# Transit Research Inspection Procurement Services (TRIPS)

**Edward Bart-Program Administrator**
Center for Urban Transportation Research, USF
Tampa, Florida

PROCUREMENT & MATERIALS MANAGEMENT LEARNING ZONE

APTA EXPO PUBLIC TRANSPORTATION'S PREMIER SHOWCASE

# Key Presentation Take-Aways

- Florida Department of Transportation Program
- State contracts issued on behalf of agencies
- Primarily for 5310 funded vehicles
- All contracts are negotiated bid, IQ type
- Encourage multiple awards
- Part of a larger effort

# TRIPS
# Program Goals

- Provide safe, clean, reliable, quality, transit vehicles
- Ensure compliance with Federal and State purchasing requirements
- Promote customer satisfaction
- Provide safe equipment for the transportation of Florida's citizens
- Maximize the use of State and Federal funds
- Conduct research that enhances product performance

# TRIPS
# Specification Workup

- Developed by committee
- Performance based
- Price not most important criteria
- Warranty is negotiated
- After Sales Service and Training are evaluated strongly

# TRIPS
# Current Contracts

- Commuter Van
- Medium Duty
- Standard Cutaway
- Small Cutaway Low-Floor
- Mobility Ventures, LLC MV-1
- Minivan

# TRIPS
# Pre-Award

- Plant and Dealer facility inspections
- Buy America audit
  - Invoices
- Create bi-lateral agreement
- Run SAMS and TVM
- Structural Pre-Qualification

# TRIPS
# FDOT Crash and Safety Testing Standards

- Award of contract is contingent on successfully completing the Pre-Qualification process
- The Pre-Qualification process must be completed prior to first build; no buses will be built until satisfactory results are obtained
- Satisfactory Full Scale testing should be completed within 24-months

# TRIPS
# Pre-Qualification Process

- **Drawing review** – Complete assembly drawings (2-D or 3-D) will be provided for evaluation. These must include location and type of all connections (welds, bolts, etc.).

- After evaluation the manufacturer will receive a report, based on knowledge gained from previous evaluations, noting any structural issues

# TRIPS
# Pre-Qualification Process

- **Frame evaluation** - A full body cage will be constructed and transported to FDOT Springhill Bus Testing-Inspection Facility

- This cage should be constructed using normal production methods and include the entry stairwell and front cap

- The frame will fail the evaluation if it is inconsistent with the assembly drawings, is not representative of normal production, or if it fails the minimum structural requirement outlined below in the section titled “Connection Tests”.

# TRIPS
# Pre-Qualification Process

- **Connection Tests** -The connection test is conducted to assess the strength of the roof to wall (RTW) and wall to floor (WTF) connections
  - It is conducted by fixing one half of the connection and then slowly applying a force to the other half
  - The WTF connection will fail the test if it is unable to dissipate 290 J per meter of connection length
  - The RTW connection will fail the test if it is unable to dissipate 140 J per meter of connection length

# TRIPS
# Pre-Qualification Process

- **Material and Tubing Tests** -The material and tubing tests are conducted to assess the strength of the bus structural tubing

- Tensile testing will be performed to obtain the stress-strain relationship and four-point bending testing will be performed as a direct measure of the tubing performance.

# TRIPS
# Pre-Qualification Process

- **Sidewall Panel Test** – The sidewall test is conducted by dynamically impacting the sidewall using a large impact hammer
  - The maximum panel deflection is measured after impact. To account for different column spacing the hammer's potential (initial) energy is scaled based on the panel width and equals 600J per meter of panel width
  - The panel will fail this test if after its maximum deflection it exceeds 150mm

