

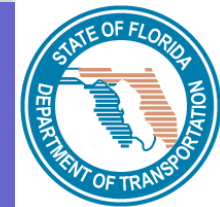


*1st International Conference on Transportation
Construction Management:
Cost Escalation and Containment*



**FDOT STRATEGIC
RESOURCE
EVALUATION STUDY:**

Highway Construction Materials



Outline

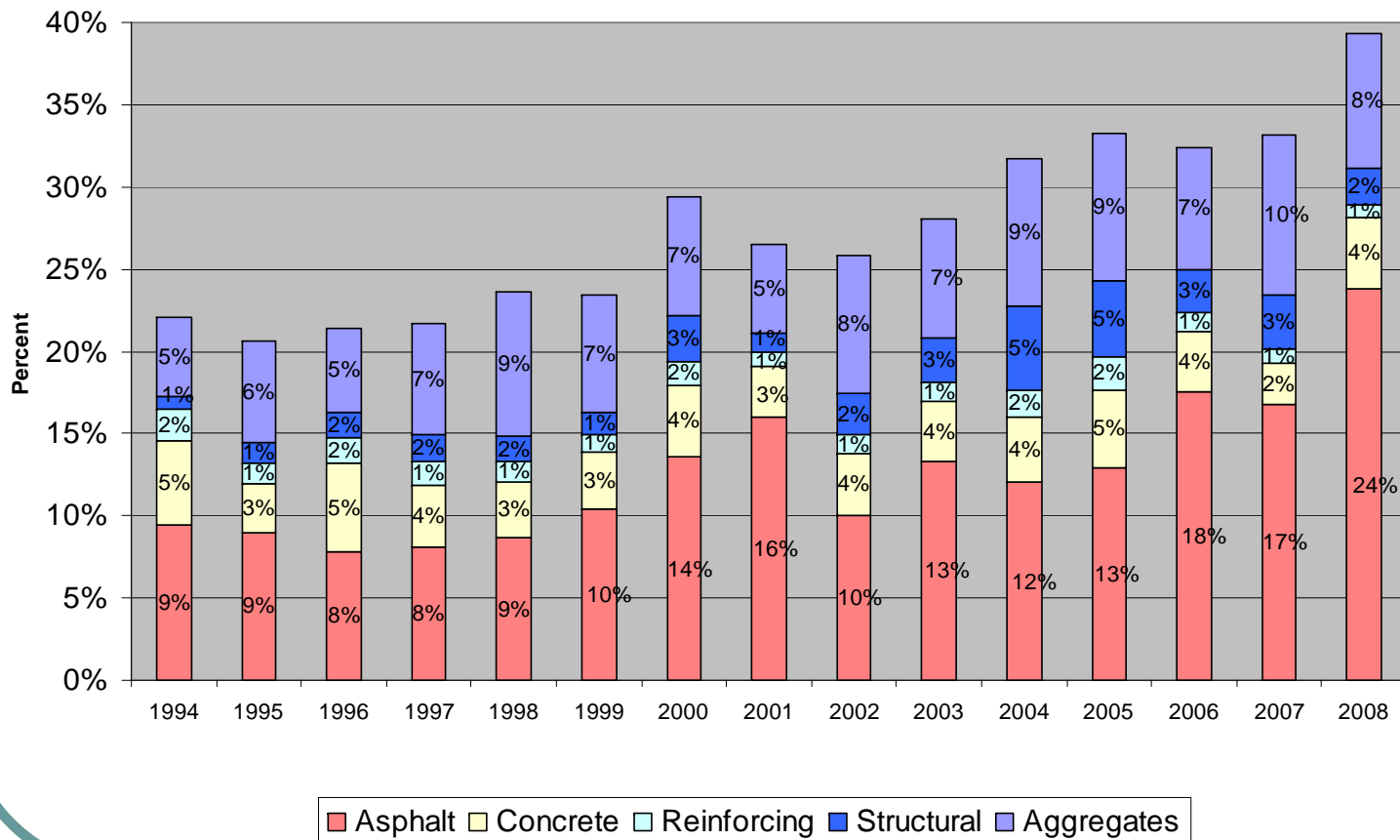
- Objective
- Scope
- What we reviewed
- Summary Findings
- Recommendations for FDOT

Objective

Determine:

1. Is supply of highway construction materials in Florida adequate to support FDOT's five year work program?
 - How much material does FDOT need for its five year work program?
2. Will FDOT be able to afford it?
3. What measures should FDOT take to assure timely availability and affordability of required materials?

Scope



Scope

- **Highway Construction Materials**
 - Did not include Materials used for Public Transit, Ports, or other non-Highway uses
 - Included Cement, Asphalt, Steel

Scope Material	FDOT Master Pay Items List
Cement	Structural Concrete, Bridge Approaches, Pipes, Drainage Structures
Asphalt	Hot Mix Asphalt (HMA), Asphalt Binder
Steel	Structural Steel, Bridge Supports, Railings, Casings, Bridge Decking, Reinforcing Steel

GIS Application

State Materials Office
Florida Department of Transportation

Layers

Visible Active

- Cement Plant
- Concrete Plant
- FDOT Approved Hot Mix Asphalt Plants
- Permitted Hot Mix Asphalt Plants
- Steel Plants
- Port Terminals
- Planned Construction Projects (Year)
- Interstates
- US Highways
- Major Water Body
- County Boundary
- State Boundary

