roles; approximately 600 in the U.S.

## A Rich Heritage in Coach Building Excellence

MCI can trace its heritage back to 1928 when founder Harry Zoltok arrived in Winnipeg on his way west and decided to call the city home

In 1933, the company built its first coach



Harry Zoltok  
founded MCI in  
1933



# Businesses and Locations

**Corporate Headquarters**  
Des Plaines, IL  
Executive Offices/ Sales and Service Center



**MCI LIMITED**  
Winnipeg, Manitoba  
Engineering/Manufacturing  
J4500/D-Series

**MCI**  
Pembina, ND  
Manufacturing/Finishing  
D-Series/ Commuter  
Coach

**MCI Service Parts**  
Louisville, KY  
350,000 square-feet  
Warehouse/Distribution/Call  
center/ Training Institute

**MCI Sales and Service**  
Eight locations, pre-owned  
coach inventory, maintenance  
and repair, parts pick-up



**MCI**

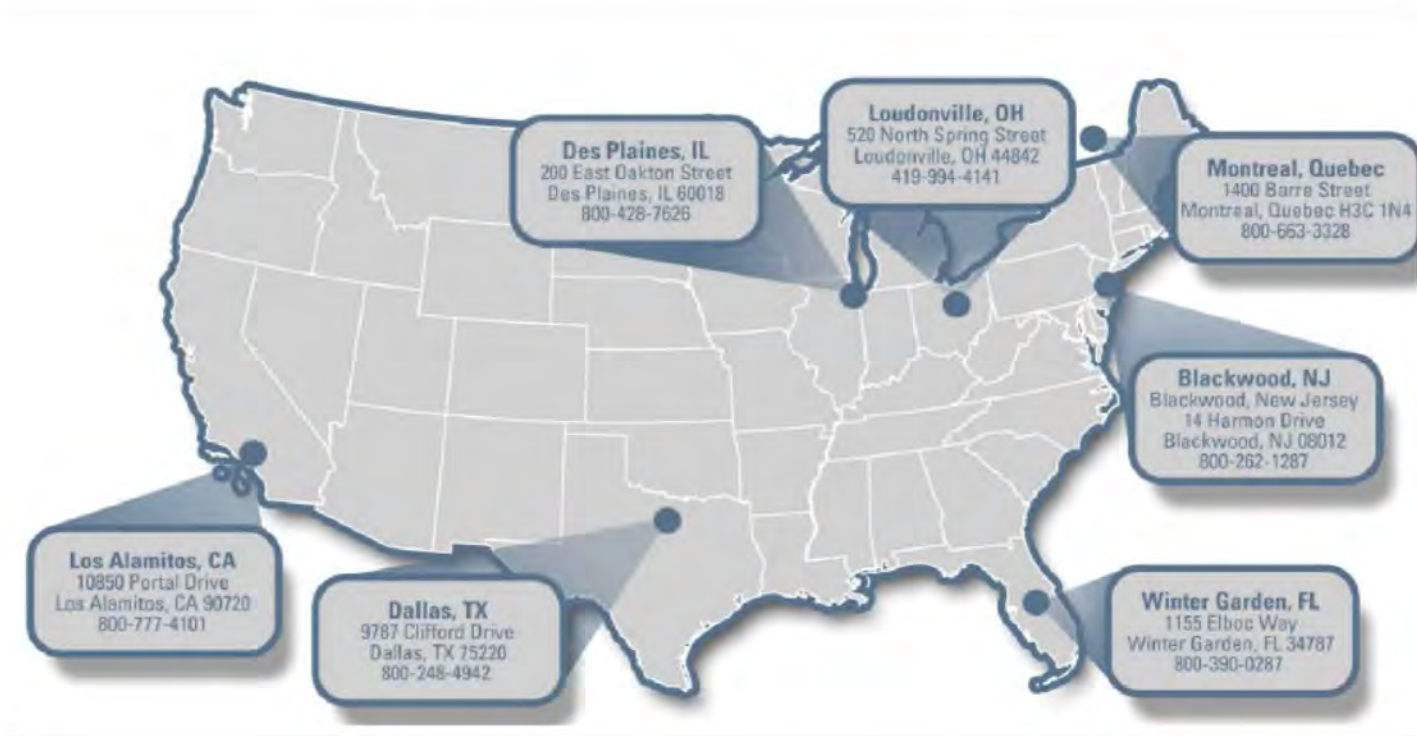


Reliability Driven

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**SETRA**

# MCI Sales and Service Centers



MCI



Reliability Driven™

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SETRA

# MCI Brand Focus



*Our goal is to be **Reliability Driven**, in **product** and **support** and to build on MCI's position as the coach leader in the US and Canada with coaches that deliver the **Lowest Total Cost of Operations**.*



## MCI Models



**J4500 # 1 best seller**



**D-Series**  
**All time best seller**



**Commuter Coach**  
**Clean diesel, Hybrid or CNG**



# MCI® Commuter Coach

## Safety and Style



*Designed for commuter express, built for highway speed*

- Forward-facing seating and a 42% greater seating capacity than a typical transit bus
- Available in clean diesel, hybrid or CNG
- Offers a highly competitive per-seat price, plus low cost of operation and the best mean distance between failure (MDBF) rate over all other types of bus models

MCI



Reliability Driven™

SETRA

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# D4500 CNG Commuter Coach



Reliability Driven™

MCI

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SETRA

# MCI® D4505/D4005

## The Workhorse



**More units on the road in the U.S. and Canada  
than any other model — ever**

- Designed for the highway
- Proven line-haul and private/public partnerships performer
- Buy-America compliant
- ACTIA multiplexing system for easier maintenance
- Optional features from an auxiliary heater for more efficient cold-weather startups to power outlets and Wi-Fi

MCI



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SETRA

# MCI® J4500

## Refined Design

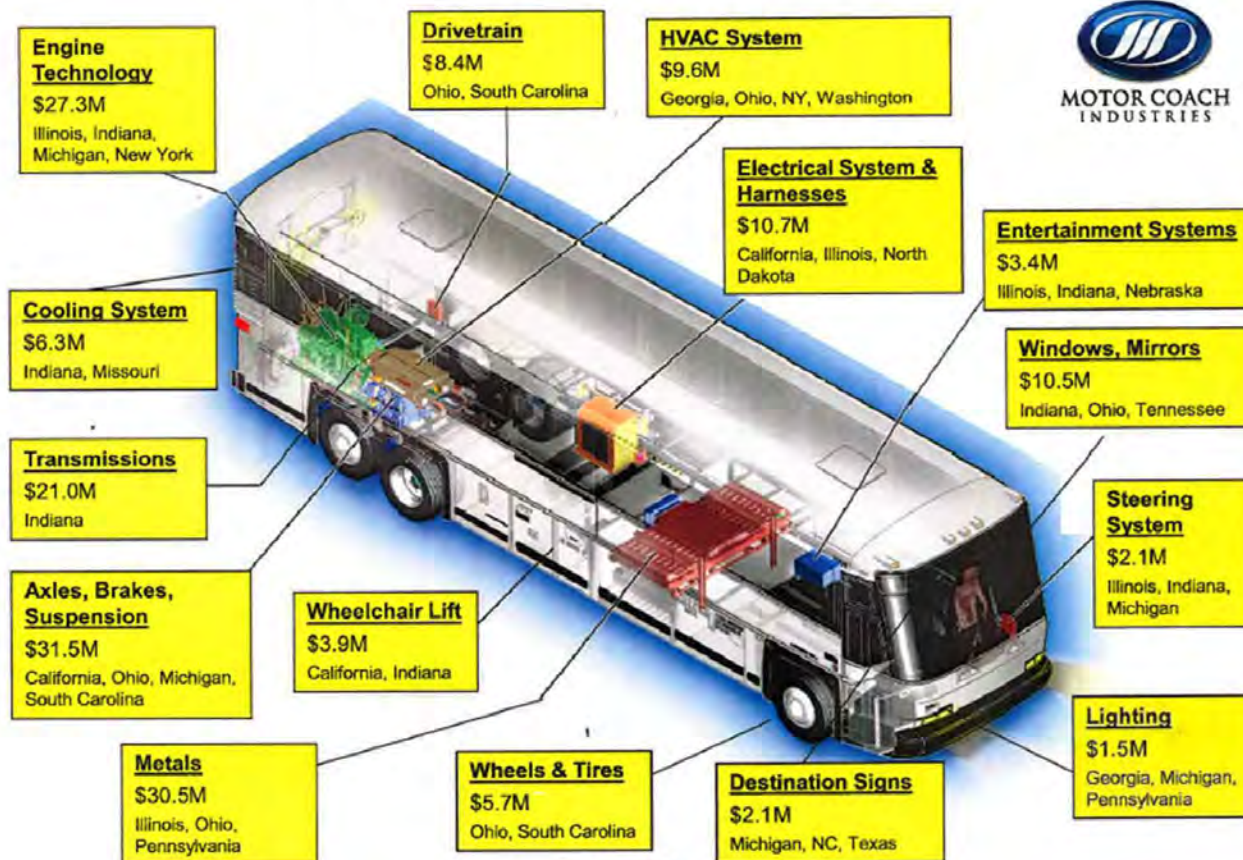


### Best-selling model for 10 years

- Premium workhorse reliability
- Modern, distinctive styling with redesign in 2013 for elevated presence, LED headlamps, smooth rear cap
- Spiral stairwell, optional wood-grain flooring, leather seating, power outlets and Wi-Fi satisfy ridership demands
- Flexibility for tour, charter, line haul and curbside service



# MCI Areas of US Spend



# Areas of Interest

- Current Commodities of interest to MCI
  - Air System – valves, controls
  - Rubber - foam/rubber seals
  - Metal Fabrication – Weldments, Stainless Steel
  - Plastics/Composites – Injection and Blow Mold
  - Machined parts – CNC metal machining capability
  - Tube Bending
  - Entertainment Systems – 10-15" Monitors, radio, CD/DVD/BlueRay, Microphones, Speakers & accessories
  - DC/AC Inverters – 1500-4000w

# Contact Information

## MOTOR COACH INDUSTRIES SUPPLY CHAIN CONTACTS

- Powertrain, Electrical, HVAC, ADA  
Terry Loewen, Sourcing Manager  
[terry.loewen@mcicoach.com](mailto:terry.loewen@mcicoach.com)  
PH(204) 287-4457
- Metal Fabrication, Composites, Seats, Glass & MRO  
Shannon Davidson, Sourcing Manager  
DBE Liaison Officer  
[shannon.davidson@mcicoach.com](mailto:shannon.davidson@mcicoach.com)  
PH(204) 287-4356



# New Flyer Industries



A better product.  
A better **workplace**.  
A better **world**.