# TRIPS
# Pre-Qualification Process

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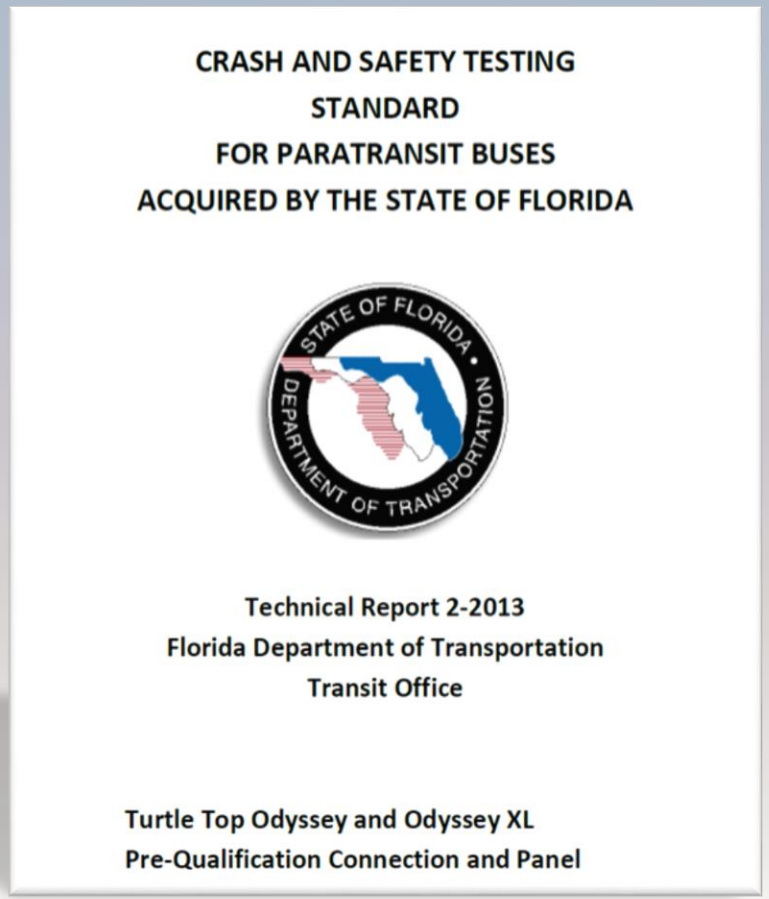
# TRIPS
# Pre-Qualification Process

## Turtle Top Odyssey / Odyssey XL
## Pre-Qualification Testing
## (Revised Design)

FDOT Springhill Inspection Facility

April 2013

# TRIPS
# Pre-Qualification Process



CRASH AND SAFETY TESTING
STANDARD
FOR PARATRANSIT BUSES
ACQUIRED BY THE STATE OF FLORIDA

Technical Report 2-2013
Florida Department of Transportation
Transit Office

Turtle Top Odyssey and Odyssey XL
Pre-Qualification Connection and Panel

# TRIPS
# Post-Award

- Prototype build
- Buy America audit
  - Match pre/post & invoices
- Inspection & post-award certifications
- Vendor clear defects prior to delivery
- Initiate Full Scale Evaluation

# TRIPS
# Full Scale Process

- **<u>FDOT Crash and Safety Test Approval Process (Full Scale)</u>**
  - Full scale crash test includes
    - Side impact test
    - Rollover test
  - Successful performance of both tests is required for the approval of the paratransit bus

# TRIPS
# Full Scale Process

- An uncompromised residual space concept is adopted in this standard as a pass/fail criterion

