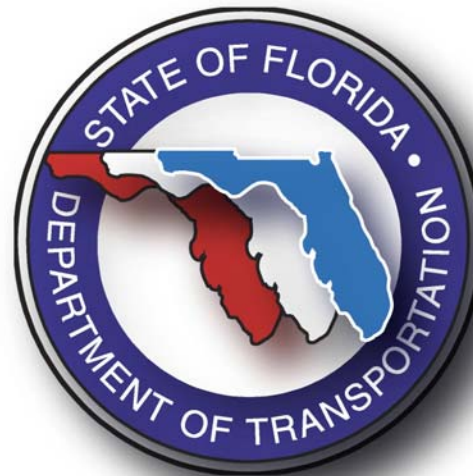


# Major Issues in the World of Asphalt in Florida



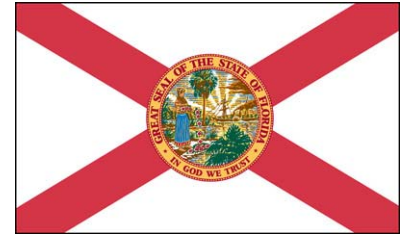
**Jim Musselman**  
**Florida Department of Transportation**

# Major Issues:

1. Increasing construction costs
2. Materials shortages
3. FDOT response to 1 & 2
4. Pavement Stuff



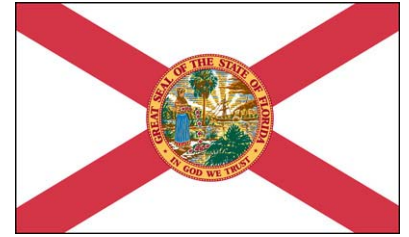
# Florida



- Population: Over 15.9 million
  - 4<sup>th</sup> Largest State in the US
  - Increases by 1,200 people per day
- Roadways: 114,000 miles
- State Highway System
  - 12,000 miles of roadway
    - 44,000 lane miles
  - Carries 66% of all traffic in state



# Florida



- Florida Department of Transportation
  - \$3 billion construction budget
    - Approximately 500 Construction contracts/year
  - Approximately 5.2 million tons hot mix asphalt (HMA) placed per year
    - Total amount of HMA statewide = 19 million tons



# Asphalt in Florida



- 100% Superpave since 1998
  - Follow AASHTO requirements
  - 9.5, 12.5 & 19.0 mm NMAS
- Open-Graded Friction Courses
  - High speed, multi-lane roadways
- Construction acceptance:
  - Percent Within Limits (PWL)
  - Based on Verified Contractor data





Major Issue No. 1:

Cost Increases



# Construction Price Increases

Pay Item Group	Unit	2003	2004	Change	2005	Change
Earthwork	CY	\$4.96	\$4.38	-11.7%	\$7.24	+65.3%
Asphalt	TN	\$55.93	\$61.63	+14.3%	\$75.81	+21.9%
Concrete (Structural)	CY	\$550.56	\$564.12	+2.5%	\$749.87	+32.8%
Steel (Structural)	LB	\$1.06	\$1.48	+39.6%	\$1.57	+6.1%
Steel (Reinforcing)	LB	\$0.52	\$0.75	+44.2%	\$0.89	+18.7%





# Causes for Major Cost Increases

- **Construction market saturation**
  - “Hot” Market, both public and private sector
  - Additional work recovering from 8 hurricanes
  - Labor shortages
  - Material shortages
- **Fuel cost increases**



# Causes for Major Cost Increases

- Materials price increases (earthwork, asphalt, concrete, steel)
- Trucking cost increases
- Project requirements:
  - Hours of operation
  - Night work
- Not enough bidding competition



# Contract Lettings

Fiscal Year	Number of Contracts	Avg Number of Bidders Per Contract	Contracts With No Bid	Contracts with One Bid	Contracts with Two Bids	Percent of Contracts w/0, 1, or 2 Bids
2002/03	243	4.3	0	7	27	14%
2003/04	238	3.9	0	20	43	27%
2004/05	240	3.5	4	11	51	28%
2005/06*	96	2.9	1	6	32	41%