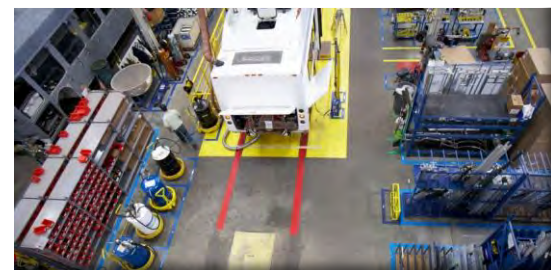






## #1 Heavy-Duty Transit Bus manufacturer in North America

- Founded in 1930 – Public Co since 2005
- Largest installed base of transit buses in North America – 25,000
- Heavy-duty transit buses in 30', 35', 40' and 60' articulating length.
- A MiDi® shuttle/transit bus in 30' and 35' for private and public operators.
- Manufacture approx 2,500 Equivalent Units (EUs) per year. On average, customers are approx 80% in US, 20% in Canada.
- 4 Bus Manufacturing Facilities
- Industry-leading Service and Support network including: regional product support managers, 2 regional service centers and 5 regional Parts Distribution centers
- ISO 9001, 14001, and 18001 certified
- Our Mission : ***To Deliver the Best Bus Value and Support for Life***



**Market Leader in Volume, Technology, Innovation and Support**

# Long History of Broad Product Offering



Low Floor Restyled (retired 2013)



Electric Trolley



Hydrogen Fuel Cell



Xcelior®  
Diesel Hybrid



Xcelior®  
Compressed Natural Gas



Xcelior® 60' Articulated  
Diesel-Electric

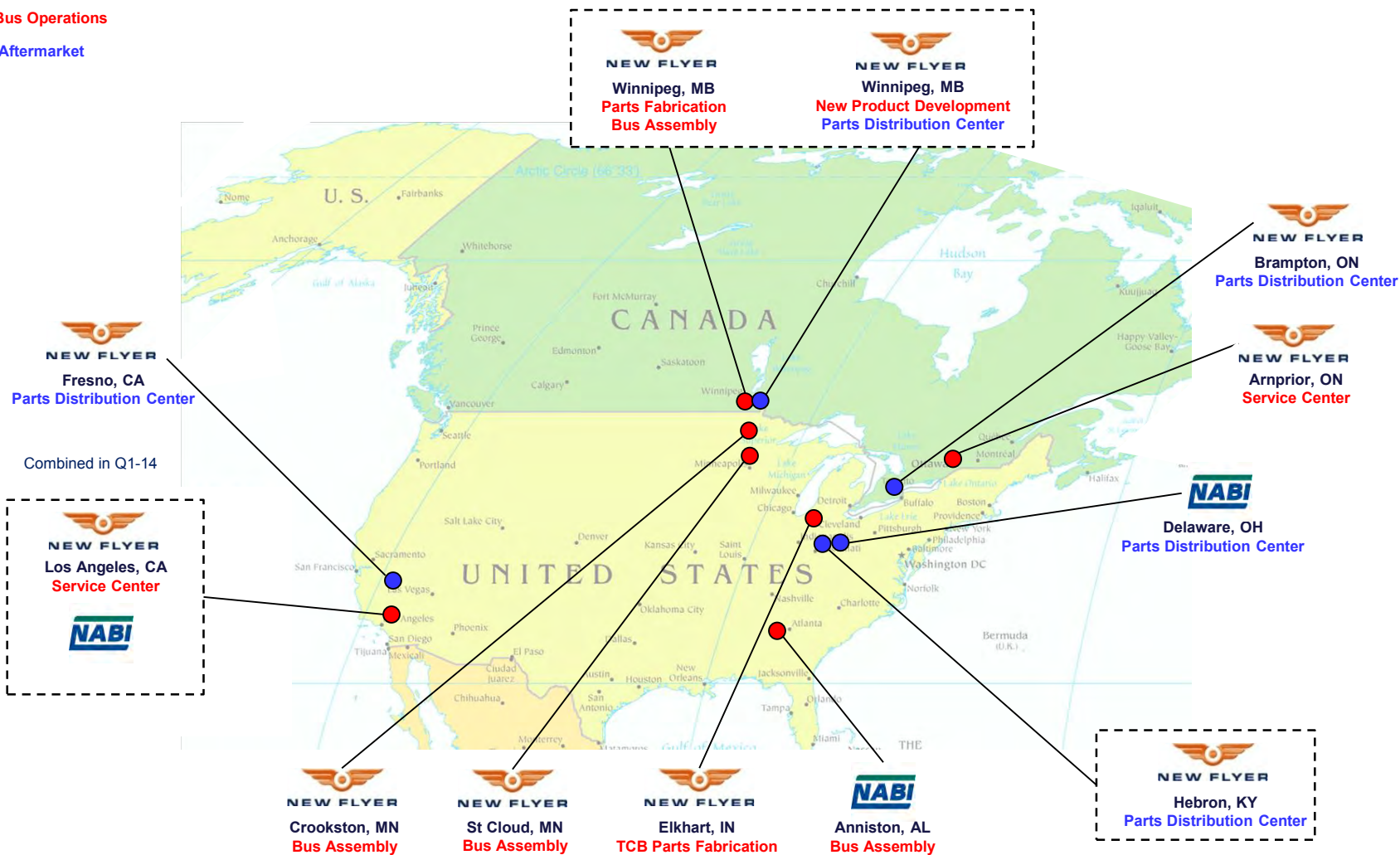


MiDi®



NABI LFW

- Bus Operations
- Aftermarket





## Winnipeg, Manitoba, Canada

- North American Corporate Headquarters
- Centre for Sales, NPD, Engineering, Purchasing, Customer Service and most Administration functions
- 330,000 sq ft, 1380 employees
- Two production lines building bus shells
- Fabrication and subassembly supplying finishing plants





## St. Cloud, MN

- Full production and finishing facility for both Xcelsior HD buses as well as a separate production line for MiDi.
- Local engineering and supply support groups
- 300,000 sq ft, 670 employees



## Crookston, MN

- Final assembly facility
  - Finishing plant for Winnipeg bus shells
  - 2 assembly lines
- 85,000 sq ft, 470 employees
- On-site natural gas fueling station for alternative-fueled buses



## Anniston, AL

- Bumper to Bumper final assembly facility for the LFW and BRT models
  - Will migrate to 100% Xcelsior in H2, 2015
- 450,000 sq ft, 700 employees



# Our Core Operating Principles...

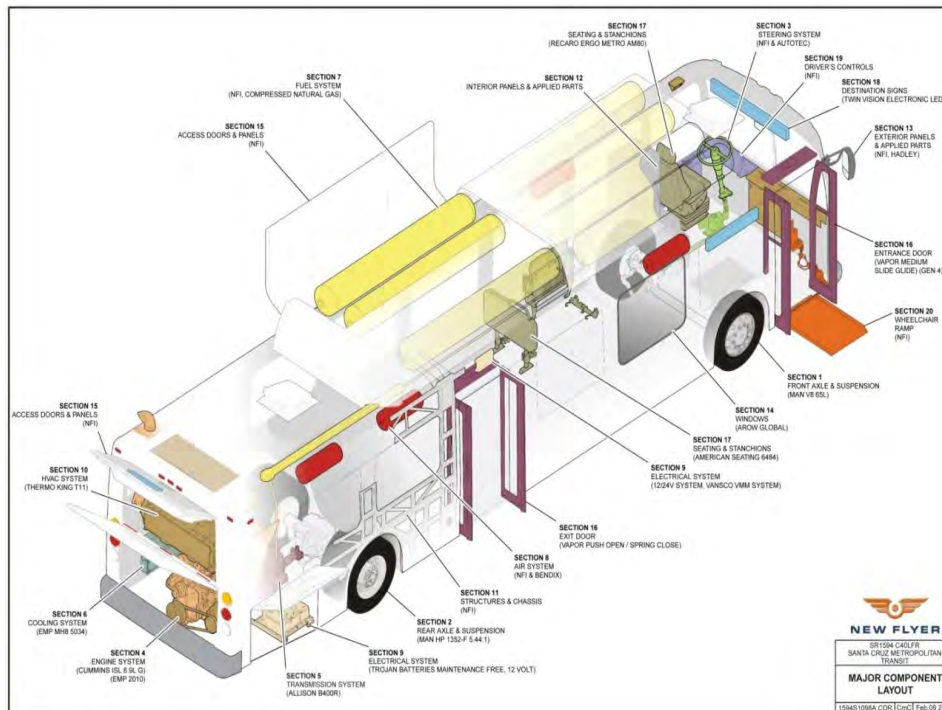
<b>Great Place to Work</b> <ul style="list-style-type: none"><li>• Employer of Choice</li><li>• Safe, Clean, Controlled Workplace</li><li>• Trained Employees</li><li>• Consistent/Strong Communications</li><li>• Team Work</li></ul>	<b>Operational Excellence</b> <ul style="list-style-type: none"><li>• World Class Facilities</li><li>• Product Technology and Systems Integration Excellence</li><li>• First Time Quality (Products and Services)</li><li>• Learning Organization with Continuous Improvement Culture</li><li>• Efficient &amp; Effective Use of Resources</li></ul>
<b>Customer Experience</b> <ul style="list-style-type: none"><li>• Focus on Customer Satisfaction</li><li>• Become the Supplier of Choice</li><li>• Customer Service and Product Support Excellence throughout Life Cycle of Vehicles</li><li>• High Priority Customer Response</li></ul>	<b>Supplier Partnerships</b> <ul style="list-style-type: none"><li>• Select best in class suppliers</li><li>• Be the Partner of Choice for Key Suppliers</li><li>• <b>Collaboration with Suppliers</b> to Optimize our Products and provide Best Value for our Customers</li><li>• Suppliers integrated into our Business (B2B, JIT, On-Site)</li></ul>



# Supply Chain - a Key Value Driver

- > 5,000 components per bus
- 80% of product costs

- Most critical systems that drive customer value and satisfaction are purchased components



- Supplier **delivery** needed for execution to schedule
- Supplier **quality** needed for customer satisfaction
- Supplier **support** needed for the life of the vehicle

*Seek to partner with best in class suppliers and drive continuous improvement*

# Supply Chain Contacts

---

Website : [newflyer.com](http://newflyer.com)

Raul Ramirez  
Director of Strategic Sourcing  
DBE and MWBE Liaison Officer  
(204) 224-6435  
[Raul\\_Ramirez@newflyer.com](mailto:Raul_Ramirez@newflyer.com)

David White  
EVP Supply Management  
(204) 224-6376  
[David\\_White@newflyer.com](mailto:David_White@newflyer.com)

# NIST MEP Buy America

APTA Show  
October 15, 2014





# Nova Bus | Driven by your city

Partnership & Sustainable Development







# Our values are the cornerstones of our work

Customer culture

Quality

Respect for the individual & teamwork

Safety

Environmental care





# We are part of Volvo Group | A strong family

The Volvo Group is one of the world's leading manufacturers of trucks, buses, construction equipment, marine and industrial engines, with

- 115,000 employees
- Production facilities in 18 countries
- Products sold in 190 markets

As part of the Volvo Group, we have access to the group's financial strength, product capabilities, quality manufacturing technology and global Bus Rapid Transit (BRT) expertise.