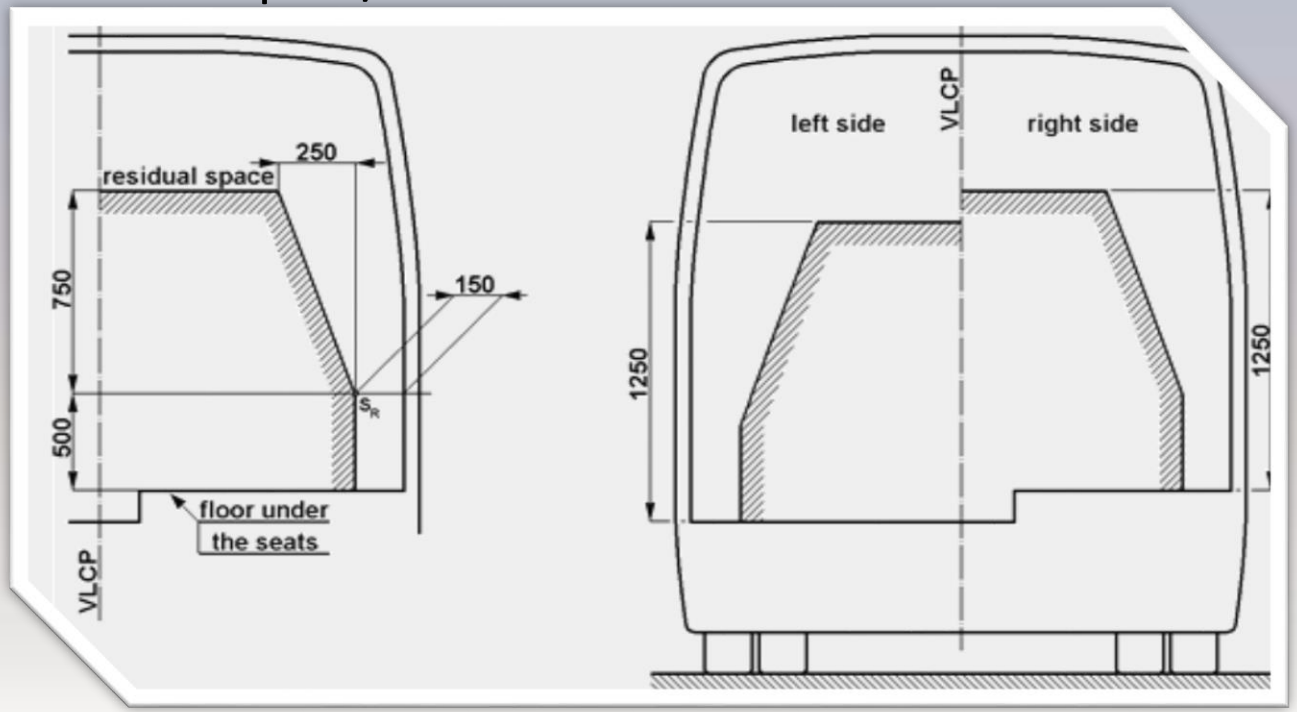



Figure 1. Specification of residual space in cross section of the bus. Dimensions in mm.

# TRIPS
# Full Scale Process

- Performance of a paratransit bus in side impact and rollover tests shall be assessed by either:
  - Experimental, full-scale crash tests
  - Computational analysis using FE method
- Both methods are considered equivalent and either one may be selected by the bus manufacturer for the bus approval
- The paratransit bus is considered to be crashworthy and safe if its residual space (as defined in Appendix 1) is not compromised through either intrusion or projection

# TRIPS
# Full Scale Process

- If the manufacturer chooses computational analysis as the testing method, the following information shall be supplied
  - A description of the applied simulation and calculation method which has been utilized
  - Clear precise identification of the analysis software, including at least, its producer, its commercial name, the version used and contact details of the developer
  - Information about model validation process
- The experimental full-scale crash test becomes mandatory if the paratransit bus fails either one of the computational analysis tests

# TRIPS
# Full Scale Process

## Paratransit Bus Side Impact Test 1

(Streetside, With Seatbelts)

Conducted by:

The Crash and Impact Analysis Laboratory (CIAL)

FAMU-FSU College of Engineering

July 10, 2012

# TRIPS
# Full Scale Process

## Paratransit Bus Side Impact Test 2

(Curbside, No Seatbelts)

Conducted by:

The Crash and Impact Analysis Laboratory (CIAL)