Refresh Map

0 797,350 Feet

Documents Map Home

State Materials Office
Florida Department of Transportation

Legend

Planned Construction Fiscal Year

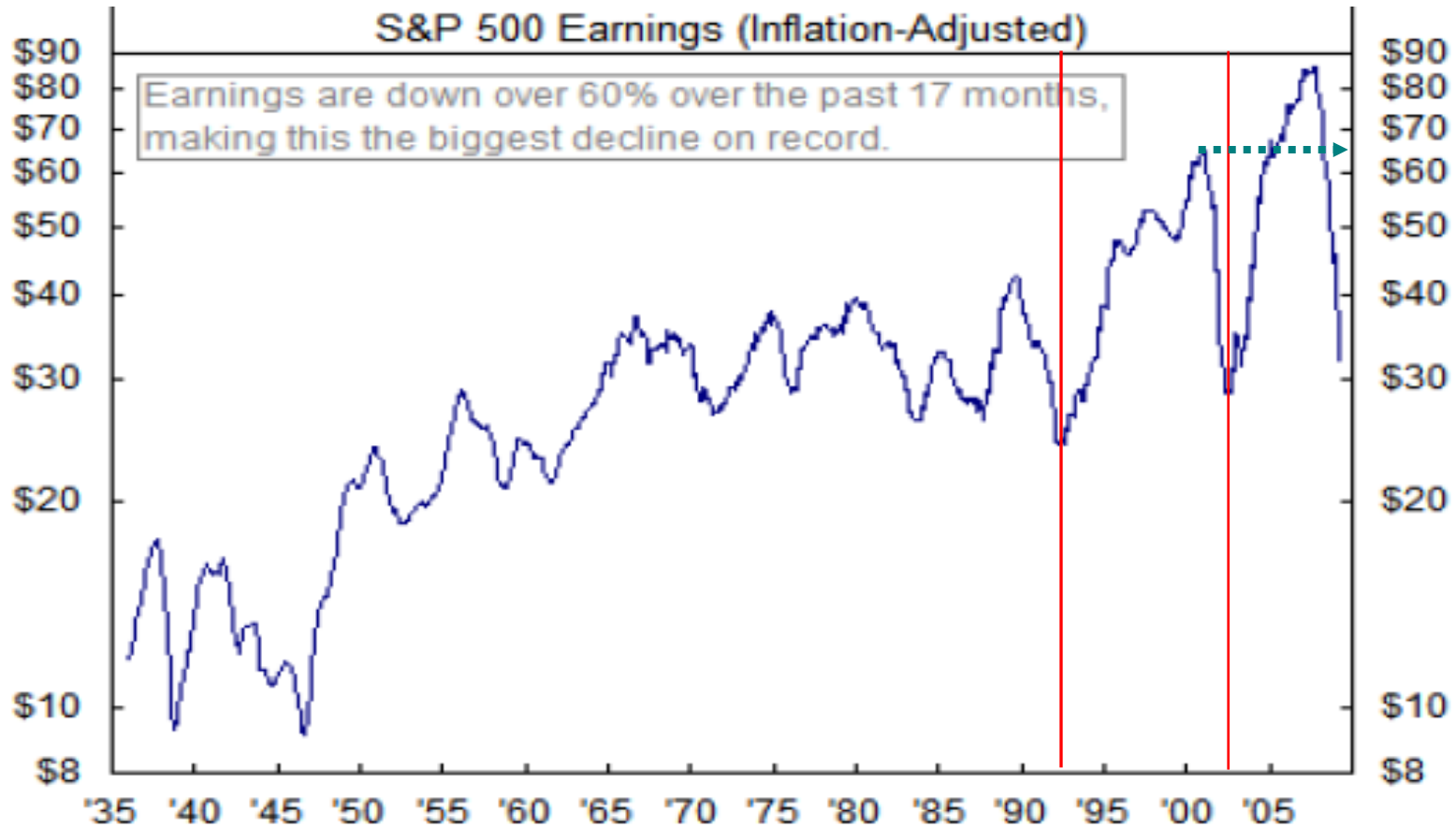
- 2008
- 2009
- 2010
- 2011
- 2012

Interstates
US Highways
Major Roads
County Boundary

0 96,54 Feet

Documents Map Home

Relevance to Current Market



Supply Chain

- From Raw Material to Job Site
- Extraction, Processing, Transport, Storage, Distribution, Value Added, Labor, Delivery.....
- Key Word: “Transport”
 - Adds costs at every step
- Data: Customs, Shipping, Industry Projections, China GDP growth



Areas Reviewed

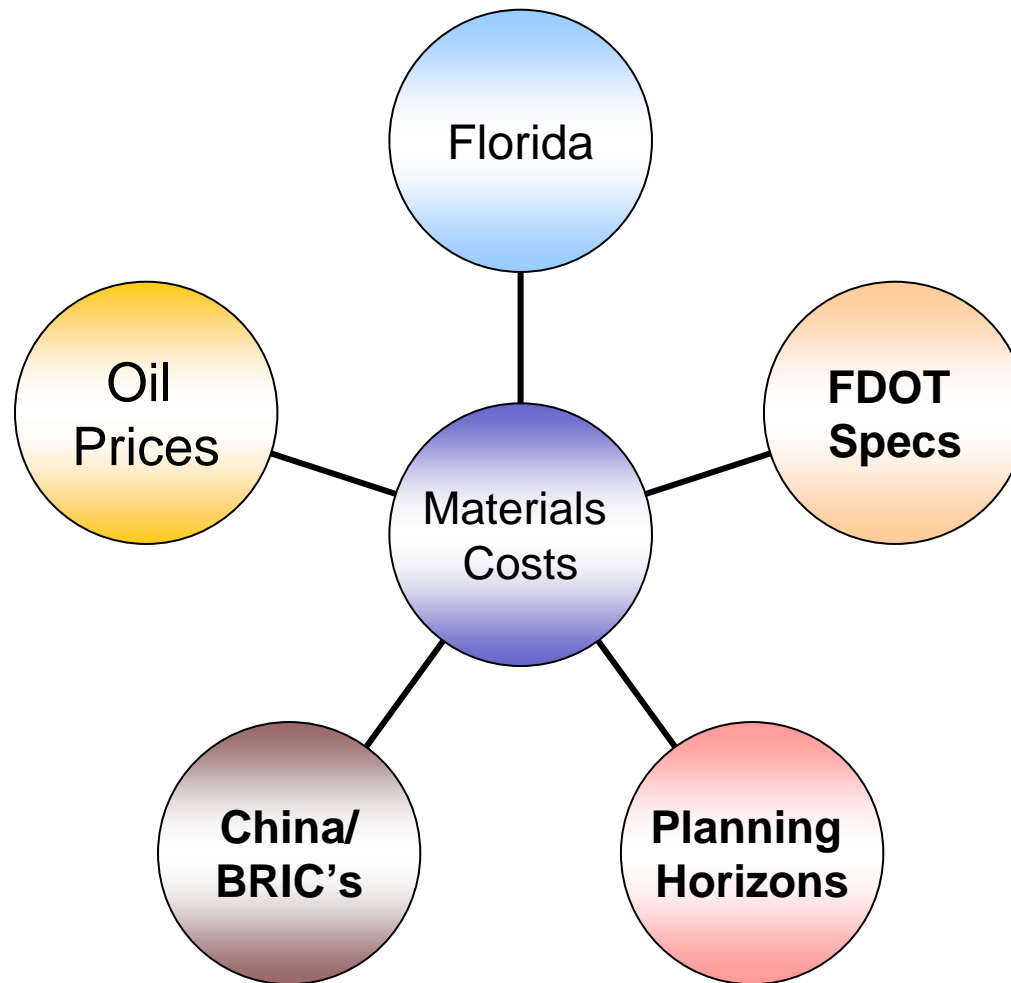
Individuals

- Contractors
- Plant Operators
- Suppliers
- Brokers
- Trade Groups
- Investment Bankers
- Design Engineers
- Counties, Agencies, DOT's