\* Data through November 2005 Letting



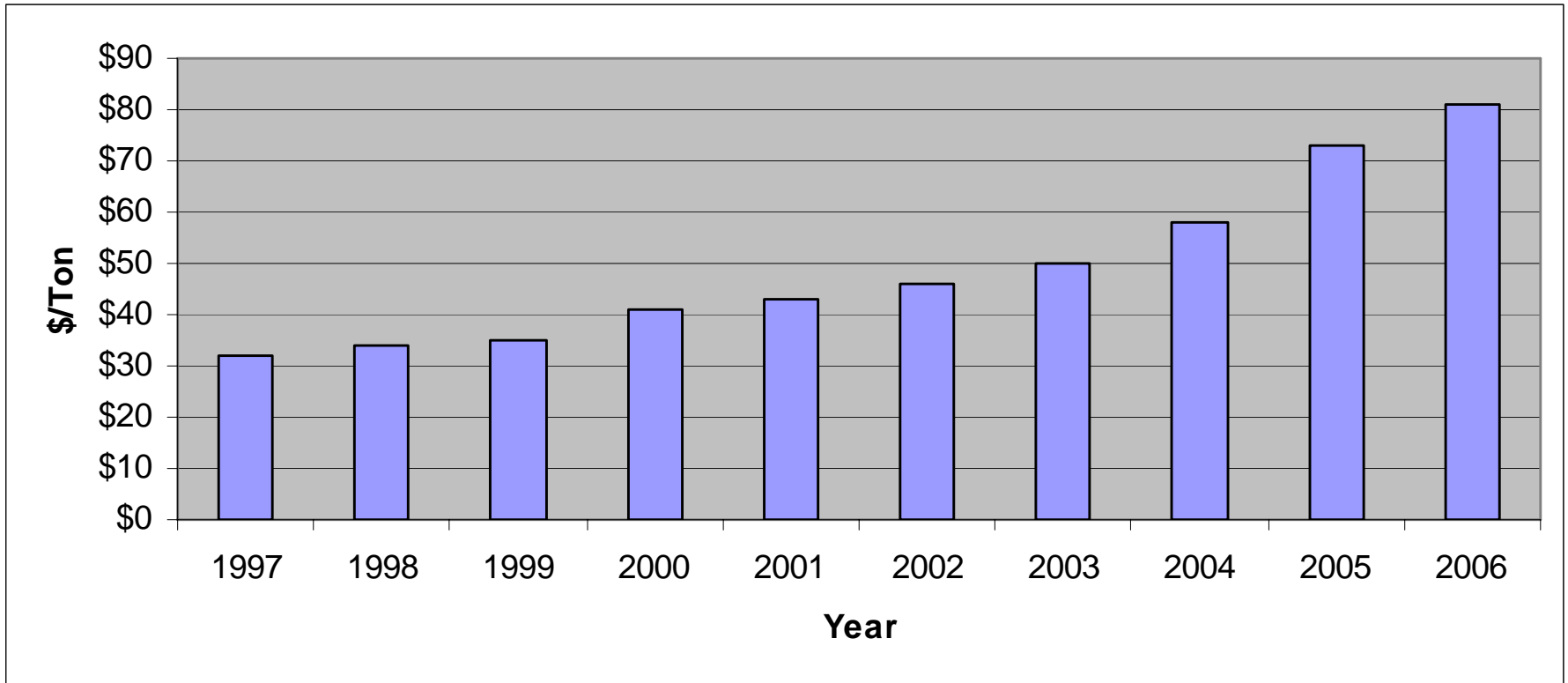
# Asphalt Related Costs

Current costs of aggregate, binder and hot mix asphalt are at an all time high!

