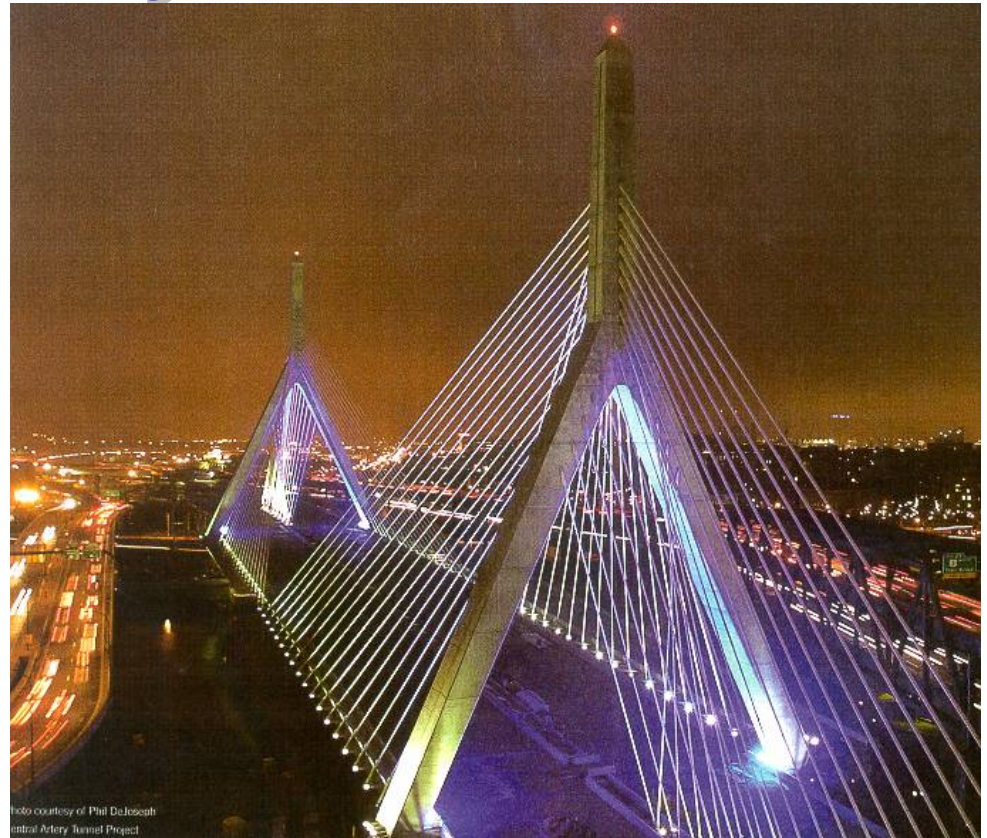


# Steel Bridge Update: Research, Availability, Choices & Costs

***Matthew F. Habenicht  
ArcelorMittal USA***

***Highway Cost  
Conference  
September 11, 2007  
St. Louis, MO***

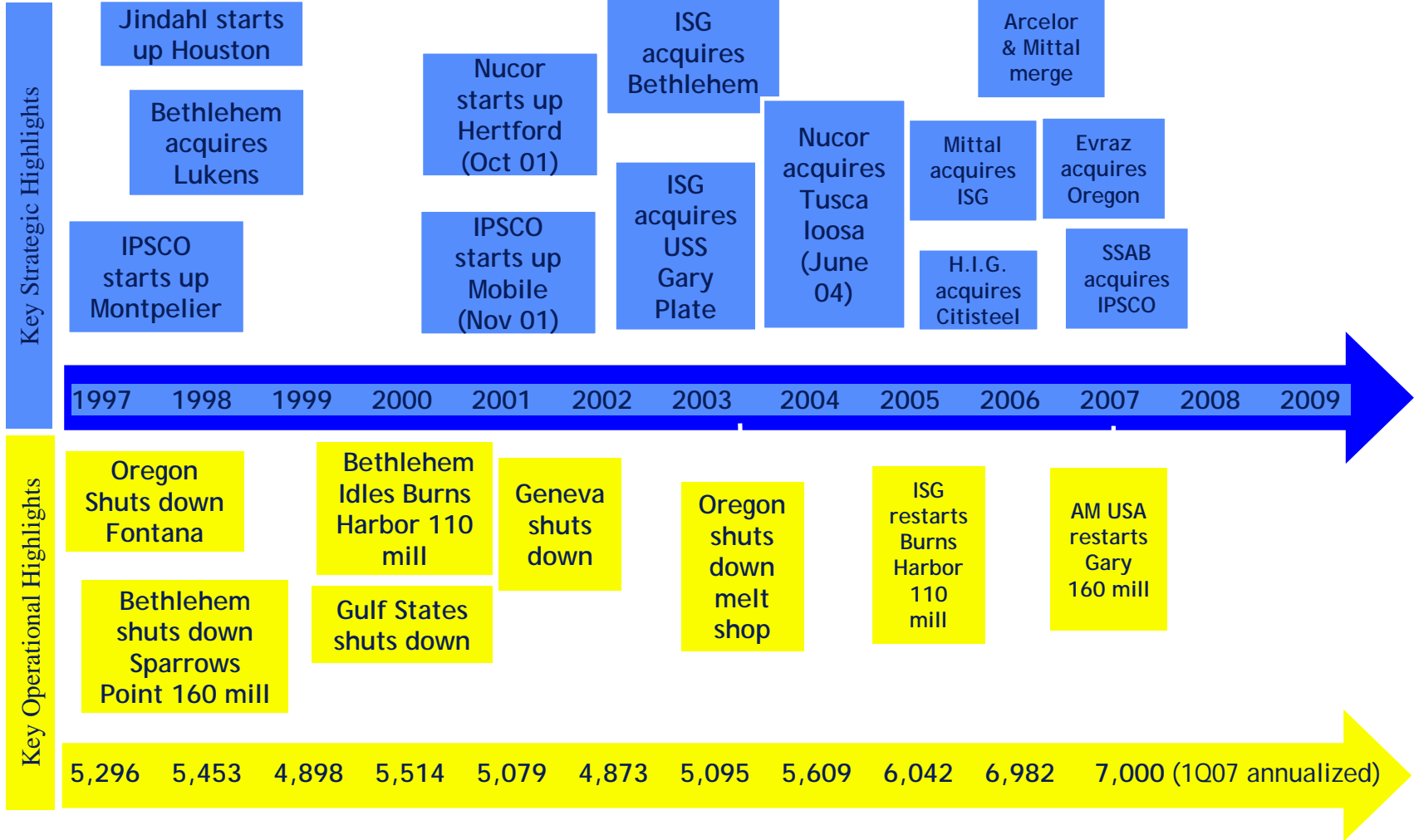


**Zakim Bridge, Boston**

# State of the Steel Industry

- Global steel economy continues strong = 3 record years of shipments.
- China meeting own needs with new capacity.
  - *Potential Chinese steel exports to USA causing concerns.*
- Scrap prices have been up; recent surge driven by demand in Turkey, Malaysia, Thailand.
  - *Iron ore prices also continue to rise*
- Plate prices had been stable.
- Tight availability of heat treated & heavy or ingot plates
  - *Iraqi war effort continues strong demand at ArcelorMittal's Conshohocken plant for Army armor.*
- Continued global consolidation: IPSCO, Algoma, & Oregon.