Data

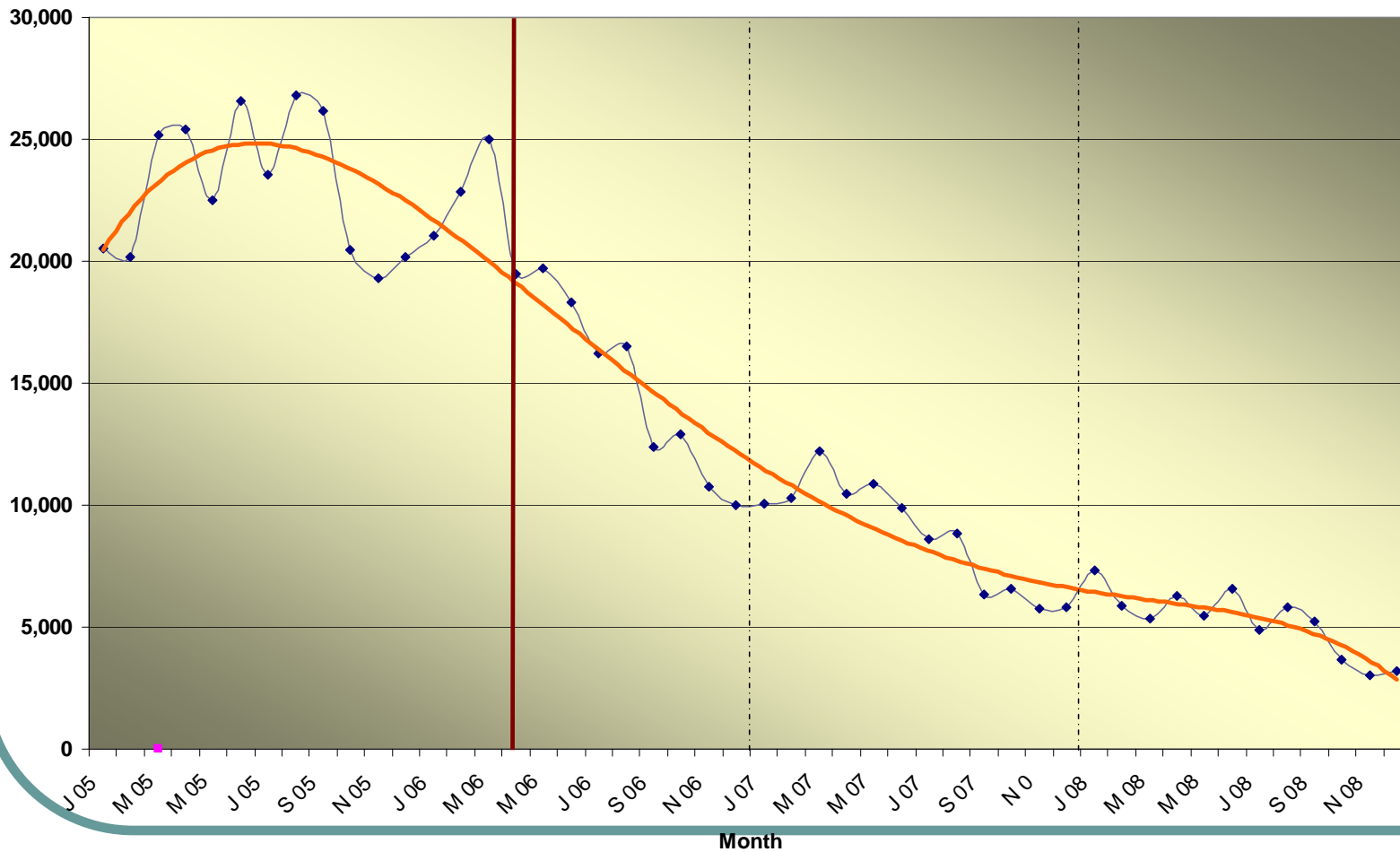
- Industry Projections
- PCA, ARTBA, AI, AIA, AISI, USGS, DOE, ITC
- National & International Economic Outlook
- Supply Chain
- China-China-China

Main Findings: Largest Short-term Impacts on FDOT's Highway Construction Materials Costs