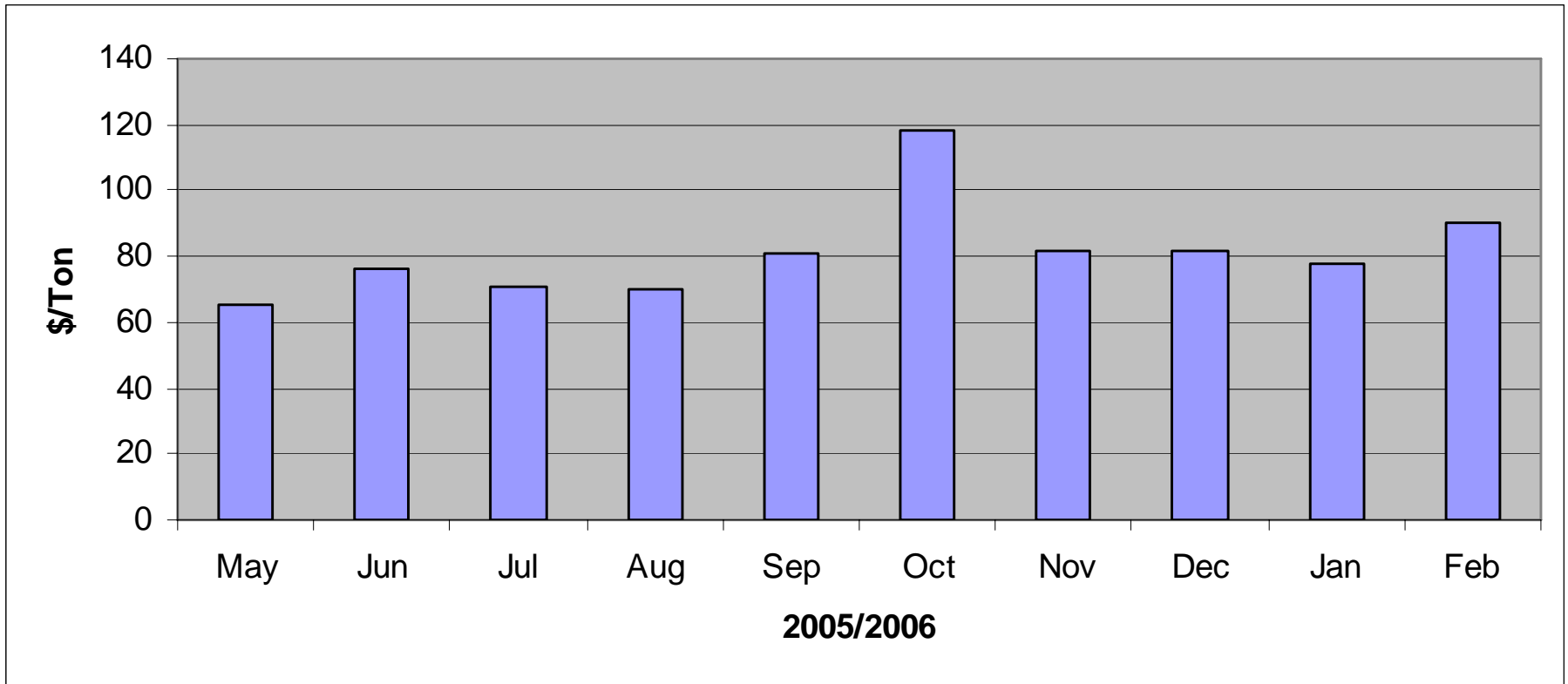
- Binder: 1.44 \$/gal (330 \$/ton)
- Aggregate: 18 – 23 \$/ton
- HMA: 81 \$/ton