# Our Products

LFS



Nova LFS

SMART TECHNOLOGY  
LFS  
NATURAL GAS



LFS ARTIC



LFX



LFX

LFS ARTIC *HEV*



LFS *HEV*



LFS HEV

LFX



LFS *e*



LFS e

The structural integrity of our single platform guarantees its durability and reliability vs our competitors

**NOVA BUS**  
Driven by your city



# The Purchasing Mission

*” Select and develop high performing suppliers in terms of QDCF in order to provide competitive bus products to each market”*





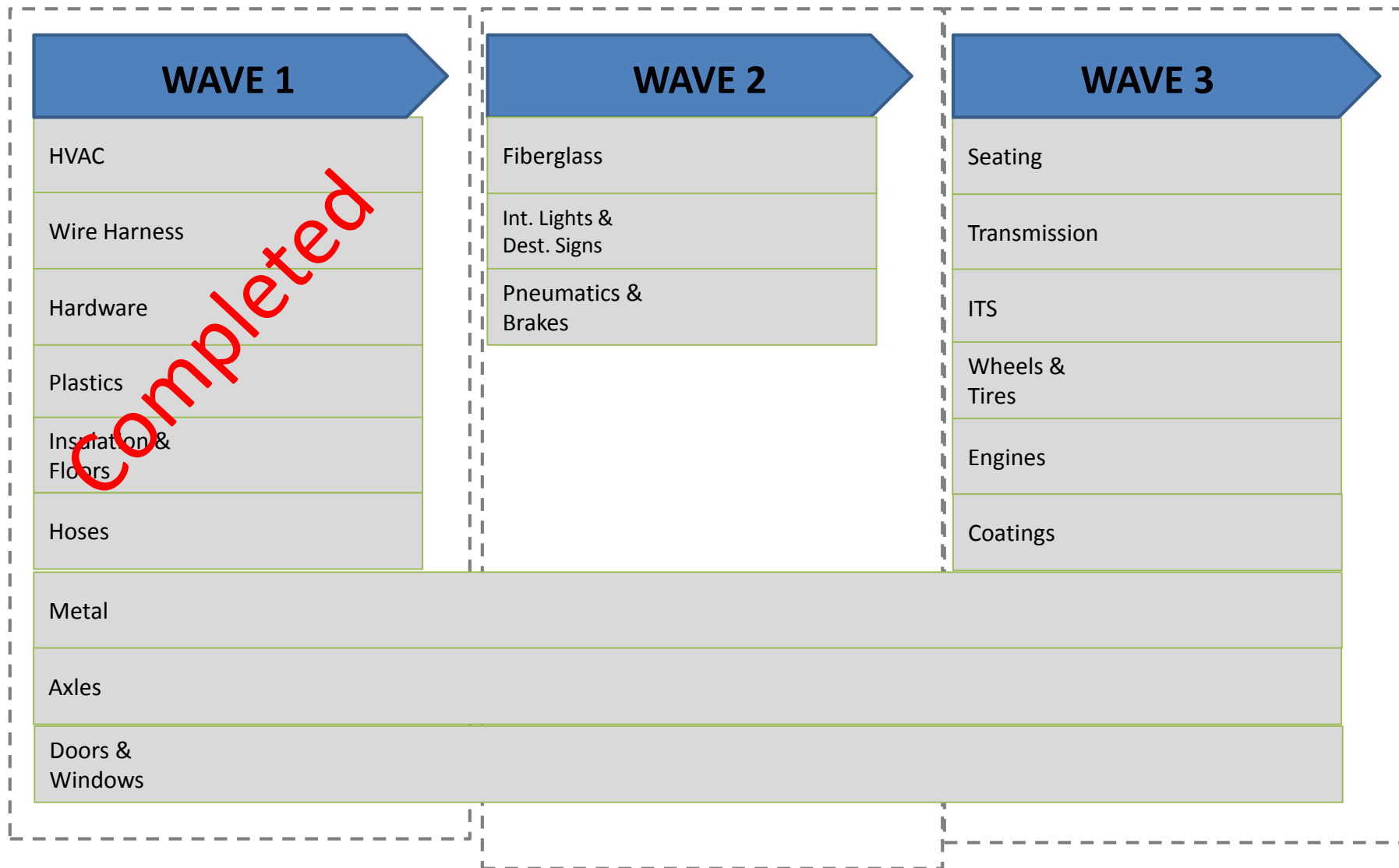


# The Purchasing Strategy

- Deliver market needs by strong cross-functional interaction
- Sell our business to high-performing suppliers
- Early and long-term involvement of selected suppliers.
- Develop high-performing people with focus on commitment, Execution & Delivery.
- Get competitive advantages to the group



# Opportunities



# What does this mean for our suppliers?

- A closer relation to the Volvo Bus Corporation:
  - Clearer interfaces
  - Dedicated people
- Access to larger business:
  - Better access to the total Volvo Bus business
  - One global sourcing organization





# What does this mean for our suppliers?

- A specialized purchasing organization to match the speed and agility of our customers and suppliers





# Global industrial footprint





# Volvo Group Supplier Portal

- Visit the Volvo Group Supplier Portal for more information

<http://www.volvogroup.com/suppliers/global/en-gb/pages/home.aspx>

**NOVaBUS**

Driven by your city

# Buy America Transit Supply Chain Connectivity Forum





- **Founder:**

Dale Hill

720-635-6681

[dhill@Proterra.com](mailto:dhill@Proterra.com)

- **Director Supply Chain \***

Carl Franz

864-214-7079

[cfranz@Proterra.com](mailto:cfranz@Proterra.com)

\* Primary Procurement Contact

PROTERRA:



# CATALYST FOR A NEW URBAN WORLD



## PREMIUM TECHNOLOGY PROVIDER

Purpose-Built Electric Vehicles

Zero Tailpipe Emissions

Lightweight Composite Body



**BRINGING BEST OF EV INNOVATION  
TO THE GLOBAL TRANSIT MARKET**

OUR CUSTOMERS **LOVE** THEIR BUSES



Foothill Transit



**11** U.S.  
CITIES

**50** BUSES IN  
OPERATION

**600K** Fleet MILES  
DRIVEN

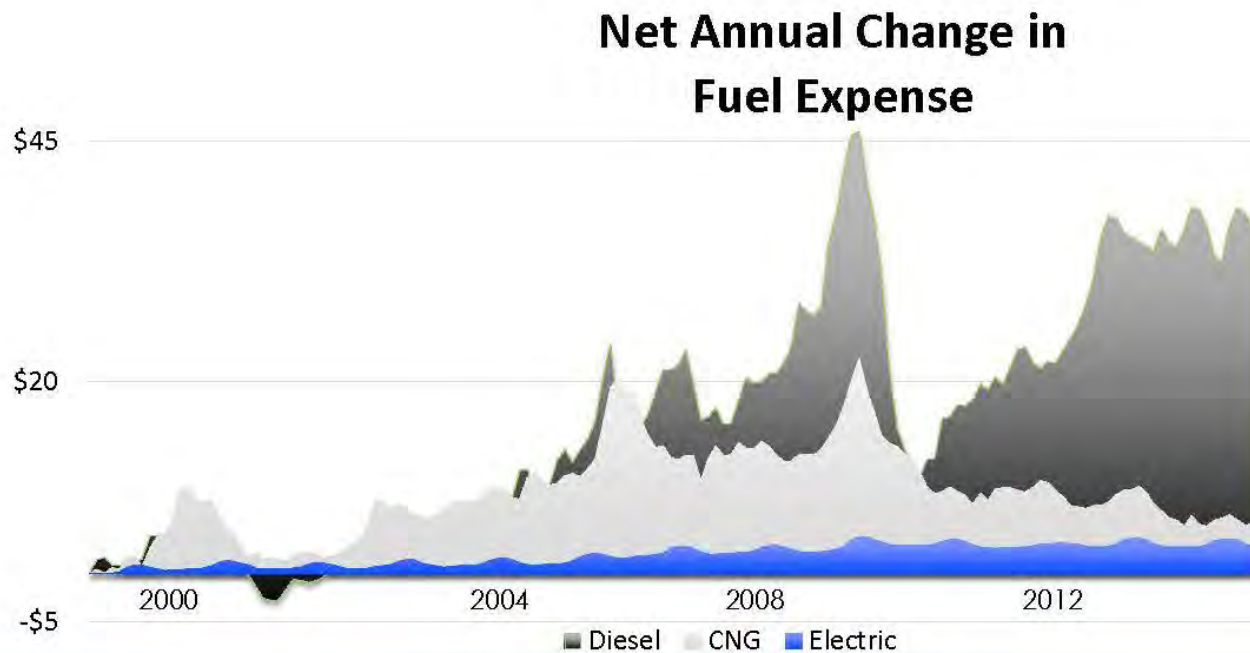
For a **Green Technology** to be Sustainable it must be **Financially Attainable**





# Economic Case for Proterra Next Generation 40' Bus - Fuel Volatility / Economy

**Electric rates are less volatile than diesel or CNG**



***More predictable Total Cost of Ownership (TCO)***

# New Technology...Simplicity...Drive Dramatically Lower Maintenance Costs

## Diesel



Engine



Engine Oil



Engine Components



Fuel Systems



Cooling Systems



Exhaust Systems



Belts



Alternator



Retarder



Aftertreatment

## Maintenance Cost

- \$135,000 total savings
- 30% less parts & labor
- 75% fewer brake repairs
- 60+ fewer components
- No engine oil changes
- No liquid fuels