Findings I: Florida

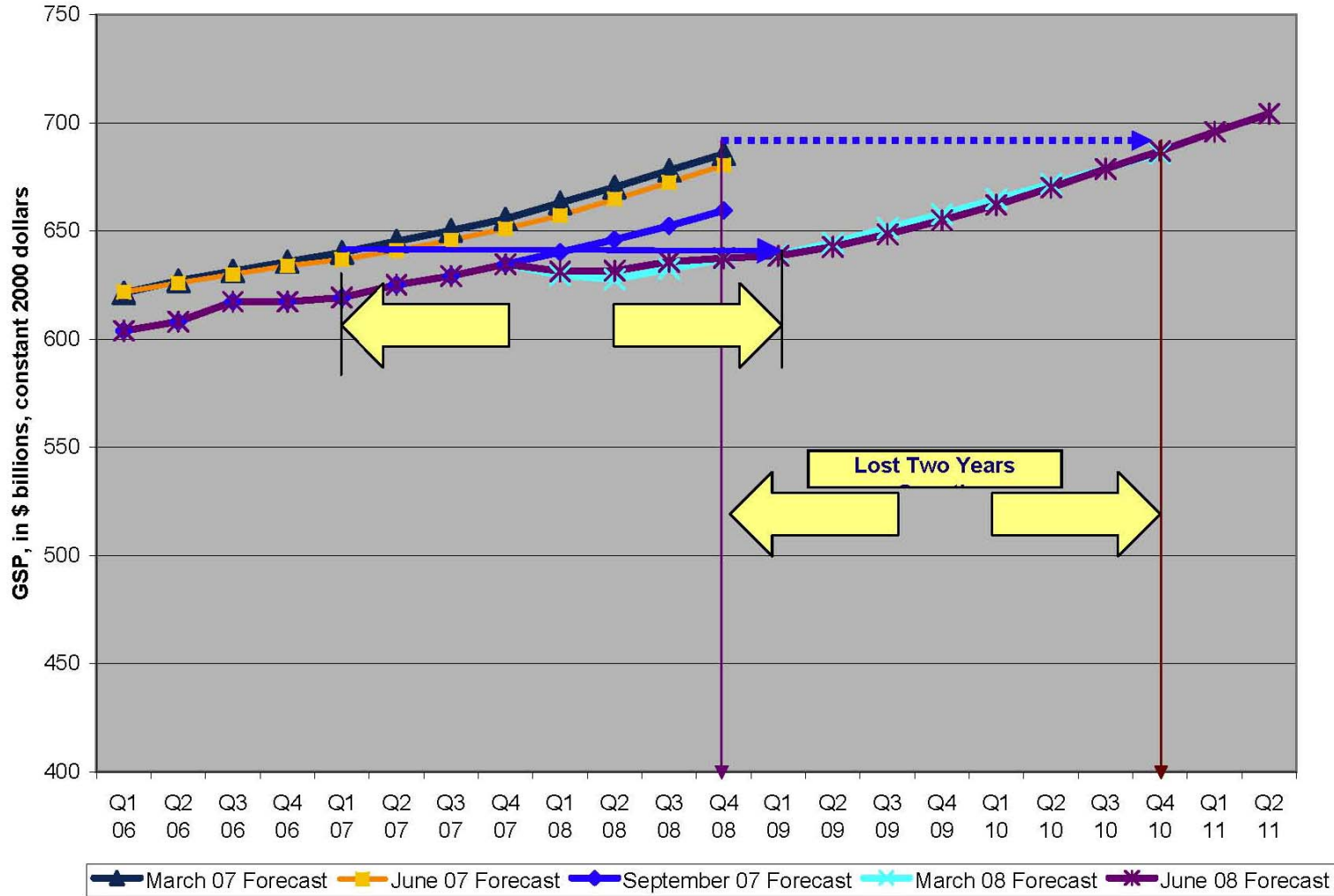
Florida Housing Starts



Source: Table 2U, U.S. Department of Census

Florida: Part two

Florida GSP Forecasts



Source: Florida & Metro Forecast, Institute for Economic Competitiveness, UCF; portions calculated



Findings II: China

- China's infrastructure growth is expected to grow in double digits for next ten years
 - Rest of Western world is flat to 2% growth
 - BRICs contribute twice as much as America to global consumption growth*
- Impact on Shipping
 - Competition for ships
- Competition for Resources
 - China planning or building 28,000 miles of roads, ports and pipelines in China, Myanmar, Pakistan, Africa
- Housing market slowdown offsets rise in prices

*Peter Oppenheimer, Goldman Sachs, as quoted in The Economist

Findings III: Energy Prices



Oil Prices

- Transport prices affect delivery costs, manufacturing costs, job site costs, for all materials
 - Distribution assumptions may change
- Design Assumptions: Concrete vs. Asphalt
- Long-term Contract Issues
 - Annual Escalation Factors
- Long term price expectations of motor gasoline vs. asphalt impact business model
 - 20-25% differential two years ago
 - \$300 binder vs. \$75 WTI crude
 - Breakeven to 10% differential last summer
 - \$650 binder vs. \$124 WTI crude
- Binder price has not declined with oil prices
 - Refinery Capacity, Market power

Findings IV

FDOT Specs

- Specs reflect historic abundance of materials
 - May need to reflect new reality: lack of abundant materials
- Florida Specific requirements evolved over years of experience
- Standardizing specs with surrounding states can reduce costs and increase availability
- Housing Market Woes create a window of opportunity to review requirements

Findings V

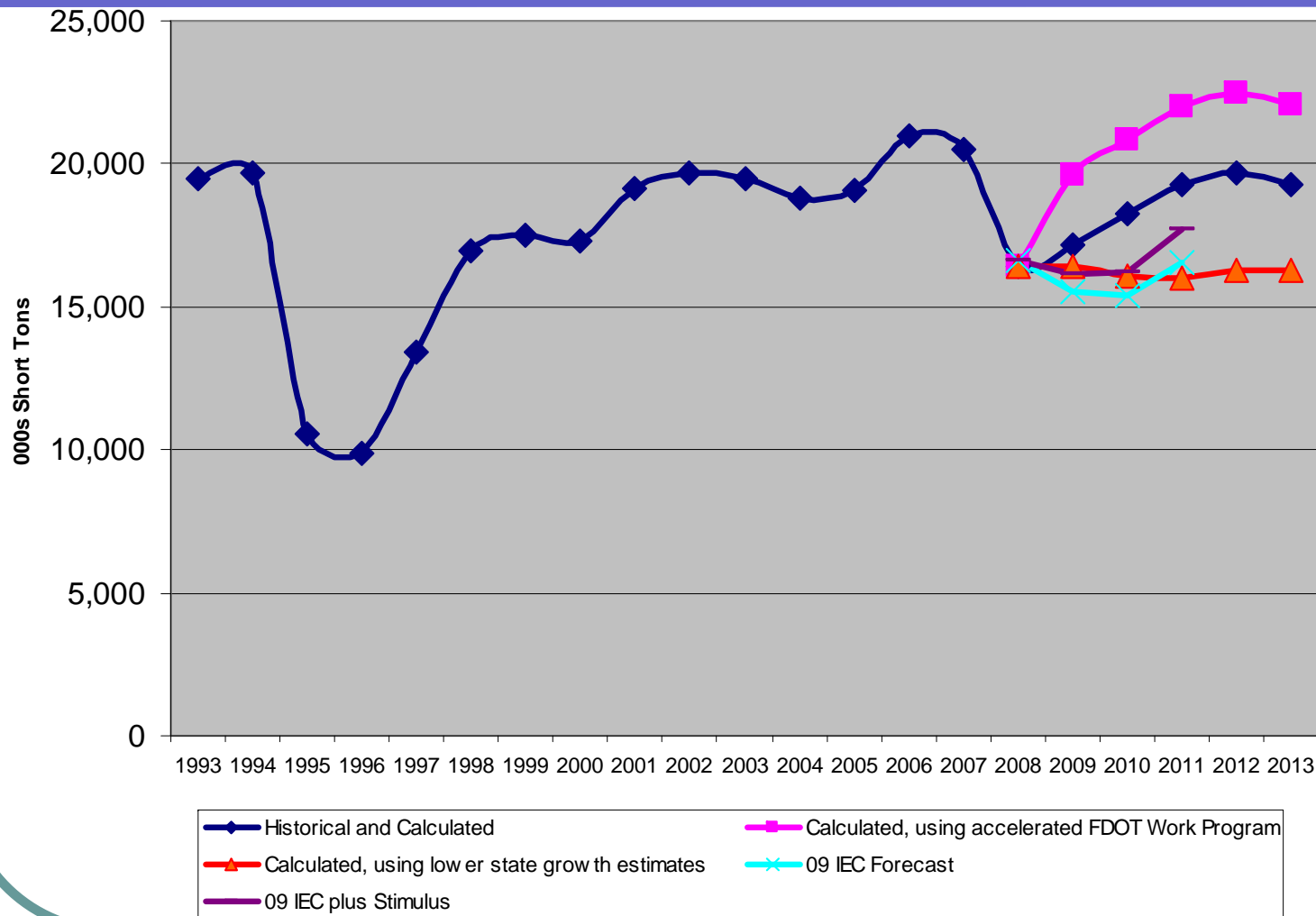
Planning Horizons

- Industry infrastructure investments, on the supply side, look out 10+ years to justify expansions
- FDOT's work plan is perceived to be available for one year out
- Land Use, Zoning, Environmental issues secondary to perceived market demand