FAMU-FSU College of Engineering

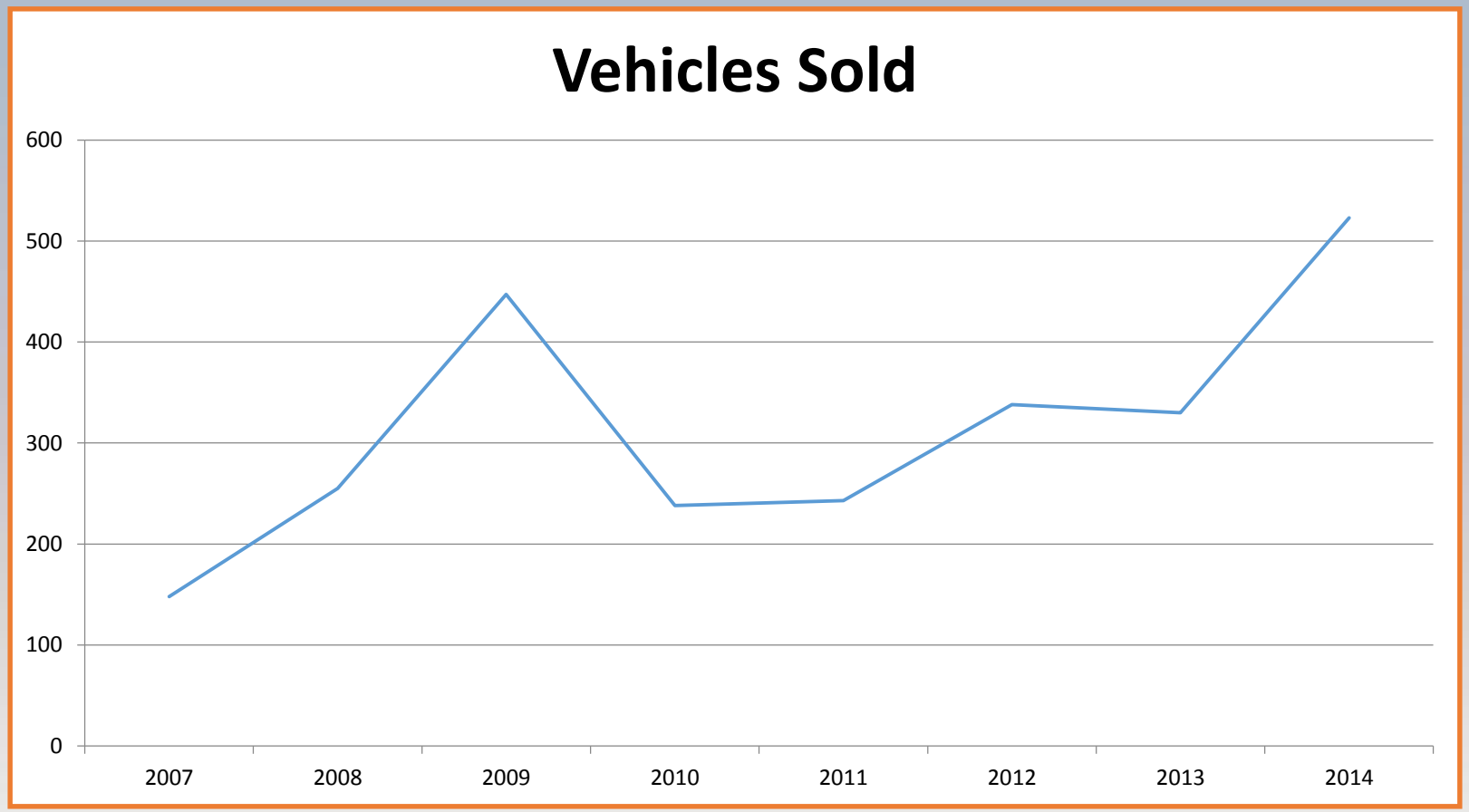
July 11, 2012

# TRIPS
# Full Scale Process

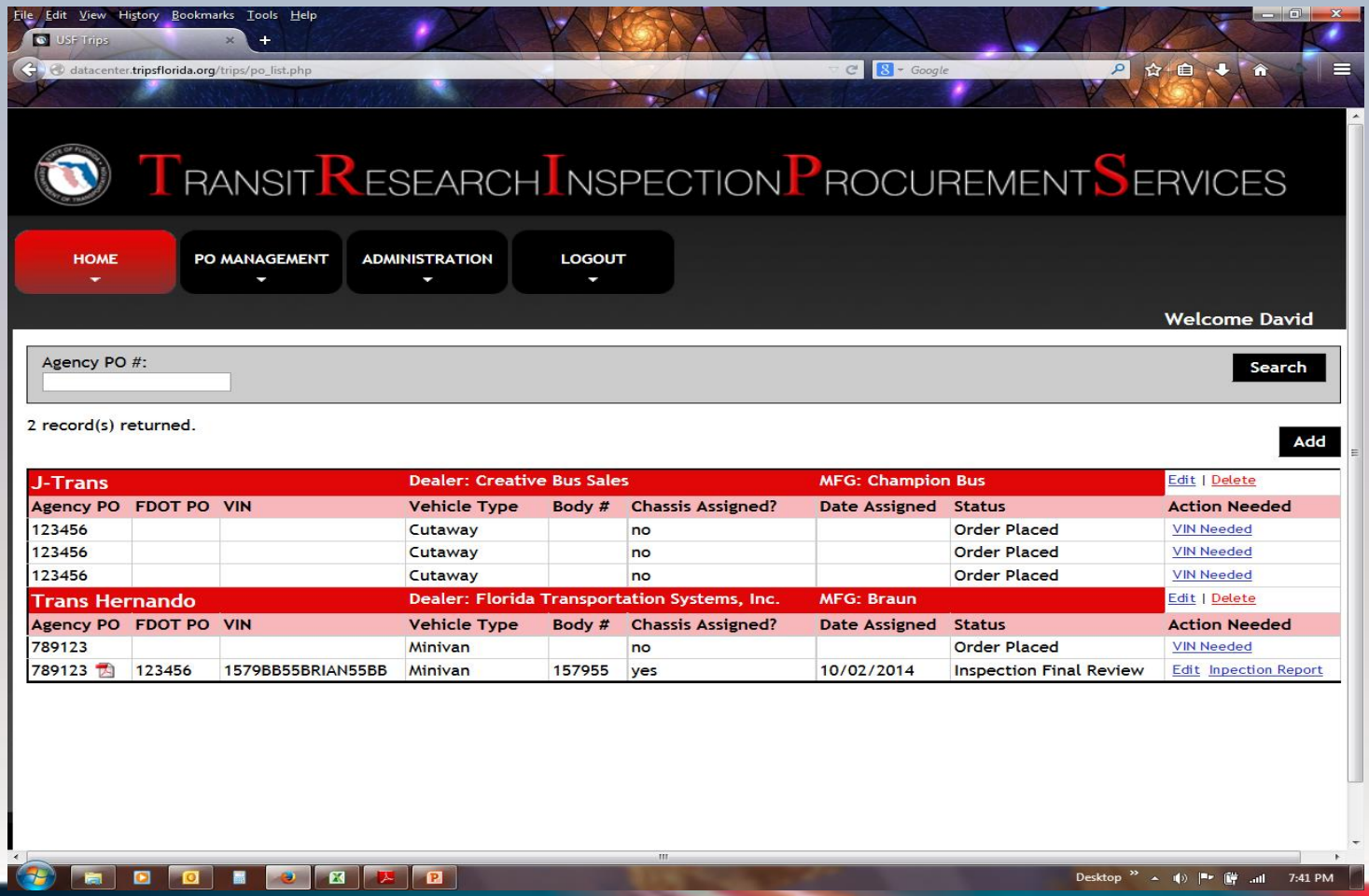
# TRIPS

- 3-6 defects average at inspection facility
- 3-5 products evaluated annually
- 10-15 issues working weekly
- 1700 + vehicles active in the database