## Electric



Traction Motor



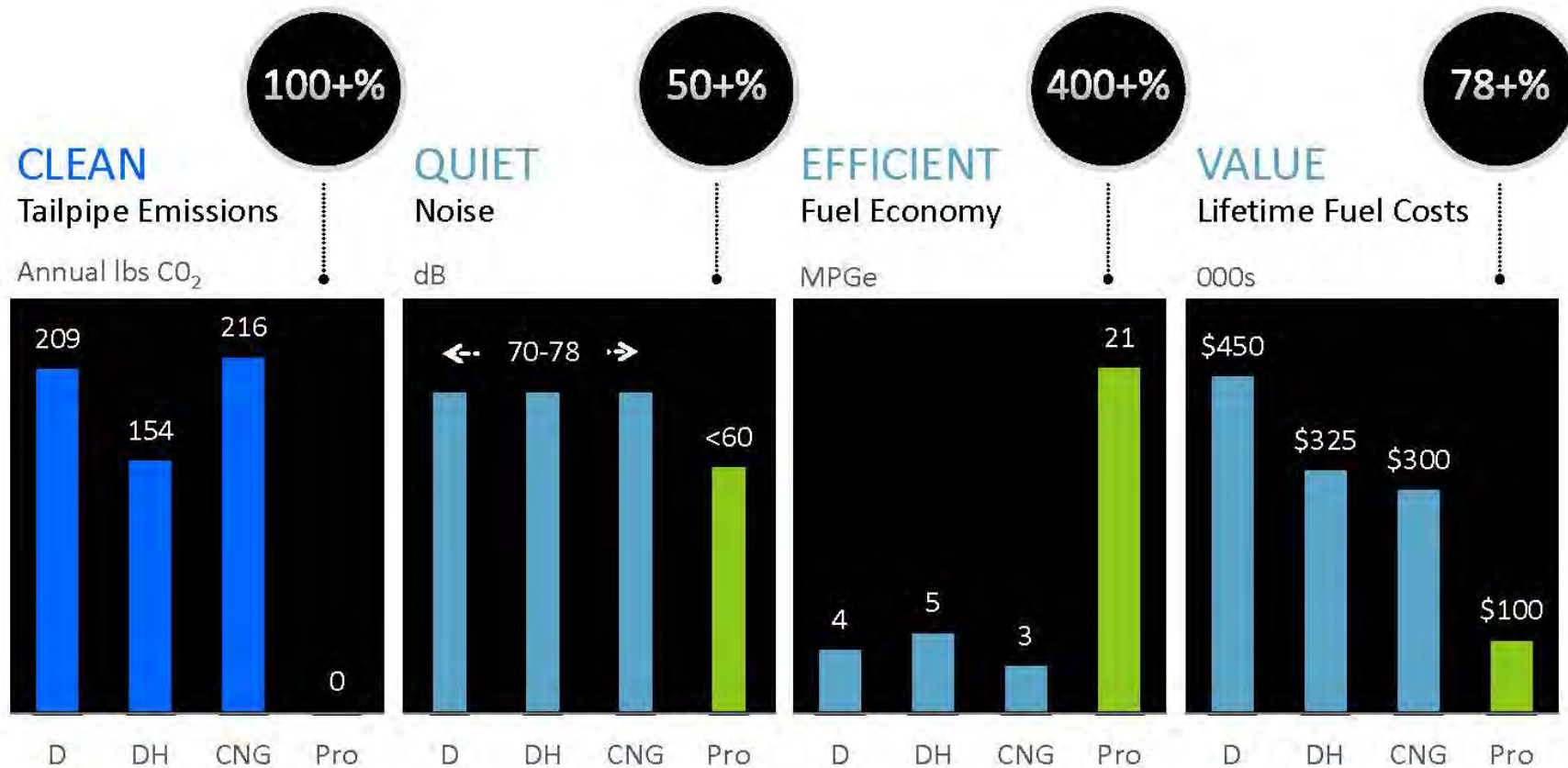
Gearbox



Battery

*\$400 Million of support inventory unlocked across US Transit Industry*

ON EVERY METRIC, WE OUTPERFORM





# Purposely Designed For Transit



## Design Concept

### *What Does a Bus Do?*

- ❖ Repeats its Route every  $\pm 1$  hour
- ❖ Returns to a Common Point
- ❖ Has a 5 minute Layover

**SO**

If we give you a bus in which we  
can restore 1 hour of energy  
automatically in 5 minutes during  
layover

**THEN**

That Bus will Run 24 hours/day  
without returning to the bus barn



Eliminates all liquid fuel and tail pipe emissions



## Features and Benefits

- < 10 Minute Total Recharge Time
  - Due to Low Resistance (nLTO chemistry) & Cooling System
- Inherently Safe Chemistry
  - Lack of Carbon prevents thermal runaway
- Initial Testing: >20k Total Full Cycles
  - Full charge-discharge tests (0% - 100%)
  - Simulation indicates >19.2k cycles possible on actual routes (70% DoD, 1<sup>st</sup> gen)
- Ability to Accept More Regenerative Braking
  - Full Power Regenerative Braking = Less Maintenance, Better Fuel Economy
  - Operating Range From 10% to 95% State of Charge
    - Due to advanced Lithium Titanate chemistry!
    - Differentiator in the market
- Wide ESS Temperature Range: -40 to 110 F
- Safest Lithium Chemistry Available (Industry Recognized)

# On-Route Charging



## Automated Charging

Charger Equipment:  
Can be indoor or outdoor



On-Route  
Charge  
Connection



Bus and Charger enter  
Identification & Communication Stage



Speed Limiting & Positioning  
(operator steers)



Charger Coupling & Charging





# Charging & Battery



## PRODUCT SUMMARY



V1

V2

AVAILABLE in 2014



LENGTH	35' (11m)	41' (12m)
ADDRESSABLE MARKET	15%	70%
WEIGHT	28,400 lbs.	27,200 lbs. <b>BEST IN CLASS</b>
CAPACITY Total	60 Passengers	77 Passengers <b>BEST IN CLASS</b>
	35 Passengers	40 Passengers
FUEL ECONOMY	20 MPGe	21+ MPGe <b>BEST IN CLASS</b>
ASSEMBLY HOURS	3,000	<500 <b>BEST IN CLASS</b>
PRICE	\$1.2m - \$950k	\$825k



## SUPPORTED BY THE BEST INVESTORS AND PARTNERS



Financial



Transportation



Financial



Electric Utilities



Electric Utilities



Financial



Financial



Financial



Financial

# OUR VISION



CLEAN, QUIET TRANSPORTATION FOR ALL

## Next Generation V-2









# Questions





# Our Brands

Ingersoll Rand is composed of a diverse array of business and market-leading brands serving customers in global commercial, industrial and residential markets.



- » Industry-leading utility, golf, transportation and rough-terrain vehicles



- » Air compressors, air treatment equipment and compressed air systems.
- » Tools, ARO pumps, material-handling equipment and air motors.
- » Parts, accessories and comprehensive services.



- » Transport temperature control units for trucks, trailers, small trucks and seagoing containers.
- » Heating, ventilation and air-conditioning systems for buses and passenger railcars.
- » Auxiliary idle reduction and temperature-management systems for sleeper compartments in tractor cabs.



- » Broad range of energy-efficient residential and commercial premium heating, ventilation and air conditioning (HVAC) systems, solutions, services and parts.
- » Global reputation for industry-leading professionals who deliver quality, reliability and innovation.
- » Accredited Energy Services Company (ESCO).

# Thermo King Bus / Shuttle Business



# *How it Started....*

Transport refrigeration was invented by the founders of Thermo King in Minneapolis in 1938. The first air conditioned buses came in 1956.



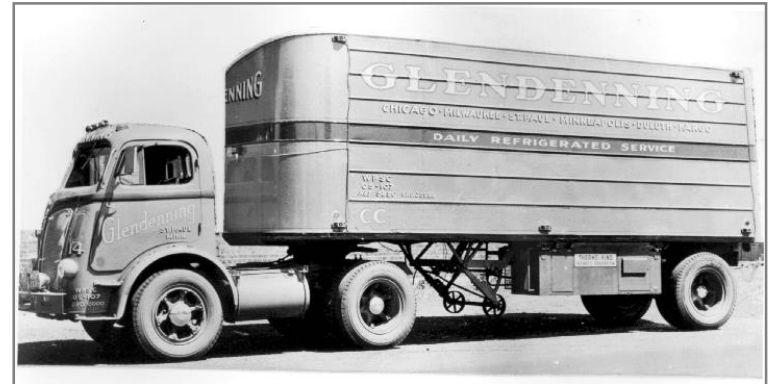
# *The Big Challenge....*

How to design a temperature control system that could perform reliably on a vehicle that moves.

- ← Ended the days of transportation of food on dry ice and salt



Ice Harvesting



Model A

# ***What? - Passenger Comfort***

**H** • Heating

**V** • Ventilating

**A** • Air

**C** • Conditioning



# ***How? - Climate Control***



# Over 50 Years of Experience

- 1950s
  - First with air conditioned mass transit fleet in St. Louis





# *Over 50 Years of Experience*

- 1980s
  - Thermo King introduces first one-piece rear mount unit for transit establishing an industry standard that exists today-T-Series



# *Over 50 Years of Experience*

- 1990s
  - TK was first with low-profile roof-top HVAC units
  - R-407C refrigerant used in systems
  - Thermo King introduces
    - AC Brushless Motors
    - light rail HVAC systems
    - advanced microprocessor technology
    - screw compressors
    - electric HVAC for hybrid buses



# *Over 50 Years of Experience*

- 2000s –
- TK introduces high performance clutch
  - Lowers maintenance costs, high reliability, more robust for heavy duty applications, low failure rates
- TK introduces Alternator powered electric HVAC
- TK continues major investments in quality and reliability
- All TK plants earn ISO certification

# Major Market Segments

Transit/City Bus



School Bus



Shuttle/Paratransit



Commuter

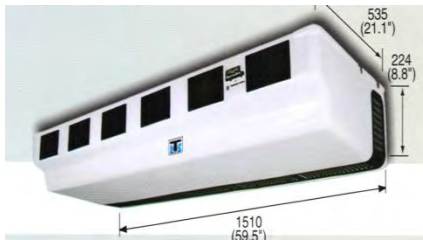
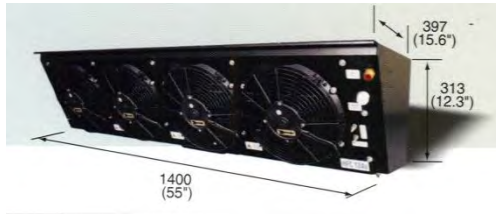


Coach





# *Full Range of Products*





# *Supply*

Thank you for your interest in becoming a supplier to Ingersoll Rand.