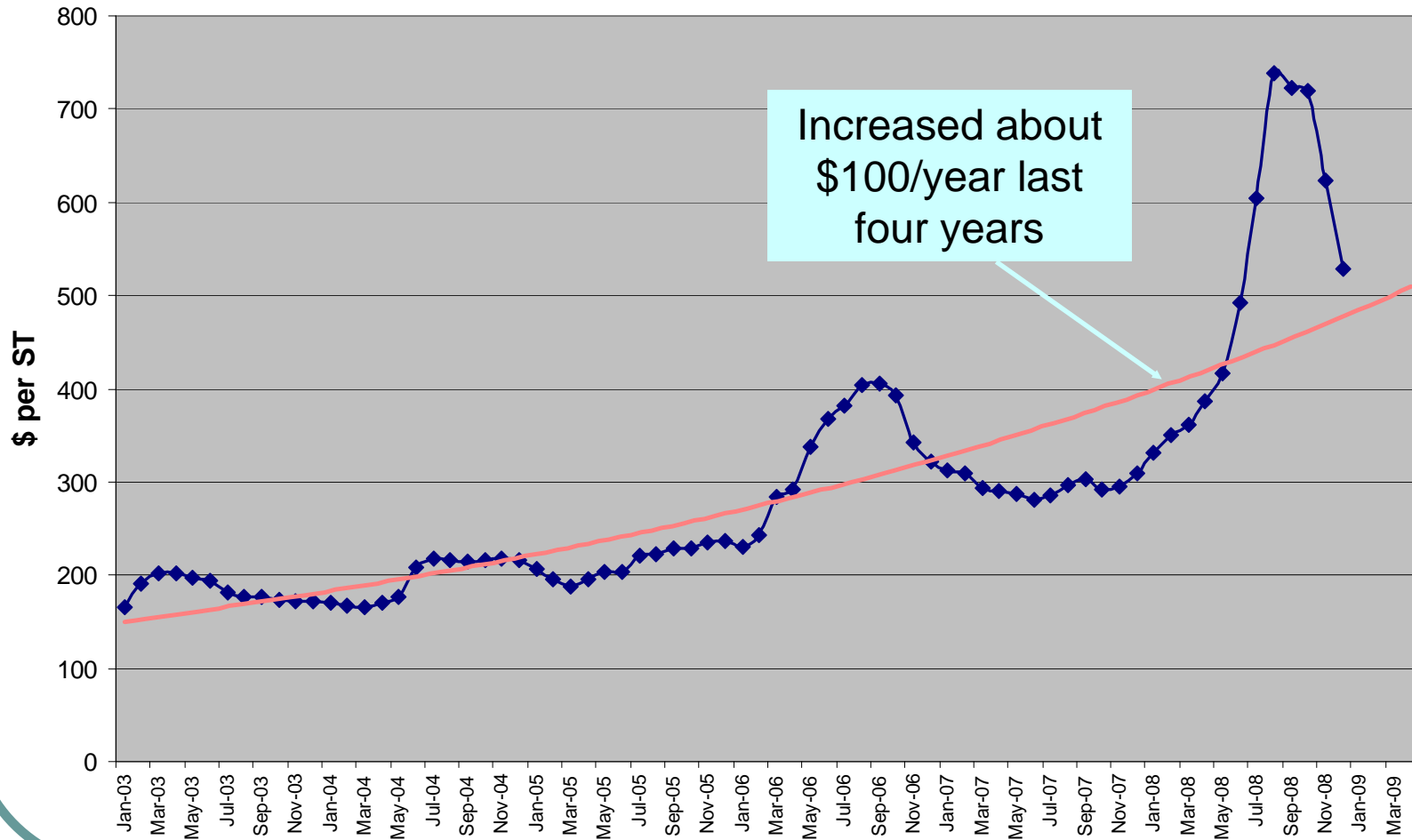
Other Findings

- Structural Steel Labor costs
 - Buy America provisions
 - Davis-Bacon Act
 - Structural (long-term economic change) issue of tradesmen
- Water Use Permits
 - May become an issue toward the end of the 5 year Work Program
- Lack of Retention of Lump Sum and Design Build Materials data
- Asphalt Refinery Production & Data Collection
 - Hasn't been collected by DOE since 1980
 - National issue
- Long-term contracts
 - Annual Escalation Factors
- Homeland Security, International Trade
 - Ports Management
- Incorporation of price increases into LRE process is inefficient