# Consolidation in the US Plate Industry

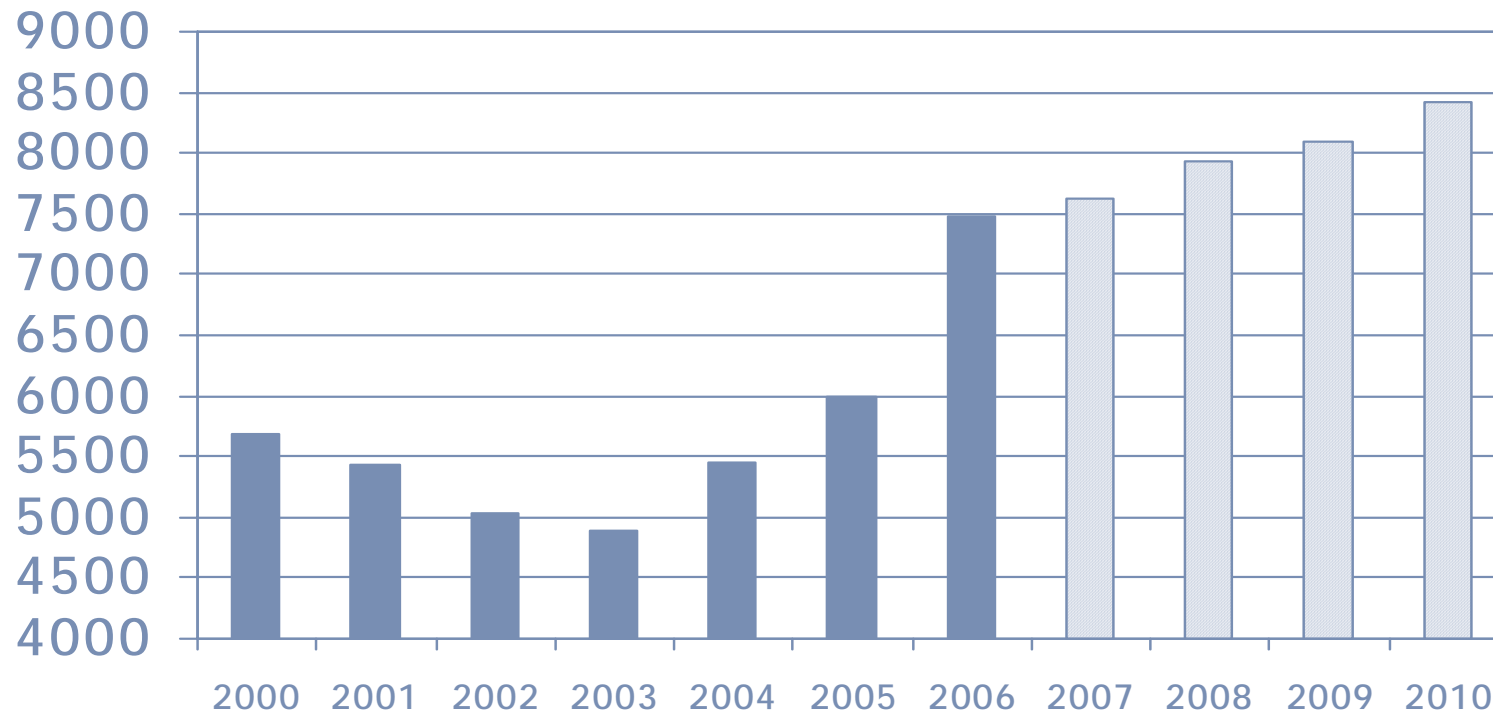


US Mill Carbon & Alloy Cut Plate Shipments in thousands of tons - Source AISI

# US plate market is attractive and has a significant growth potential by 2010

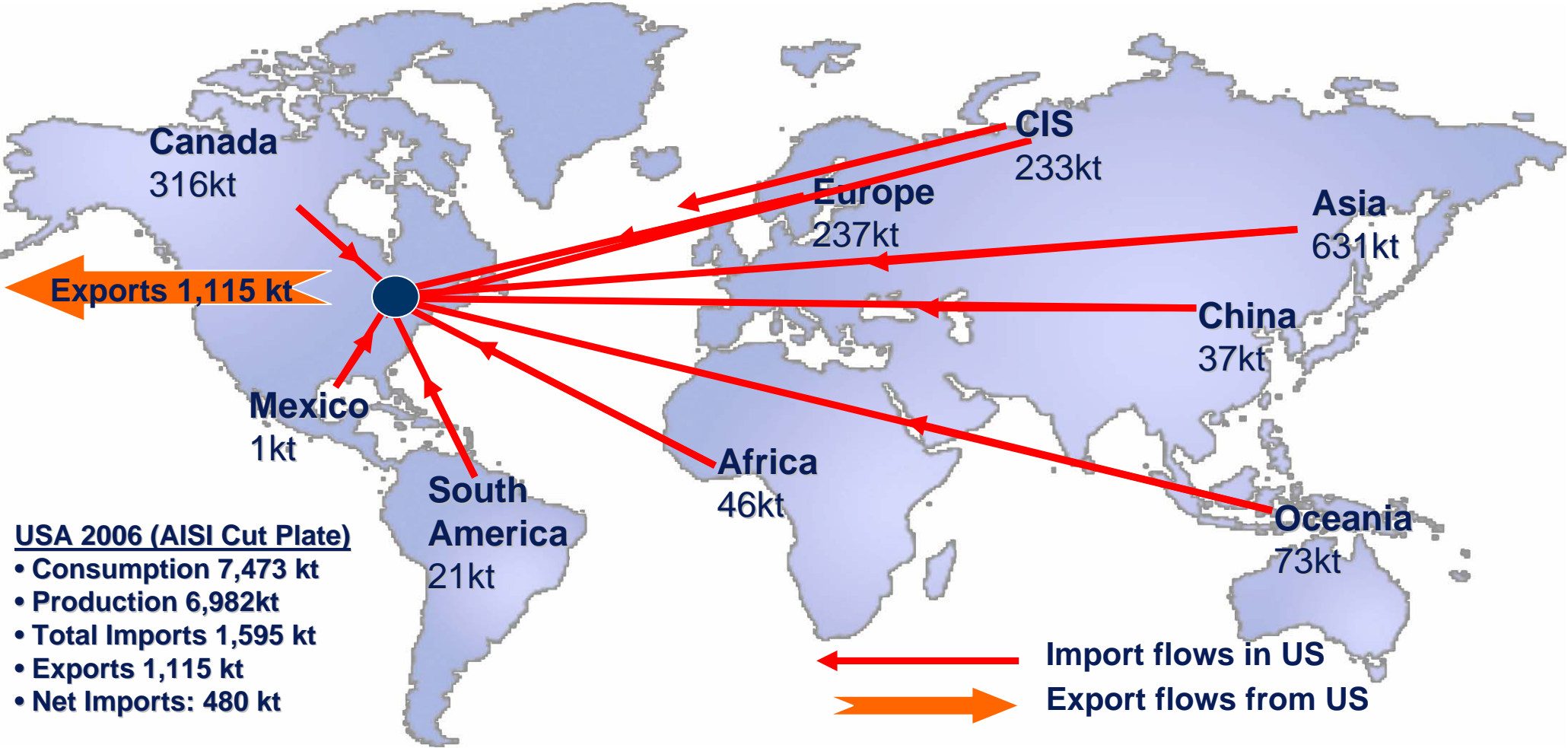


US market - Cut Plate Apparent Consumption

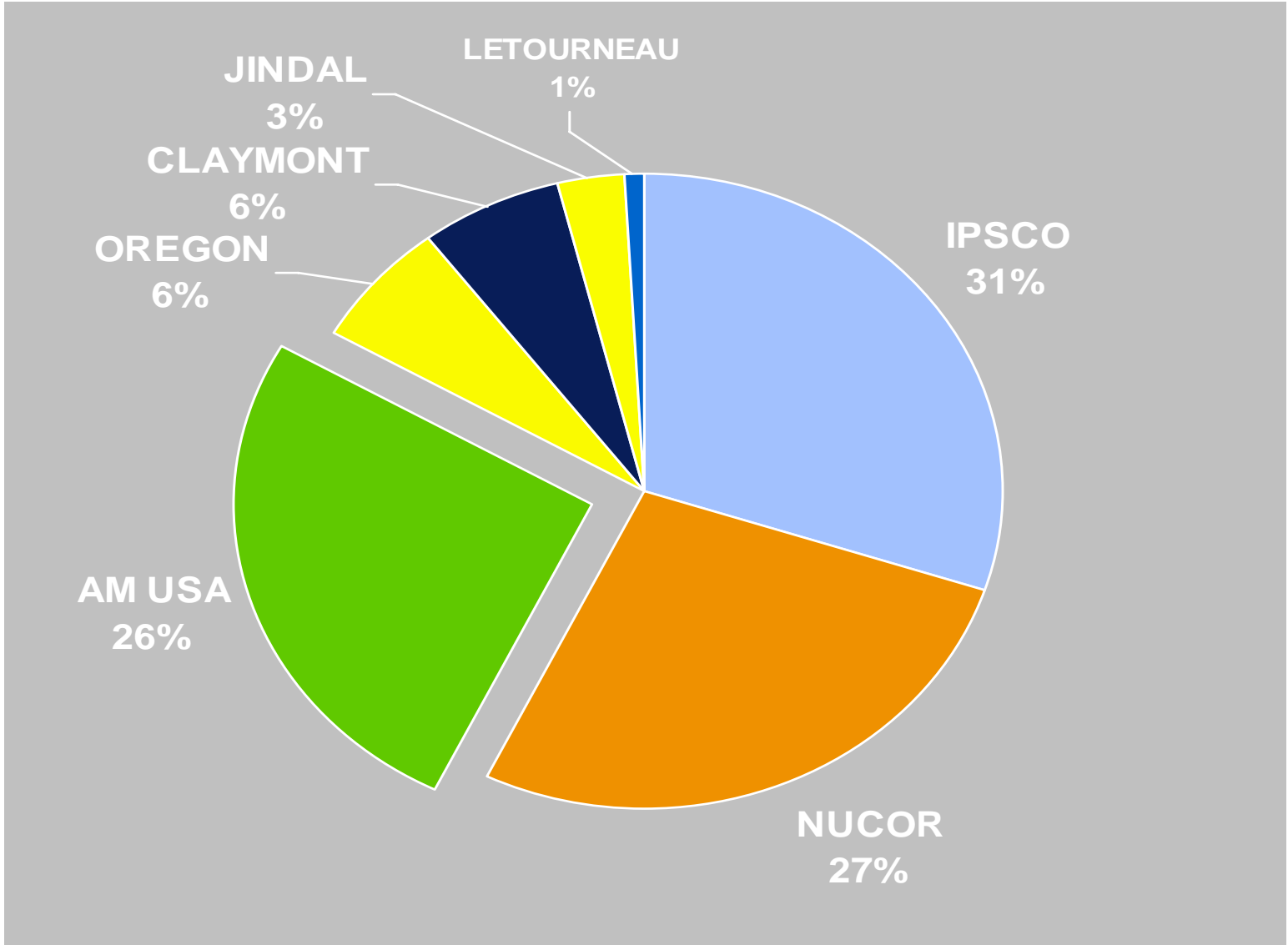


- 2007- 2010 forecasts are based on CRU's growth estimations
- The main drivers of future growth are the energy markets (linepipe, wind towers, offshore)

# US plate market is attractive and has a significant growth potential by 2010



# AM USA is #3 supplier of the US Cut Plate domestic shipments based on 2006 data



# Various Welding & Design Activities



- Optimizing weldments & guidelines for use of HPS 70W and HPS 100W
- Continuing studies on the ductility, live-load deflection, superior toughness, and seismic attributes of HPS grades.
- Projects to develop new corrosion resistant grades of steel.



# HPS Use in Bridges - Highlights



- *HPS grades in use in 45 States; over 250 in service*
- *Benefits of HPS 70W: 5 to 10% cost reduction*
  - Largest project, Mass. Route 3 with 33 HPS bridges; includes 100th bridge in service
  - Marquette Interchange in WS and Blennerhassett in WV are projects that are major users of HPS
- *Hybrid designs with HPS 70W and 50W*
  - For improved clearances totally HPS 70W used
- *HPS 100W used in NE, NY and WV; NC currently*
- *Use in fracture-critical members encouraged by FHWA*