# ***What We Expect***

We expect our suppliers to:

- Abide by our Code of Conduct
- Provide high quality goods or services
- Deliver goods or services at a competitive price
- Stand behind the goods or services offered



# *Supplier Diversity*

- Our procurement teams have direct responsibility for positively positioning qualified diverse-owned businesses in their portfolio of suppliers.

# Summary

- Retained 3<sup>rd</sup> party auditors.
- Gaps identified in US sourced components.
- IR Global Supply Chain actively sourcing US supply sources.

For additional information- let's connect.

Doug Kimble -PPM

Thermo King Bus Shuttle – Minneapolis, MN



# Agenda

8:00am	Registration/Continental Breakfast
8:30am	Welcome Remarks and Forum Introduction
9:00am	U.S. DOT Keynote and Buy America Overview
9:30am	Q&A
9:45am	Break
10:00am	OEM Panel: Supply Chain Opportunities and Needs
11:15am	Q&A
11:30am	Supplier Panel: The View from Prospective Transit Suppliers
12:00pm	Q&A
12:15pm	LUNCH
1:00pm	MEP Assistance Opportunities and Available Resources
1:30pm	Blue Green Alliance Rail Industry Study and Resources
1:45pm	Open Discussion: Transit Supply Issues and Opportunities
2:05pm	Intro to One-on-One Meetings among OEMs and Suppliers
2:15pm	One-on-One Meetings among OEMs and Suppliers
2:15pm	Networking Reception Concurrent with One-on-One Meetings
5:00pm	CONCLUDE





# Supplier Panel - The View from Prospective Transit Suppliers





[www.TexasInjectionMolding.com](http://www.TexasInjectionMolding.com)

# ***IMPACT* recovery** **S Y S T E M S™**

[www.ImpactRecovery.com](http://www.ImpactRecovery.com)



Roadway



Pedestrian



Low Profile Curbing and Delineation



Railroad Crossing



Bike Lane



Light Rail Pedestrian Management

**IMPACT** recovery  
SYSTEMS™

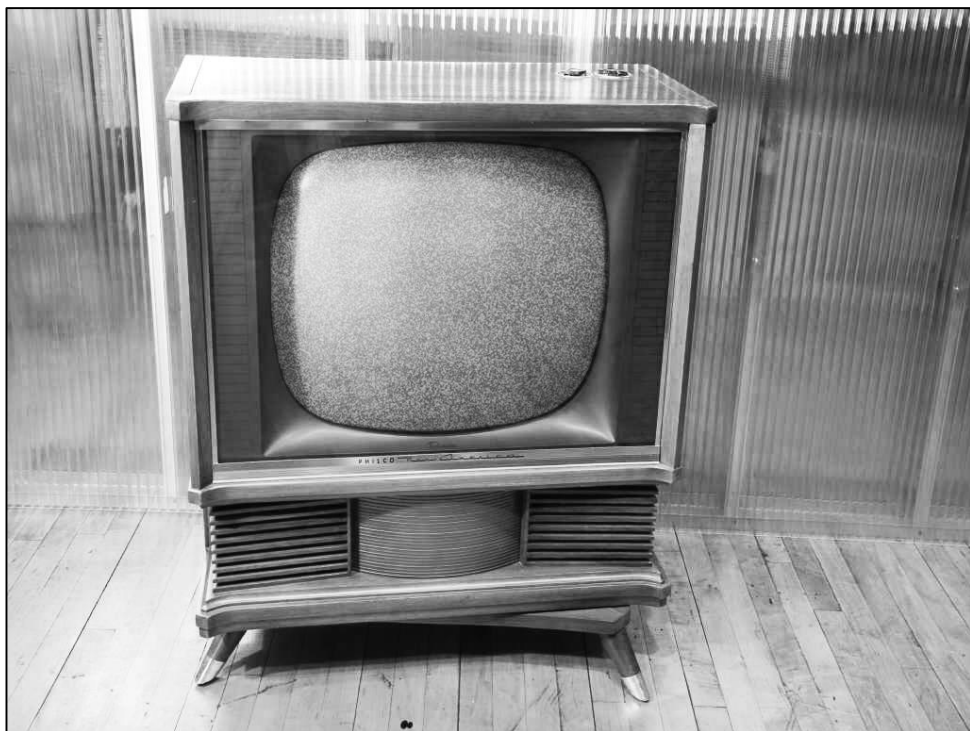


- Why the transit industry?
- What are the barriers to entry?
- How can you help us?



**Laura Richardson**

President, CEO









# Mobile Stroke Unit



Fewer than **0.1%** of stroke patients in the U.S. receive effective treatment within 1 hour of symptom onset.

# Mobile Stroke Unit



During that hour,  
more than **120 million**  
brain cells may die.

# Mobile Clinic



Small on the  
Outside...



# Mobile Clinic



Big on the Inside.











See more at

**[www.frazerbilt.com](http://www.frazerbilt.com)**



You



**(888) 372-9371**



## **Electronic Assembly Services, Inc.**

Evelyn Fletcher, President

<http://www.eashouston.biz/>





# Agenda

8:00am	Registration/Continental Breakfast
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5:00pm	CONCLUDE





## LUNCH

- Boxed lunches are provided in the back of the room
- There are eating and lounge areas located throughout the convention center
- **We plan to reconvene promptly at 1:00pm**



**DON'T FORGET TO STOP BY THE  
REGISTRATION DESK TO SIGN UP FOR  
YOUR ONE-ON-ONE MEETINGS**

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# MEP Assistance Opportunities and Available Resources



## **David Stieren**

Technical Manager, Program Development

NIST MEP

[david.stieren@nist.gov](mailto:david.stieren@nist.gov)

301-975-3197

## **Samm Bowman**

Business Specialist

NIST MEP

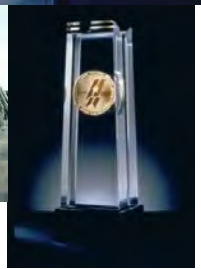
[samm.bowman@nist.gov](mailto:samm.bowman@nist.gov)

301-975-5978



# The National Institute of Standards and Technology (NIST)

Mission: To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life



## NIST Programs

- Measurement Laboratories, **Manufacturing Extension Partnership (MEP) Program**, Baldrige Performance Excellence Program

## NIST Assets, Products, Services

- 3000 employees, 2700 associates and facilities users, >1300 field staff in MEP partner organizations
- Unique User Facilities: Center for Neutron Research, Center for Nanoscale Science and Technology
- 100 different types of Standard Reference Data, 1,300 Standard Reference Materials
- 18,000 calibration tests, 2,000 publications, 800 accreditations per year







# MEP MISSION

“

To enhance the productivity and technological performance of U.S. Manufacturing.

”

## ROLE

MEP's state and regional centers facilitate and accelerate the transfer of manufacturing technology in partnership with industry, universities and educational institutions, state governments, and NIST and other federal and research laboratories and agencies.



# MEP Program in Short



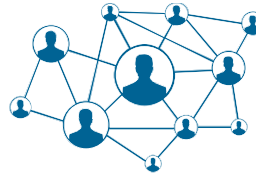
## Program Started in 1988

Created by Omnibus Trade and Competitiveness Act; at least one center in all 50 states by 1996



## MEP System Budget

\$128 Million Federal Budget;  
Cost Share Requirements for Centers



## National Network

System of Centers providing hands-on, direct assistance to Manufacturers in every U.S. State, plus Puerto Rico.



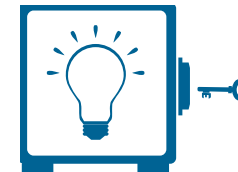
## Global Competitiveness

Program focused on helping U.S. manufacturers grow and compete in the global economy



## Partnership Model

Federal, State  
and Industry – 60 MEP  
Centers, 500 field locations,  
1400 non-federal staff, 2800  
3<sup>rd</sup> party service providers



## Evolving Role

Program continues to evolve in order to support manufacturers during changing economic situations.



# What MEP Does



- ✓ Work with small and medium size manufacturers to help them create and retain jobs, increase profits and save time and money
- ✓ Focus on meeting manufacturer's short term needs, but in context of overall company strategy.
- ✓ Reach over **30,000 manufacturing firms** and complete over **10,000 projects** per year.
- ✓ Provides companies with a consistent set of services including:



Supply  
Chain  
Development



Technology  
Acceleration



Workforce  
Development



Quality Systems  
and Lean  
Process



Innovation  
and Growth

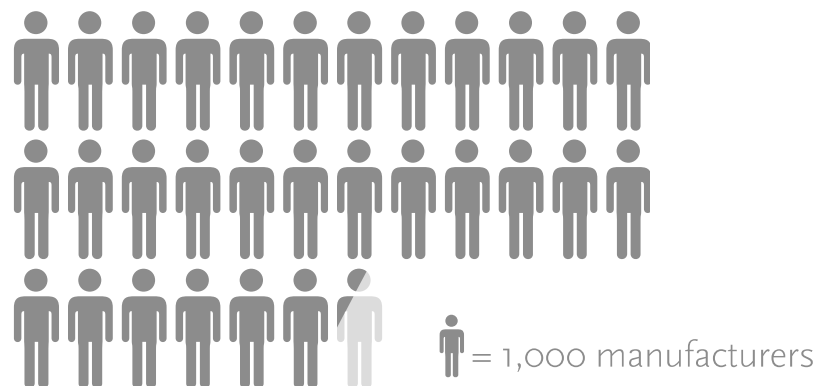


Sustainability



# Client Impacts

30,131  
Manufacturers  
served in FY2013



JOBS SAVED

43,914



JOBS CREATED

18,789



RETAINED SALES

\$6.2  
Billion



NEW SALES

\$2.2  
Billion



COST SAVINGS

\$1.2  
Billion



CLIENT  
INVESTMENTS

\$2.5  
Billion





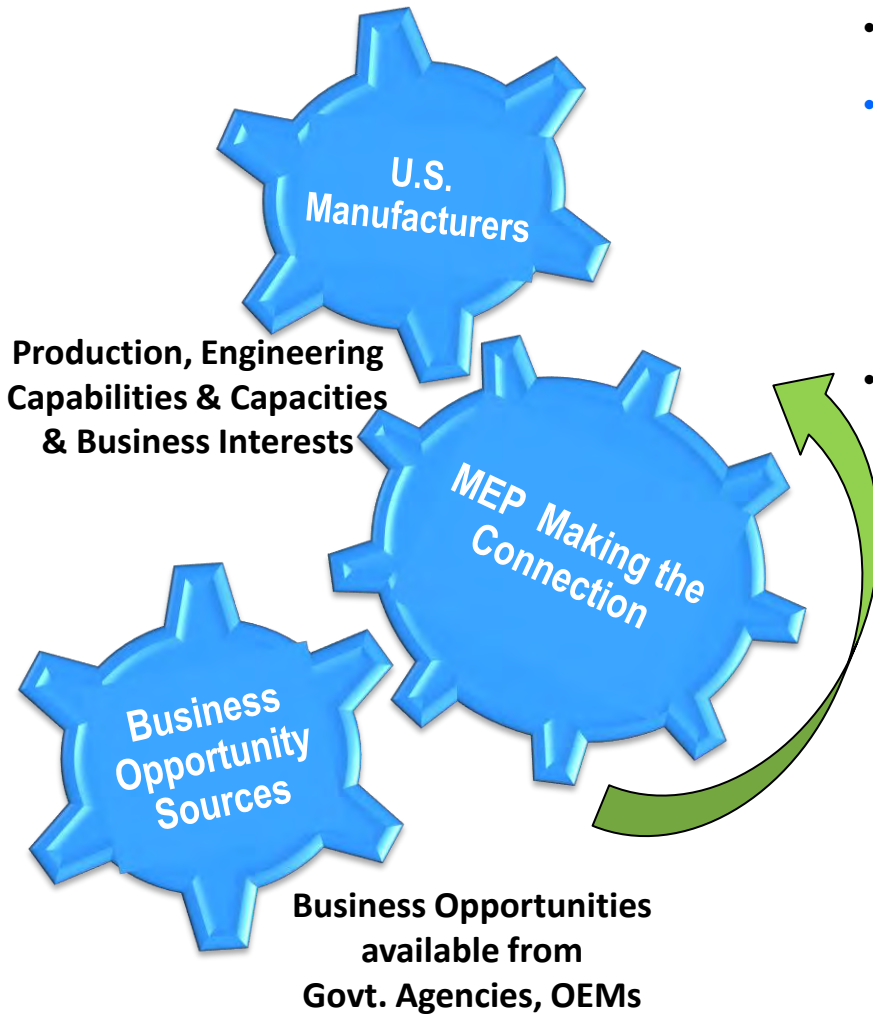
# National Network



MANUFACTURING  
EXTENSION PARTNERSHIP  
**National Network**



# Connecting and Assisting U.S. Manufacturers



- Enhance business opportunities for U.S. manufacturers
- *Connect* products, capabilities, capacities of U.S. (small) manufacturers with:
  - ✓ *Appropriate market opportunities*
  - ✓ *Supply chain needs of OEMs, govt agencies*
- Provide *assistance* to manufacturers, including:
  - ✓ *Technical manufacturing services for products, processes*
    - *Manufacturing Strategy and Scale-up*
    - *Production Optimization, (Re)tooling (Lean/Quality)*
  - ✓ *Supply Chain Requirements and Market Diversification*
  - ✓ *Innovation and Product/Process Development*
  - ✓ *IP Management and Financing/Access to Capital*
  - ✓ *Workforce Development*
  - ✓ *Environmental Sustainability*

# MEP Supplier Scouting

- Connects capabilities, capacities, business interests of U.S. manufacturers with needs and business opportunities of various manufacturing supply chains.
- Connects government agencies that have Buy America(n) provision requirements, with capable and interested U.S. manufacturers.
- Supplier Scouting has identified and connected domestic manufacturers with business opportunities for supply chains in following industry sectors:
  - ✓ energy products
  - ✓ passenger rail cars and rail locomotive
  - ✓ railroad track and physical infrastructure
  - ✓ defense weapon systems and defense support equipment
  - ✓ highway and waterborne transportation systems
  - ✓ laboratory instruments
  - ✓ consumer products
  - ✓ power utilities



**MAKE IT IN AMERICA**  
MANUFACTURING EXTENSION PARTNERSHIP



12

**Participating Government  
Agencies**



~200

**Items Scouted**



**64 BUY  
AMERICA(N)  
MATCHES**

**of products that previously  
were awarded waivers, to be  
manufactured in the U.S.**



# MEP Supplier Scouting



- MEP Supplier Scouting is a proven set of processes that brings business opportunities to U.S. manufacturers.
  - ✓ MEP leverages its knowledge of local manufacturers to
    - ID potential suppliers for gov agency, OEM sourcing needs
    - provide tech assistance to firms as relevant to specific supply chains – often involves market diversification for manufacturers
  - ✓ MEP scouts for U.S. manufacturers that are capable **and** interested in supplying products needed by various supply chains
  - ✓ Multi-faceted approach to connecting manufacturers with opportunities
  - ✓ Key to success is the MEP Network – not the tools utilized





# MEP Supplier Scouting and Buy America Transit Supply Chain Connectivity and Development

The nationwide MEP Network is actively assisting in the development of more robust domestic supply base for transit equipment in the U.S



- ✓ Interagency Agreement between DOT FTA and NIST MEP
- ✓ NIST MEP coordinate national, system-wide MEP efforts
- ✓ MEP Supplier Scouting conducted by Centers to ID manufacturers both **capable of** and **interested in** supplying needed manufactured goods
  - To likely include manufacturers currently serving transit industries + manufacturers from other sectors (auto, defense, aero, industrial controls / electronics, others ?)
- ✓ MEP available to assist domestic manufacturers with needs and requirements to enter transit supply chains and become suppliers



# Buy America Transit Supply Chain Connectivity

## Next Steps



- **Today's Supply Chain Connectivity Forum**
  - ✓ NIST MEP to post slides for access by participants, interested entities at [www.nist.gov/mep](http://www.nist.gov/mep)
- **MEP Assistance to Manufacturers**
  - ✓ NIST MEP available to coordinate national level MEP assistance resulting from today's Forum, such as supplier scouting, supplier development and improvement, other, ...
  - ✓ Local MEP Centers available to work with manufacturers at the local level to provide assistance in response to needs – resulting from today's Forum and other needs
    - Contact TMAC within the state of TX [www.tmac.org](http://www.tmac.org) or [www.tmacgc.org](http://www.tmacgc.org) in Houston area
    - NIST MEP: [www.nist.gov/mep](http://www.nist.gov/mep)



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# New Rail Industry Studies: Preview and Tools for Manufacturers

**Zoe Lipman**

**Senior Policy Advisor, BlueGreen Alliance**

Buy America Transit Supply Chain Connectivity Forum

Houston, TX

October 15, 2014



# Who we are

**BlueGreen Alliance** – 15 of the nation's largest labor and environmental groups committed to building a cleaner, fairer and more competitive America

*Happy to be working to grow transit and transit manufacturing with:*

- Jobs To Move America
- Environmental Law and Policy Center
- NIST Manufacturing Extension Partnership

## BLUEGREEN ALLIANCE PARTNER ORGANIZATIONS



# New Tools for Manufacturers

- Latest Industry Overview
  - Snapshot of the Transit Procurement Pipeline
  - New Rail Manufacturing Data
  - Additional links and resources
- 
- *Reports coming out Fall 2014*
  - *Robust web based tools 2015 – additional partners welcome*

# Report: Updated Industry Overview

Out this  
Nov!

## ELPC/ BGA Rail Manufacturing Report

- History & Current market outlook
- Economic impact: business & community, operations & manufacturing
- **In depth look at US rail manufacturing:**  
The Nation → major regional clusters  
→ your state or locality
- Opportunities and gaps in the value chain
- Practical and Policy recommendations to help grow the transit manufacturing sector



2013



# New Tool: Where are the big buys?

Cities including Washington D.C., Minneapolis-St. Paul, Chicago, Seattle, Los Angeles, Houston, New York, Boston and Denver are planning large public transportation projects and expanding and upgrading existing systems; creating hundreds of new transit lines and an increased demand for transit vehicles across the United States.

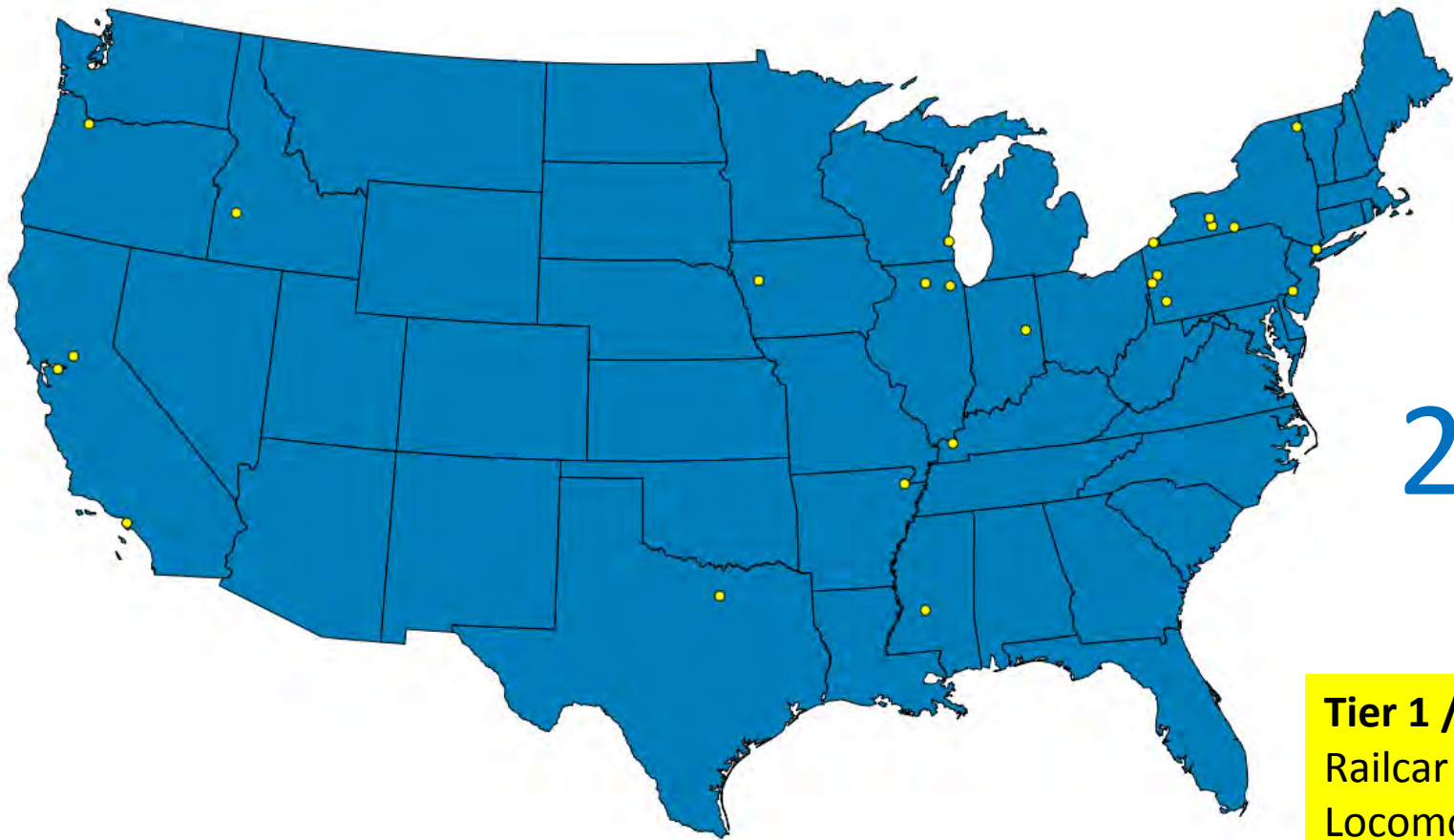
- **JUST RELEASED:** JMA's interactive map that analyzes a large set of data on current and upcoming rail and bus purchases by U.S. transit agencies nationwide [jobstomoveamerica.org](http://jobstomoveamerica.org)