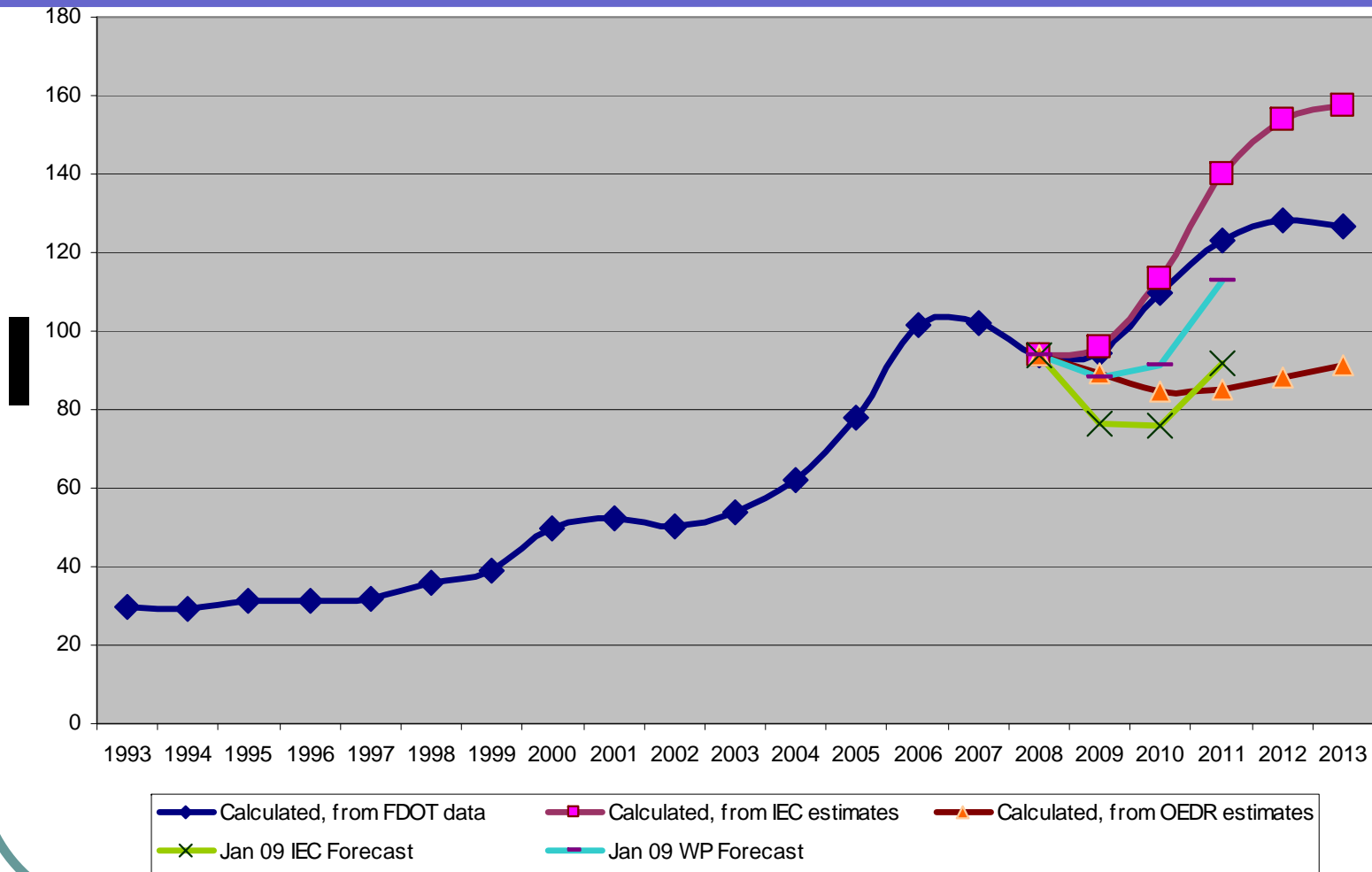
Forecast Demand: Asphalt



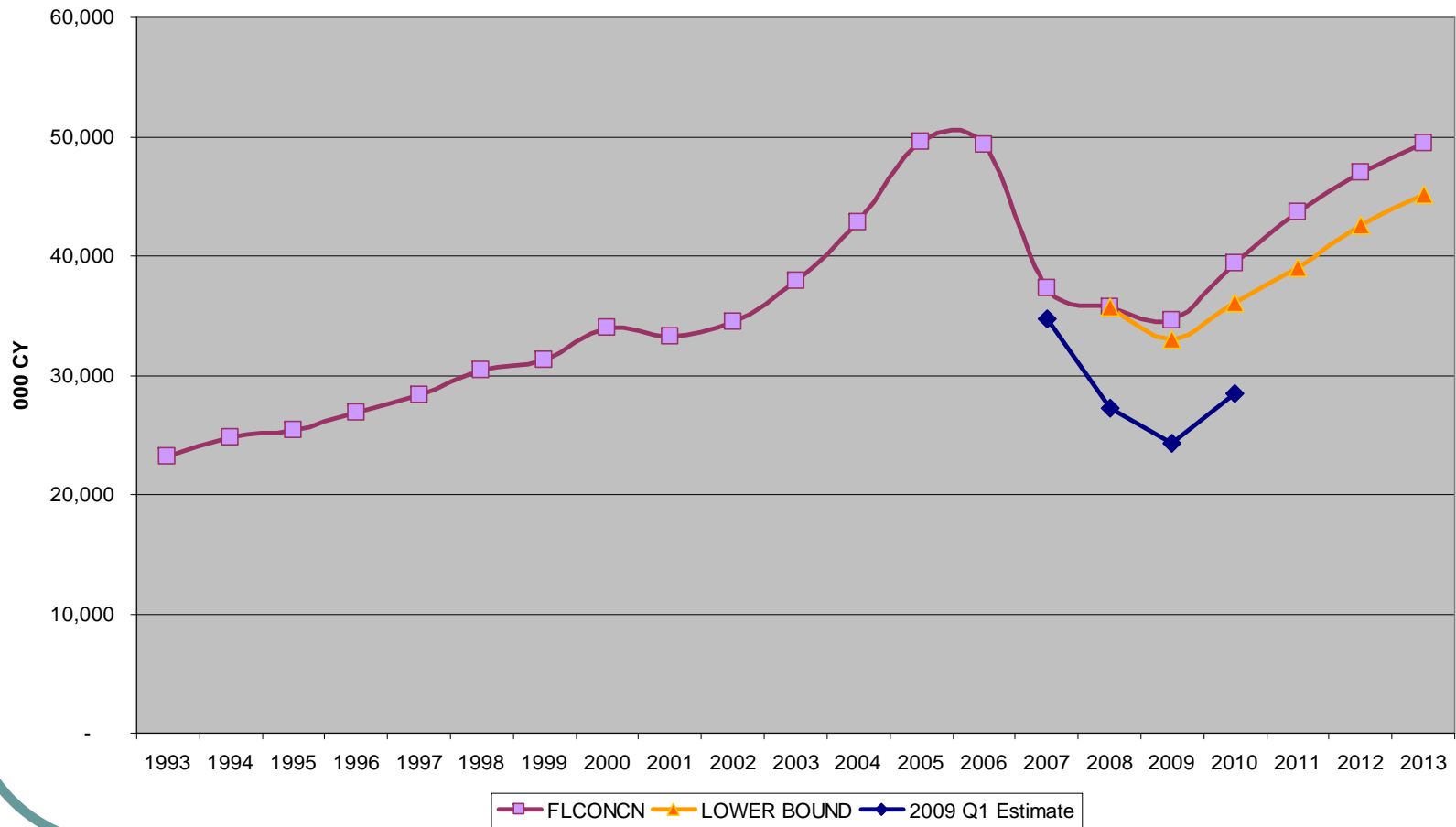
Florida Asphalt Binder Prices



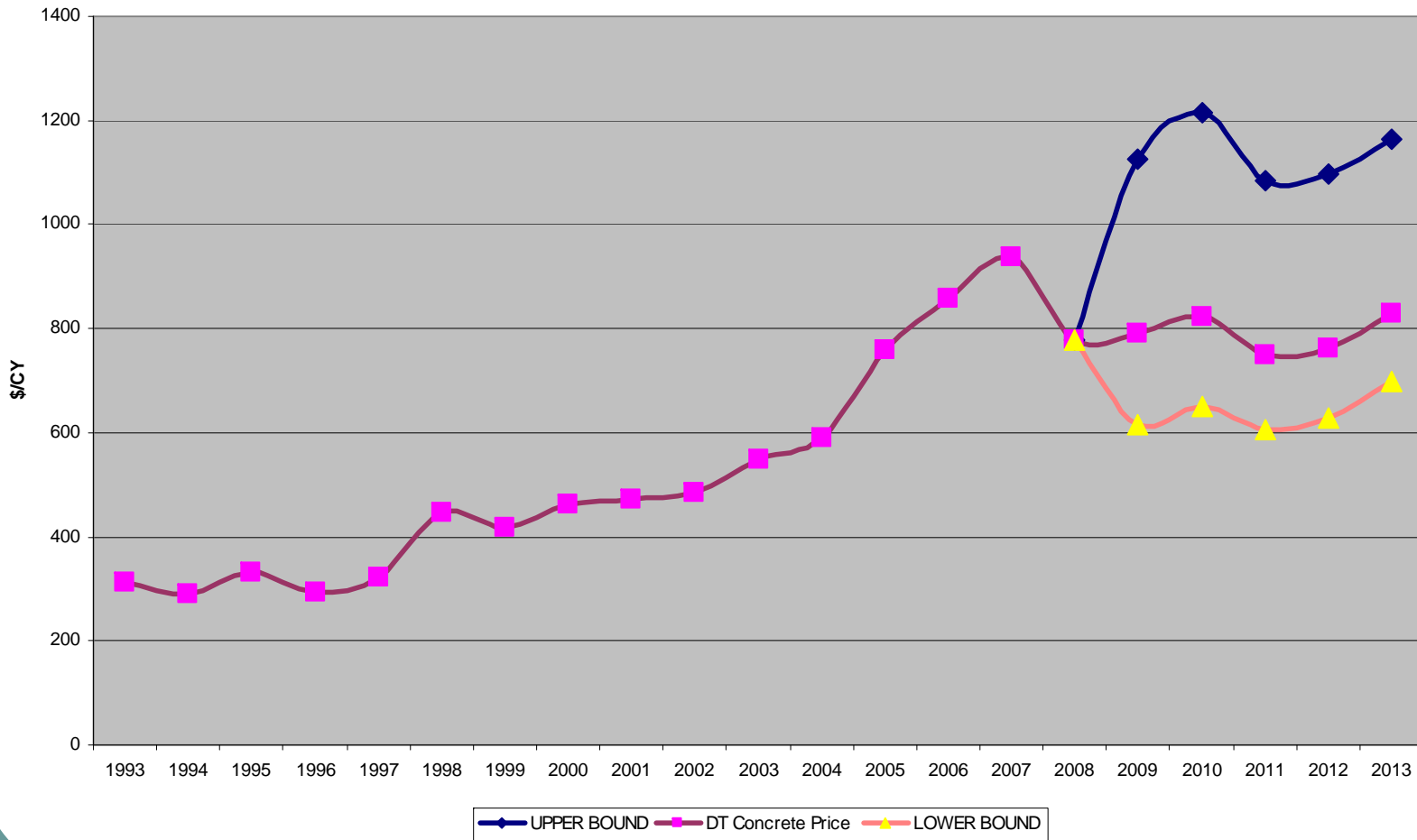
Forecast HMA Costs



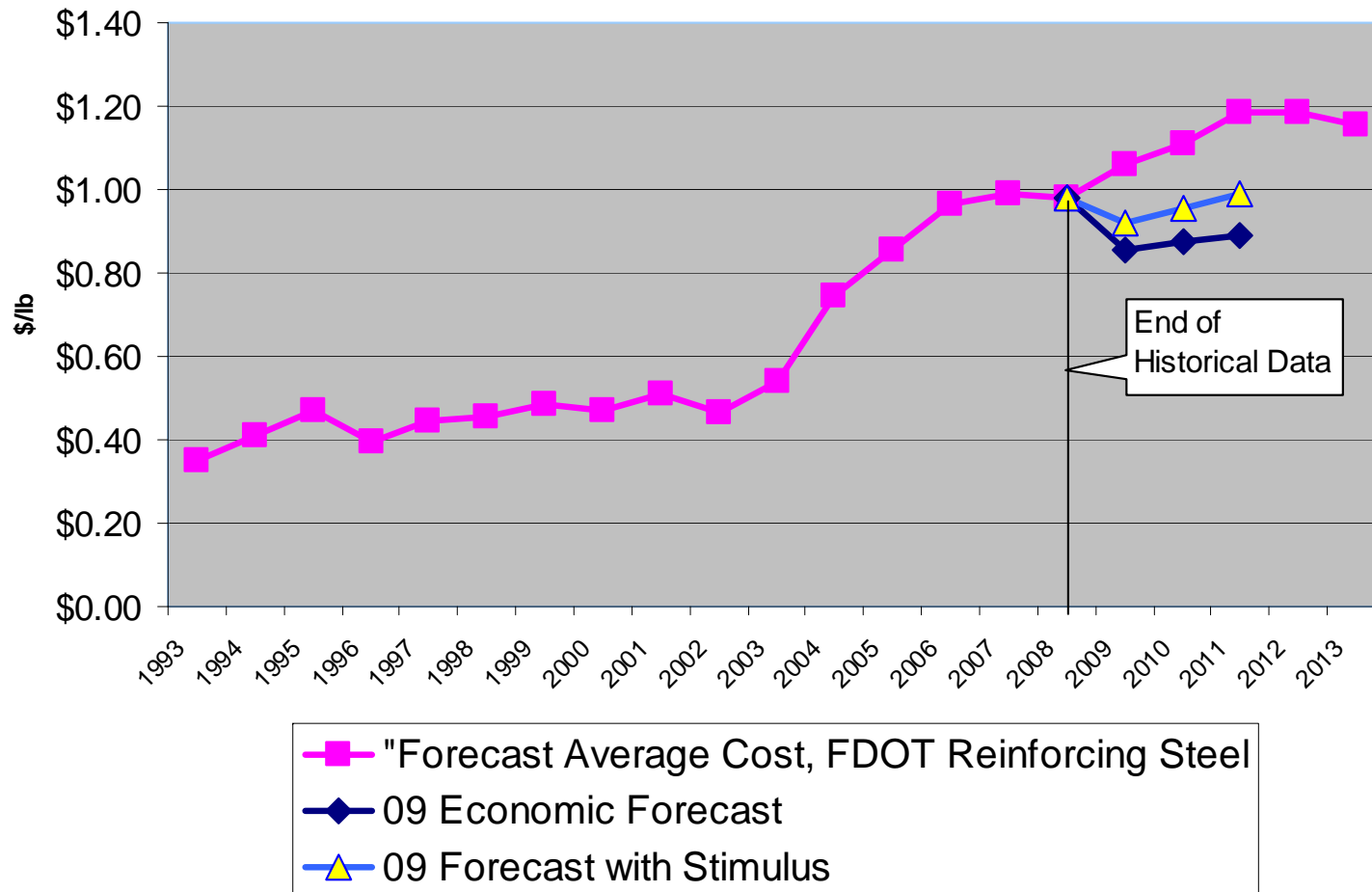
Florida Demand: Concrete



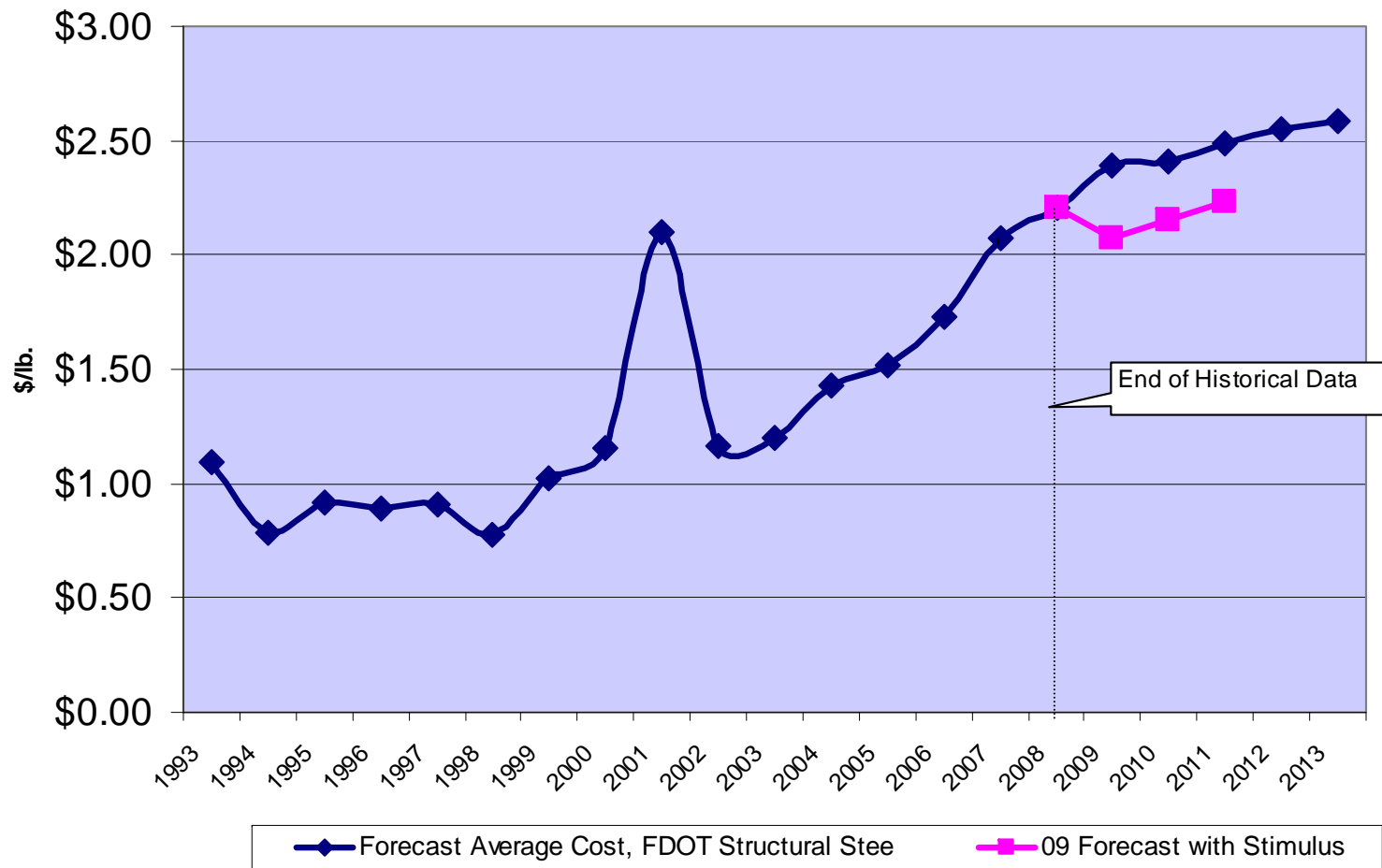
FDOT Concrete Cost Outlook



FDOT Cost Reinforcing Steel



FDOT Cost Structural Steel



FDOT Costs

	For every 10% increase in	FDOT saw an increase of:
	FDOT's Work Program	2.5%
	Crushed Stone Prices	6.9%
HMA	Price of Crude	3.6%
	Portland Cement Prices	6.1%
	Diesel Prices	2.4%
Concrete	Imports to Florida	2.2%
	Price of Portland Cement	5.1%
Reinforcing Steel	Price of Iron Ore	2.5%
	Price of Coal	13.5%
Structural Steel	Employment in Heavy Construction	4.0%

Recommendations

“Control what you can control”

- Not China, nor Energy Prices
- Focus on findings which FDOT can begin to work on now for most cost savings
 - Flexibility
- Final written report includes additional findings which are expected to have long-term impacts

Summary of Recommendations

- Use Window provided by lower demand and increased competition to Standardize Specs.
- Increase Flexibility
 - Design standards
 - Contractors choice pavement design at bid
 - Imports of material

Summary of Recommendations

- Use Longer-Term Planning Horizon