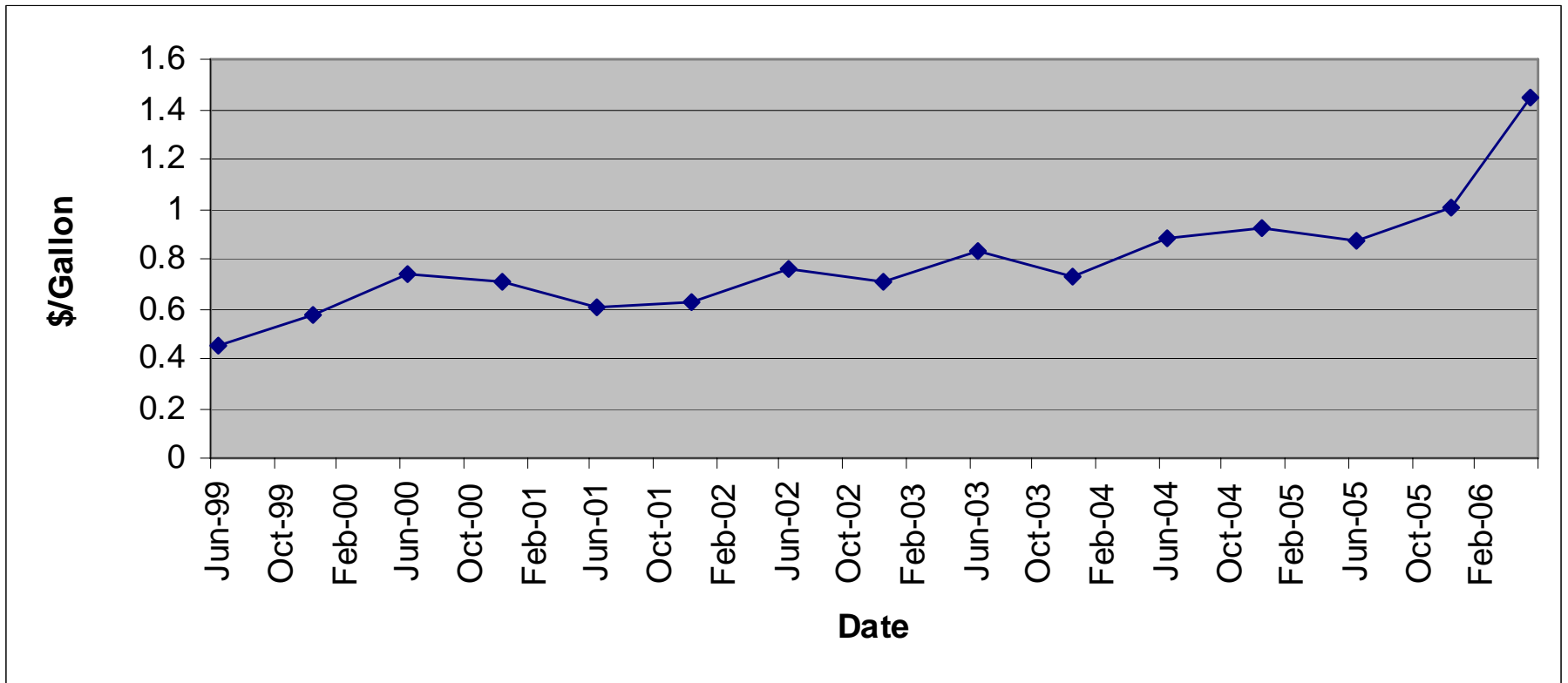
# Rising Cost of HMA in Florida



# HMA Costs 2005/2006



# Binder Costs







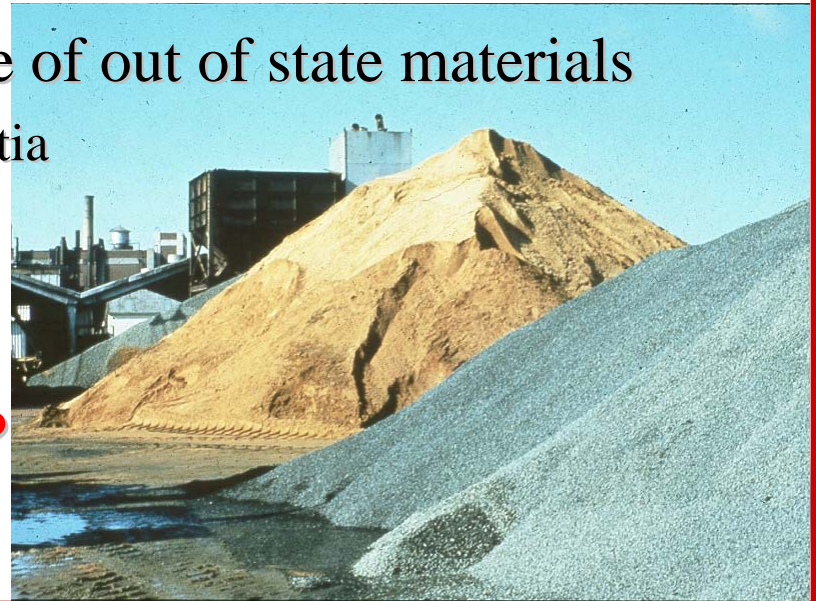
# Major Issue No. 2:

# Material Shortages



# Aggregate Shortages

- High demand
- Superpave impact
  - Dramatically reduced usage of Central & North Florida Limestone
  - Dramatically increased usage of out of state materials
    - Granite: Georgia & Nova Scotia
- Transportation issues:
  - Rail, shipping & trucking
- **Lake Belt Mining Ruling?**



# Aggregate Sources

- Aggregate mine
- Aggregate terminal



# Asphalt Binder Shortages

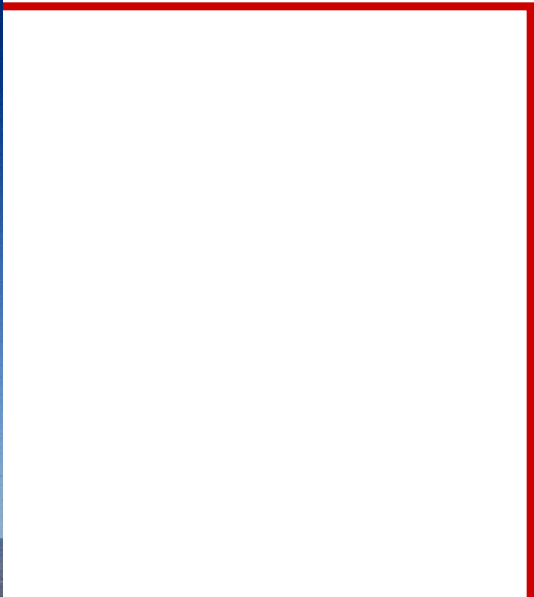
- Increased demand for asphalt in the eastern US
  - Warmer winter
- Reduced Supply:
  - Reduced asphalt production – Gulf Coast
  - Katrina
  - Economics
- Limited storage facilities in Florida
  - Rely on terminals at ports
  - No refineries
- Peninsular Florida out of binder since January '06