*... JMA also provides tools to aid bidders to demonstrate leadership in job creation and domestic content*



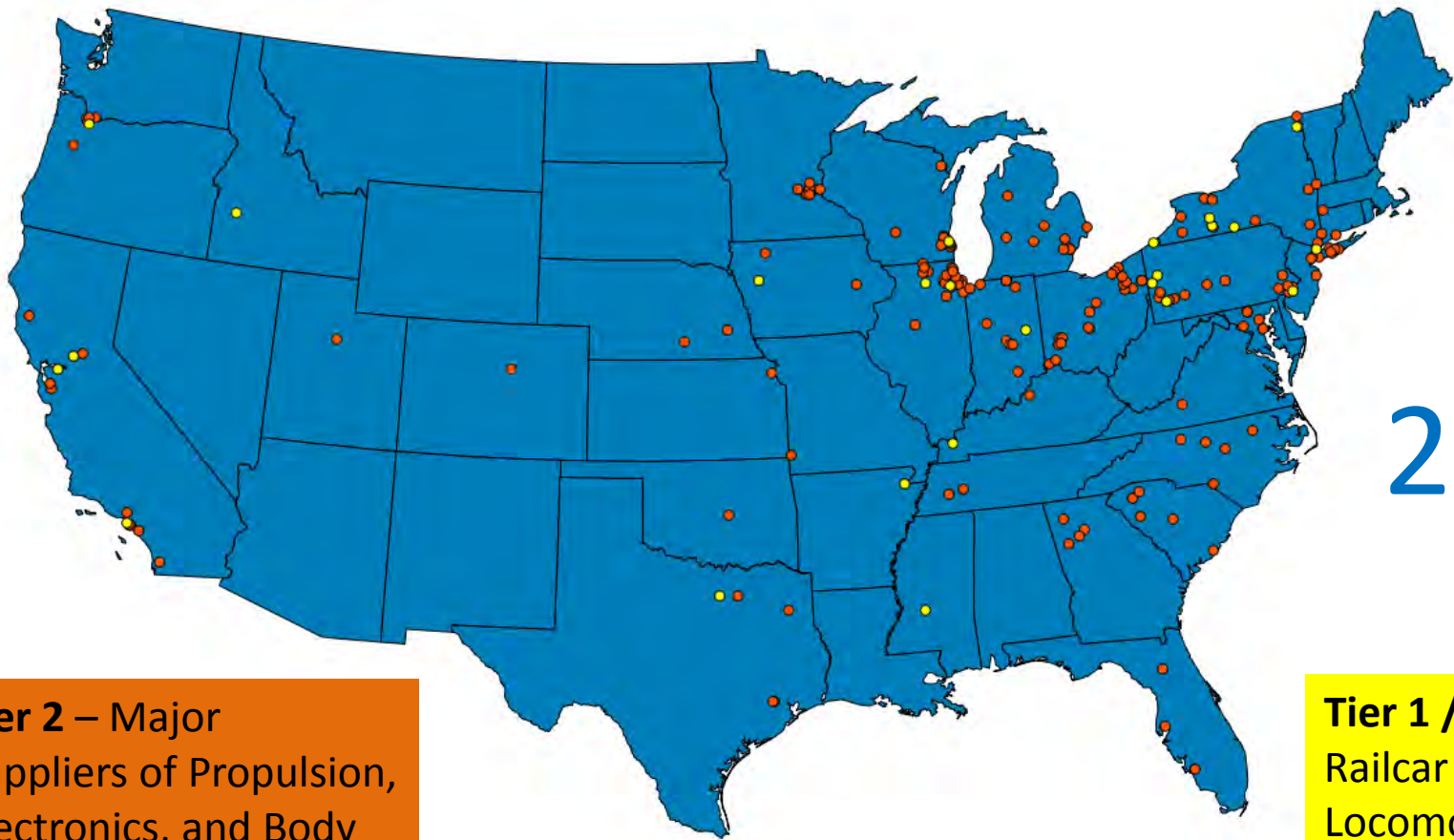
# New Rail Manufacturing Database



26

**Tier 1 /OEMs –  
Railcar and  
Locomotive  
Assemblers**

# New Rail Manufacturing Database



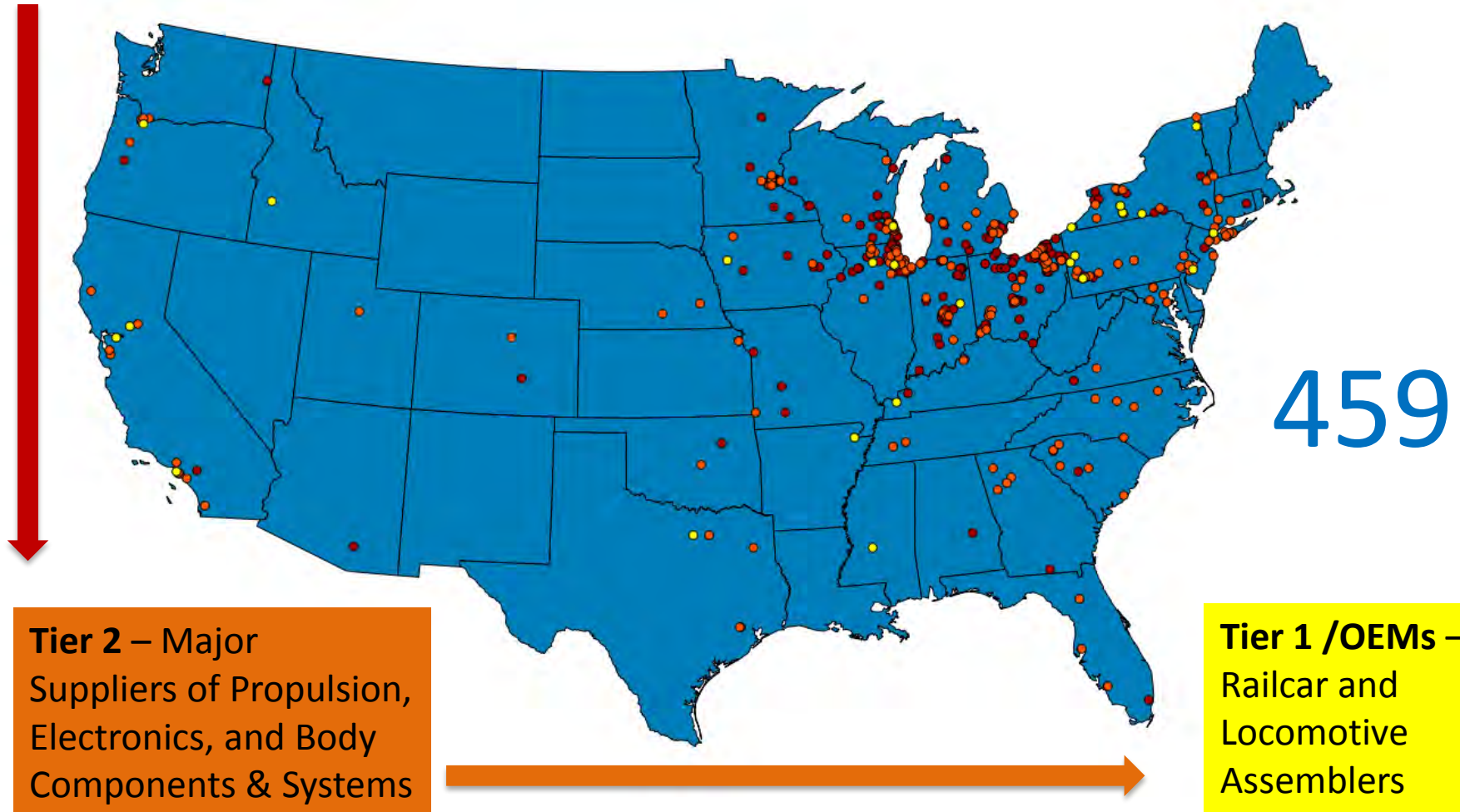
211

**Tier 2** – Major  
Suppliers of Propulsion,  
Electronics, and Body  
Components & Systems

**Tier 1 /OEMs** –  
Railcar and  
Locomotive  
Assemblers

# New Rail Manufacturing Database

**Tier 3** – Subcomponent Parts,  
Materials (regions TBA)

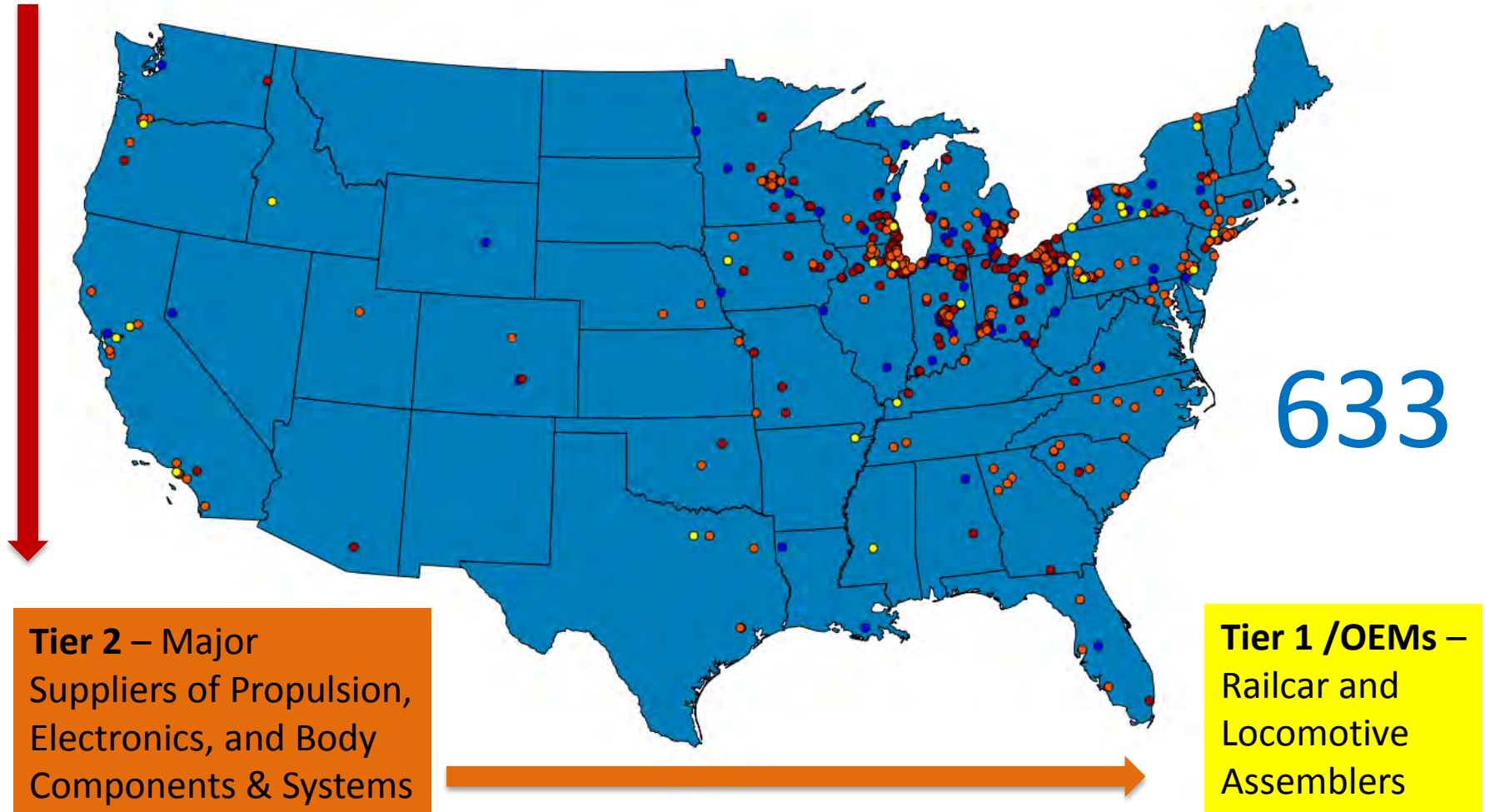




# New Rail Manufacturing Database

**Tier 3** – Subcomponent Parts,  
Materials (regions TBA)

**Tier 4** – Repair, Remanufacturing,  
Maintenance (sectors TBA)





# What we're seeing

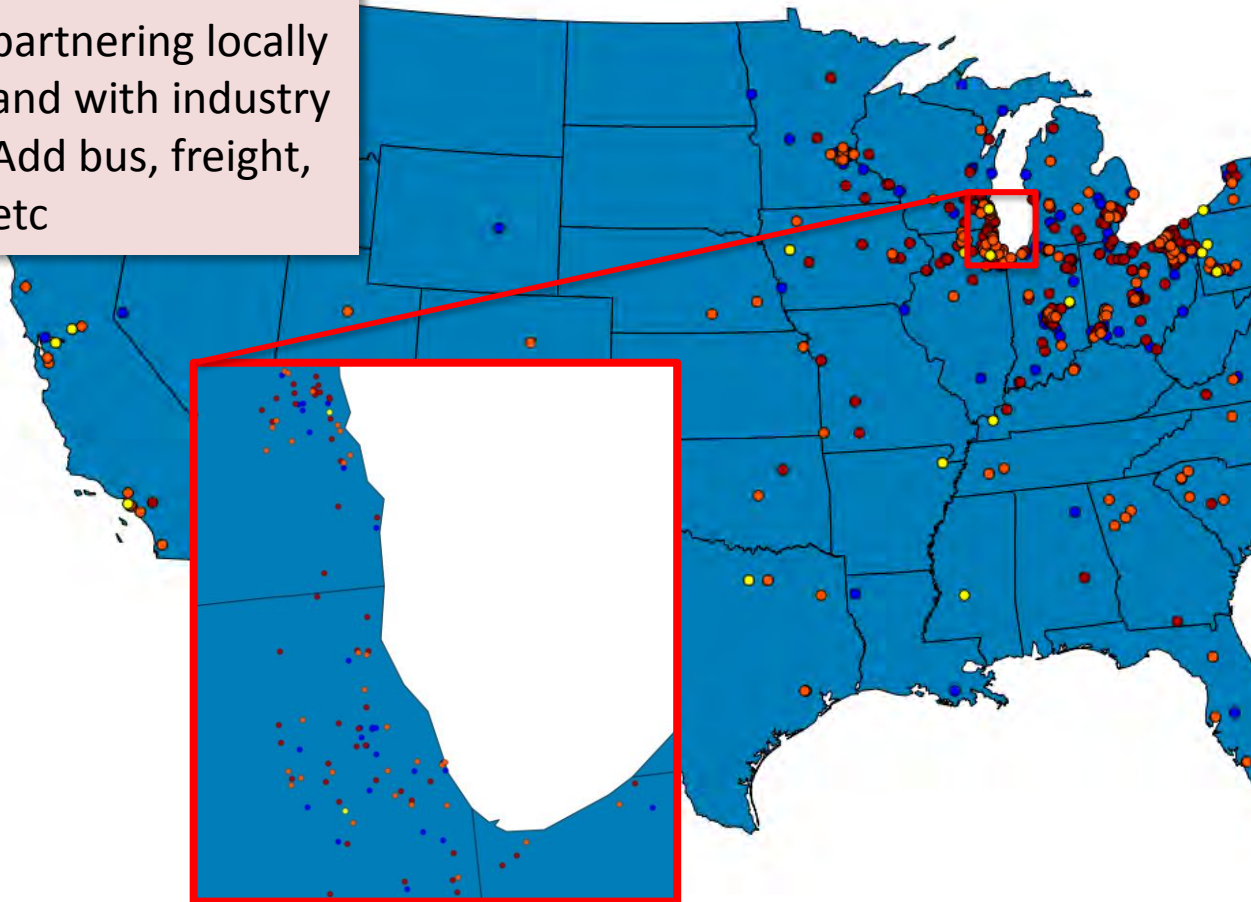
- **211 companies OEM/Tier 1 & 2**
- >400 Tier 3 & 4 so far – work in progress
- Clusters in Midwest, greater NY, west coast ... but also Southeast, elsewhere
- Anchored by big transit systems and/or traditional manufacturing centers – opportunities for overlap with automotive, aerospace, electronics, etc

Other takeaways for prospective rail manufacturers:

- Variety of entry points
- Manufacturing not driven solely by assembly/ new integration; improved predictability
- Sourcing globally, but procuring locally
- Consolidations/acquisitions retain domestic footprint

# What you'll find inside the web tool

- Tier 3 & 4 data still incoming
- Look forward to partnering locally and with industry
- Add bus, freight, etc



**600+ companies**  
**OEM thru Tier 4**

Includes:

- Name, manufacturing location & contact info
- market sector, tier, high-level product categorization
- additional company background
- **Drill down by geography or sub-sector**

# Additional Resources

- Supplier connectivity and support, supplier scouting (MEP)
- Industry and policy analysis, tools (BGA, ELPC)
- Market and procurement tools (JMA)
- **Buy America** (DOT/FTA one-stop shops) such as  
<http://www.dot.gov/highlights/buyamerica>  
[http://www.fta.dot.gov/legislation\\_law/12921.html](http://www.fta.dot.gov/legislation_law/12921.html)
- **Procurement processes and tools** (transit agencies, OEMs) such as  
<http://web.mta.info/mta/procurement/doingbusiness.htm>