 - Long-term contract for binder supplies.
 - Annual escalation factors.
 - Publicize long-term work plan estimates.
 - Ports Management.
 - Water and land use planning.

Recommendations

FDOT Specs

- Use window of opportunity during housing downturn to review specs
 - Best estimate: 4th Quarter 2009
 - In process
- Certifications & Specifications versus warranties
- Identify specs that cannot be verified through performance; eliminate others
 - “Generic Mix” specs
- Coordinate with Georgia, Louisiana, Alabama, Texas to standardize specs
 - Publicize to suppliers

Recommendations

Oil Price Impacts

- Long-term Contract Issues
 - 40% of contracts extend more than two years
 - Annual Escalation Factors tied to midpoint of project

Recommendations

Oil Price Impacts on Asphalt Supply

- Long term contracts for backup asphalt binder supplies
 - Strategic Reserves negotiated with suppliers
 - Physical or Financial (future contracts)
 - Private sector opportunity as oil companies let terminal leases expire
 - Data collection

Recommendations

Oil Price Impacts on Asphalt Supply

- National issue
- Post-WWII policies approached the same issue with steel and zinc through long-term Federal contracts
 - Purchased material for stockpiling
 - Production accelerated, both domestically and abroad
 - Created competition
- Actively market 5 year materials requirements
 - Coordinate with FHWA to do the same

Recommendations

Competition & Planning Horizons

- Bid contractor's choice pavement design for new roadway projects or reconstruction
 - Identify candidate projects during Preliminary Design phase
 - Potentially lower construction costs 9-14% based on Other STA's experience
 - \$80 million for 5 year work plan new roadways
 - Not including reconstruction projects
 - Prior to recent cost declines for concrete
 - Increase contractor participation
- Imports

Summary

- Lower demand is having a significant effect, increasing bid competition and lowering prices
- Competition is masking materials costs temporarily
- Price increases should be more controlled than during the housing/China bottleneck period
- Market constraints support review of FDOT specs
- Energy costs may change outlook for certain design assumptions

Closing Thoughts

“In all affairs it's a healthy thing now and then to hang a question mark on the things you have long taken for granted.”

Bertrand Russell

British author, mathematician, & philosopher (1872 - 1970)

“We can draw lessons from the past, but we cannot live in it.”

Lyndon B. Johnson, *36th president of US (1908 - 1973)*

Questions?

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