# Binder Sources

- Asphalt Terminal





**Crude Oil**



**Transportation**

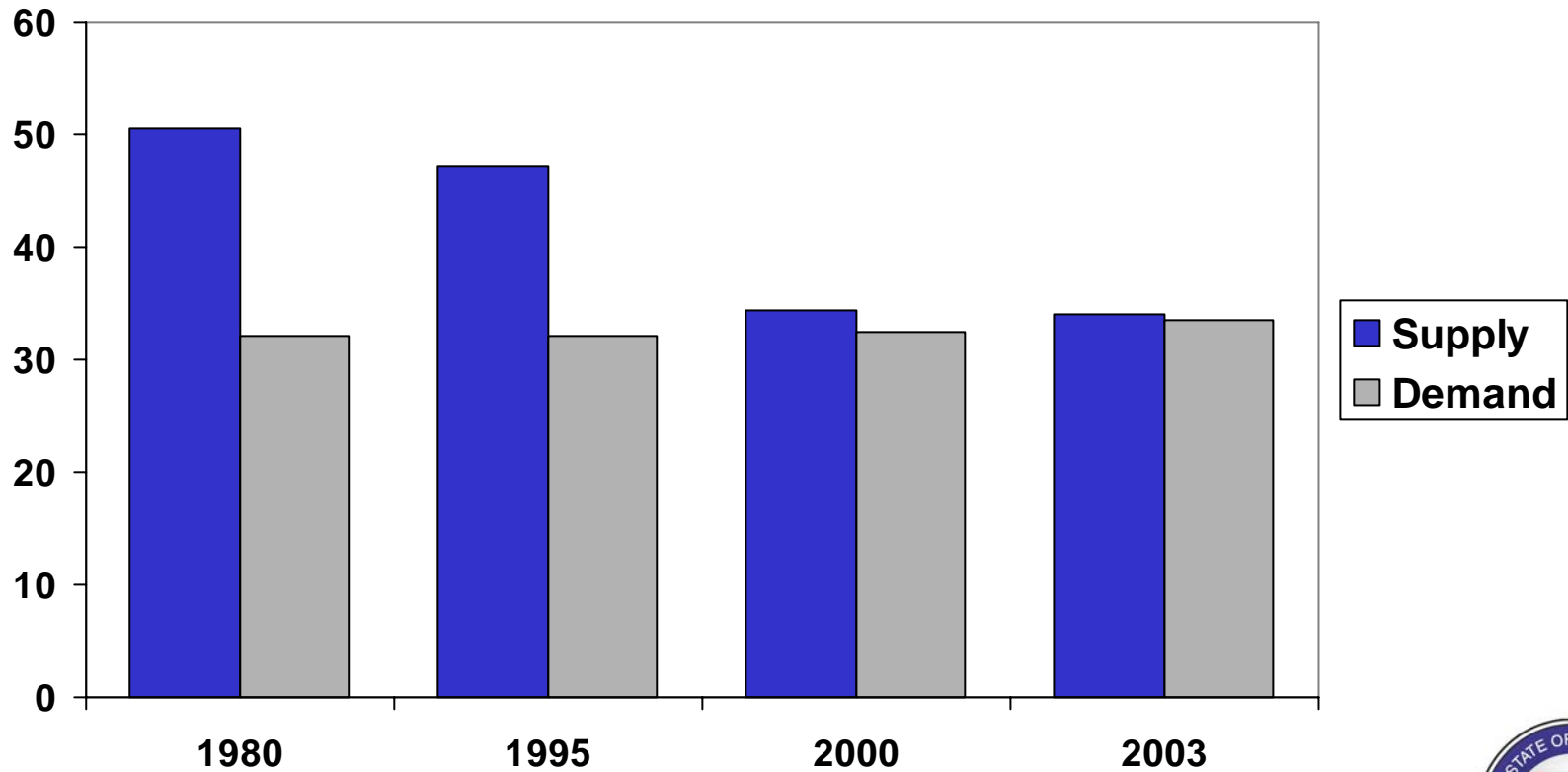
# Refineries



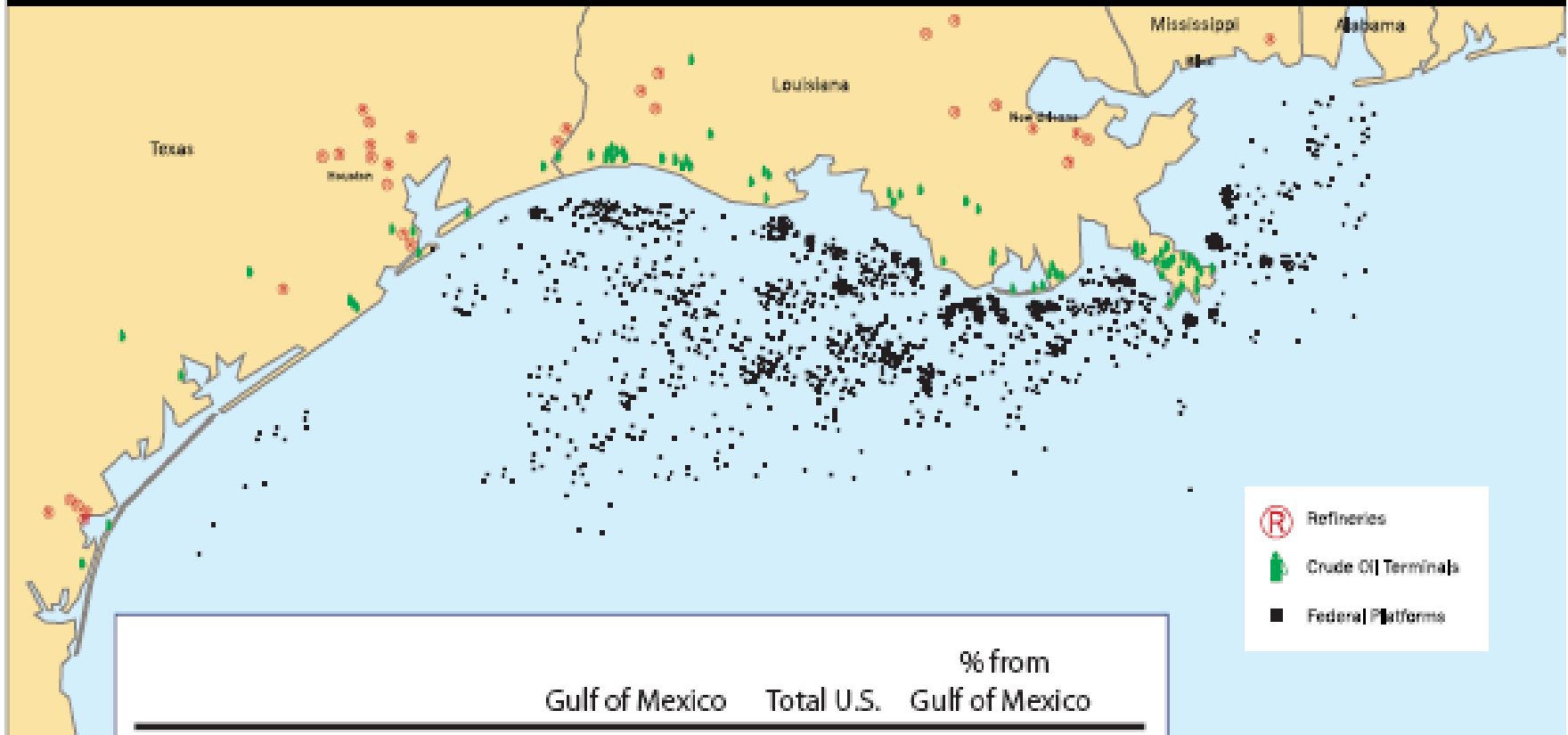