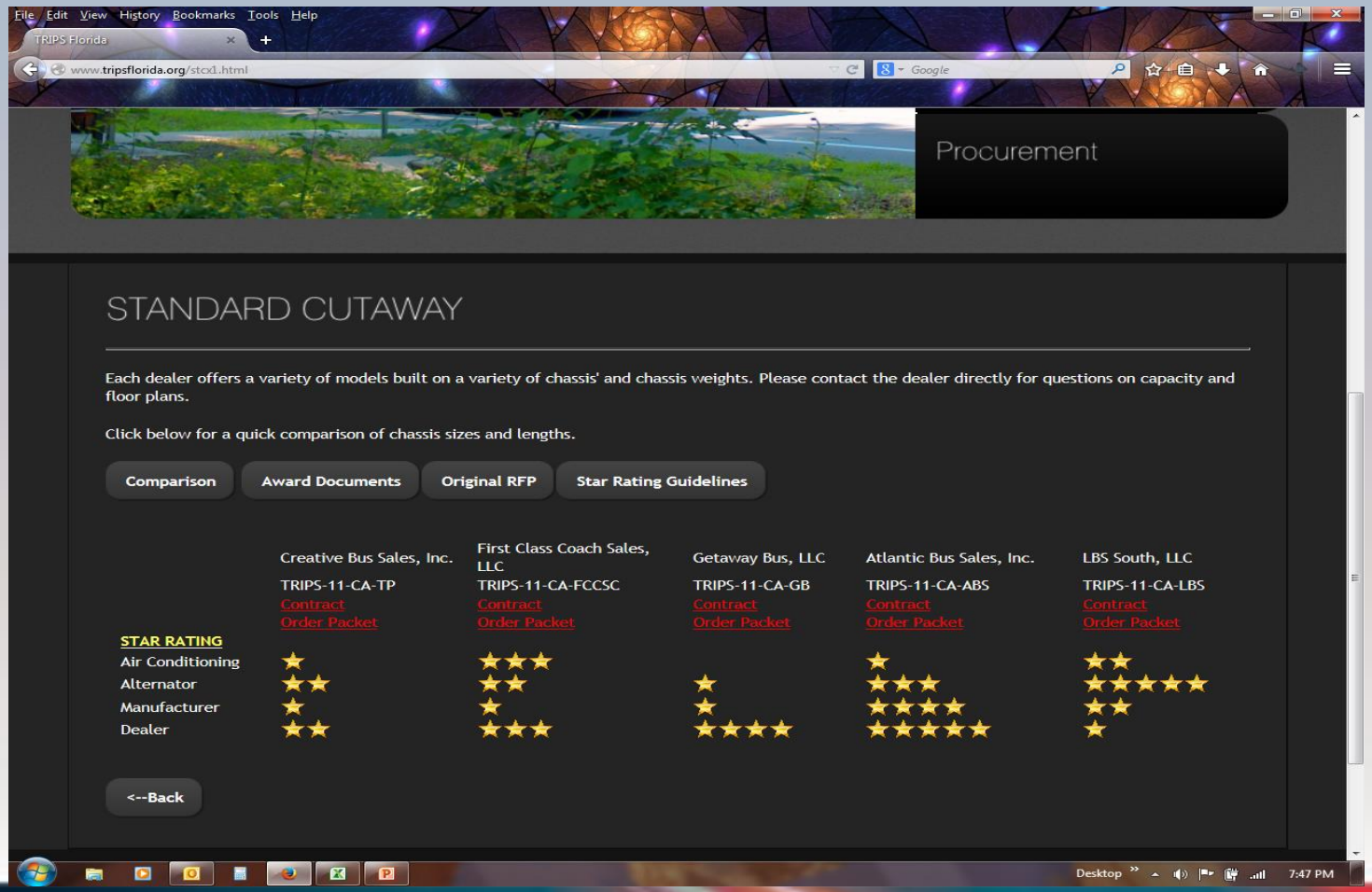
# TRIPS


Vehicles Sold
600
500
400
300
200
100
0
2007
2008
2009
2010
2011
2012
2013
2014

# TRIPS
# Upcoming



# TRIPS
# Upcoming

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End of Presentation