- **Specs and technical information** (APTA technical committees, s305 Next gen equipment pool cte, MEP M-TACs) such as:  
<http://www.apta.com/about/governance/committees/rail/Pages/default.aspx>

## Some next steps with partners:

- Info even more accessible
- Ongoing local conversations with manufacturers
- ID'ing and addressing obstacles to small and WMDBE manufacturer engagement

Contact:

Zoe Lipman

BlueGreen Alliance

[zoel@bluegreenalliance.org](mailto:zoel@bluegreenalliance.org)

# U.S. Value Chain for passenger and transit rail vehicles

**Tier 3**

**Main materials**

Aluminum  
Chemicals  
Fabrics  
Glass  
Iron  
Paints  
Plastics  
Rubber  
Stainless steel  
Steel

**Parts inputs**

Air compressor  
Brake parts  
Blower motor  
Cable  
Elastic material  
Flanges, forgings, gears, shafts  
Fuel supply controller  
Inverter  
Printed circuit board  
Rectifier  
Sensors  
Speed indicator  
Switch gear  
Voltage convertor

**Tier 2**

**Propulsion components**

Electric generator

Engine

Fuel system

Truck system

Brakes

Wheel set

Under carriage casting

Suspension

**Propulsion systems**

Integrated propulsion system

Traction motors

**Electronic systems**

Communication system

Security system

Driving control system

Integrated software

Electric collector

Auxiliary power unit

**Body & Interior**

HVAC

Hatch cover

Seating flooring

Bathroom

Lighting

Coupler

Others

Body

Door systems

Window

**Infrastructure-related equipment**

Signaling/ info. systems

Steel track

Other track parts

Electrification

**Railcar maintenance and refurbishing**

- Most OEMS and transit agencies' facilities
- Small/medium-sized companies

**Tier 1**

Passenger & transit coaches/ locomotives

Passenger/ Metro/ LRT/ Street cars

Locomotives

Construction, finance, leasing, project management



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U.S. Department of Transportation  
Federal Transit Administration

**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce



MANUFACTURING  
EXTENSION PARTNERSHIP  
National Network



# Buy America Transit Supply Chain Connectivity Forum



*APTA Annual Meeting and EXPO*  
Houston, TX  
October 15, 2014



AMERICAN PUBLIC TRANSPORTATION ASSOCIATION



MEP • MANUFACTURING  
EXTENSION PARTNERSHIP



# THANK YOU!!