# Historical Asphalt Supply/Demand

Millions Tons - Liquid



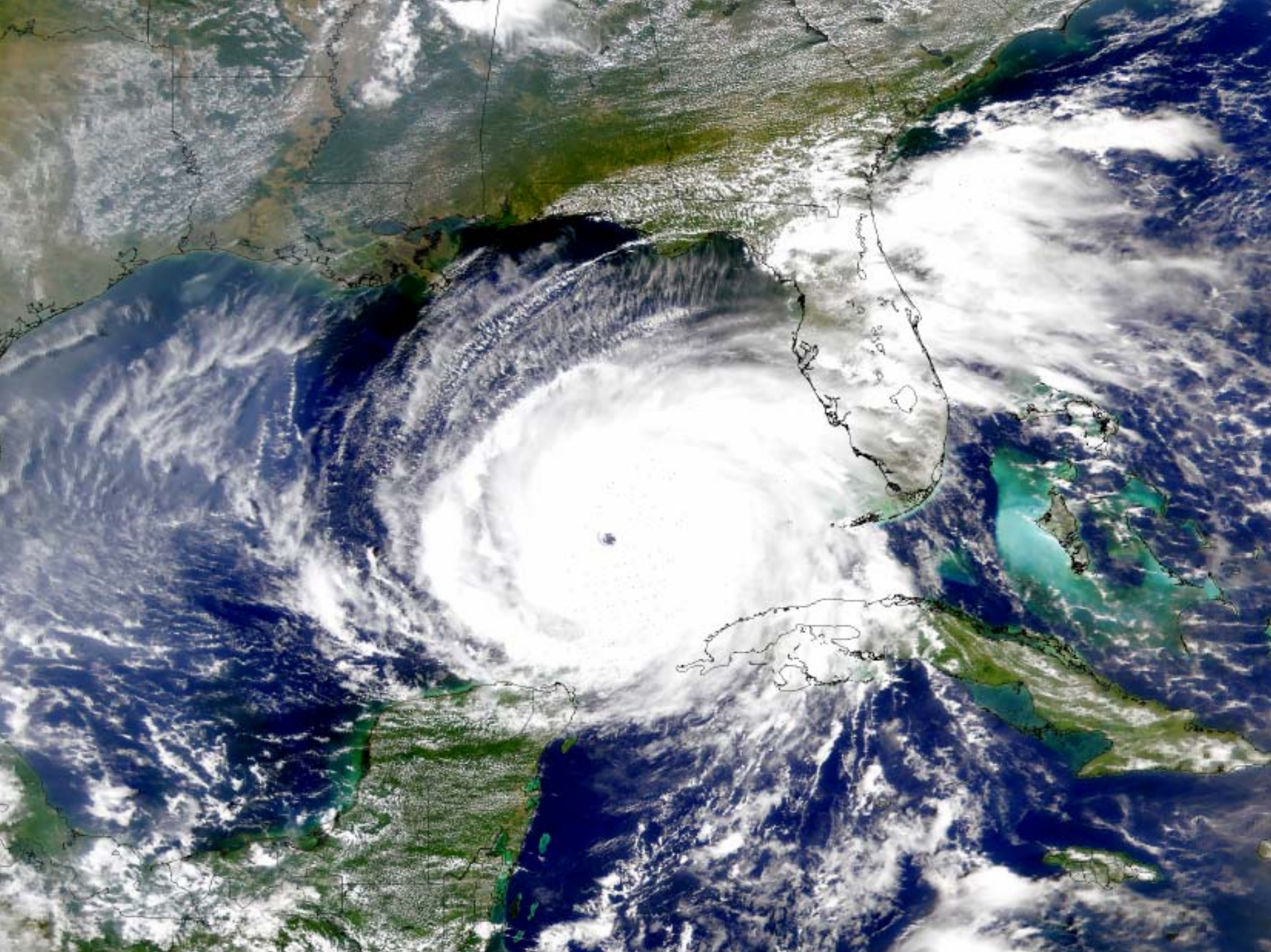
# Gulf Coast Oil and Natural Gas Operations



- Ⓡ Refineries
- ▭ Crude Oil Terminals
- Federal Platforms

	Gulf of Mexico	Total U.S.	% from Gulf of Mexico
Oil production (million b/d)	1.5	5.5	27%
Natural Gas production (bcf/d)	10.6	52	20%
Refinery Capacity (million b/d)	8.1	17	48%
<i>of which in LA and MS</i>	<i>3.1</i>	<i>17</i>	<i>18%</i>
Crude Oil Imports (million b/d)	6.5	10.8	60%
<i>of which into LA and MS ports</i>	<i>2.5</i>	<i>10.8</i>	<i>23%</i>

Source: U.S. Energy Information Administration



A tropical beach scene at sunset. The sky is a mix of orange, yellow, and blue, with scattered clouds. The sun is low on the horizon, creating a bright glow. In the foreground, three palm trees are silhouetted against the sky, their fronds blowing in the wind. The ocean is visible in the background, and the beach is in the foreground.

# New State Tourism Campaign:

Coming to Florida?

Bring some rock....or binder!

**Major Issue No. 3:**

**FDOT Response to Issues 1 & 2**



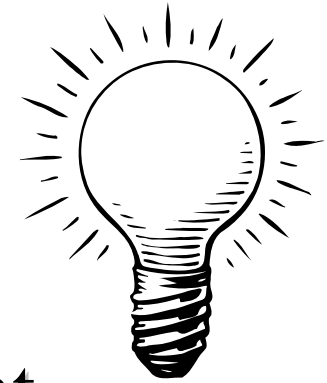
# FDOT Actions



- Construction specification changes
  - Removing unnecessary restrictions
  - Simplifying (dropping PWL)
  - Opening up materials usage
- Looking at developing “strategic reserves” of aggregate
  - Purchase & stockpile aggregate for use on FDOT projects
  - Help to develop aggregate delivery infrastructure
- Considering FDOT owned & operated mines



# FDOT Actions



- Considering Regional Asphalt Plant Facilities
  - Property owned by FDOT
  - Permitted for asphalt plant
- Considering reducing night work
- Hot In-Place Recycling
- Generic HMA specification



Major Issue No. 4:

Actual Pavement Stuff







# Hot Issues

- Value Added Asphalt Pavements
  - 3 year performance “guarantee”
- Pavement Noise
  - UCF Research contract to look at typical pavement noise in Florida
  - Wayside/OBSI/CPX
  - Determine if FDOT participates in QPPP



# Hot Issues

- Smoothness
  - Working on an incentive/disincentive spec
  - High speed laser profiler
  - Not sure how to handle bumps...
- Friction
  - Porous Friction Course in Jacksonville
    - PEM 1¼”
  - Bonded Friction Course
    - Novachip and variations
  - Friction data
    - Granite/Limestone issue



# Hot Issues

- Performance:
  - Cracking still primary mode of failure
  - Longitudinal wheelpath
  - Top-down
- Looking at improved materials
  - Binder
  - Gradation



# Hot Issues

- Lack of experience
  - Losing experience at all levels
  - In all areas
    - Design/Construction/Materials
  - All entities:
    - Contractor/FDOT/Consultants/FHWA
  - Big problem....





**Thank You!**