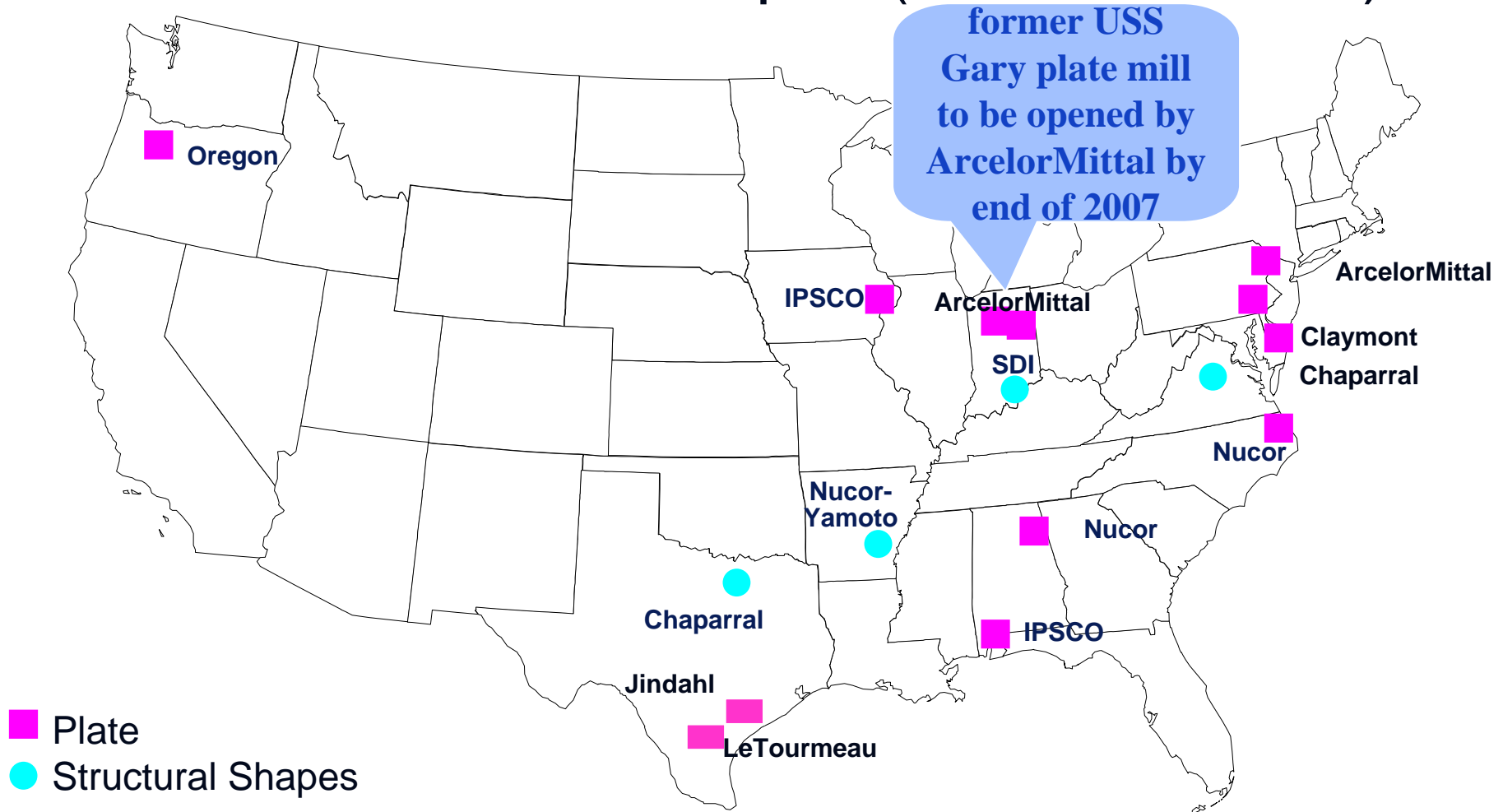
# Steel Availability



Millau Viaduct, France

# Production Facilities for Bridge Steels

## Plate and Structural Shapes (main members)



# Steel Choices



Marquette  
Interchange



# Traditional Steels and New HPS

The New Steel



A709 Grade	Similar ASTM	Typical Production	Nominal Levels C.E.	C
36	A36	HR	.33	.15
50	A572	HR	.38	.15
50W	A588	HR	.48	.15
100W	A514	Q&T	.59	.16
HPS-50W	-	HR, CR	.50	.10
HPS-70W	-	CR, IAC, Q&T	.50	.10
HPS-100W	-	Q&T	.60	.06
A1010	A1010	T, N&T, Q&T	NA	.01

HR - Hot-Rolled, CR - Control-Rolled, IAC - Interrupted Accelerated Cooled,  
Q&T - Quenched and Tempered, N - Normalized

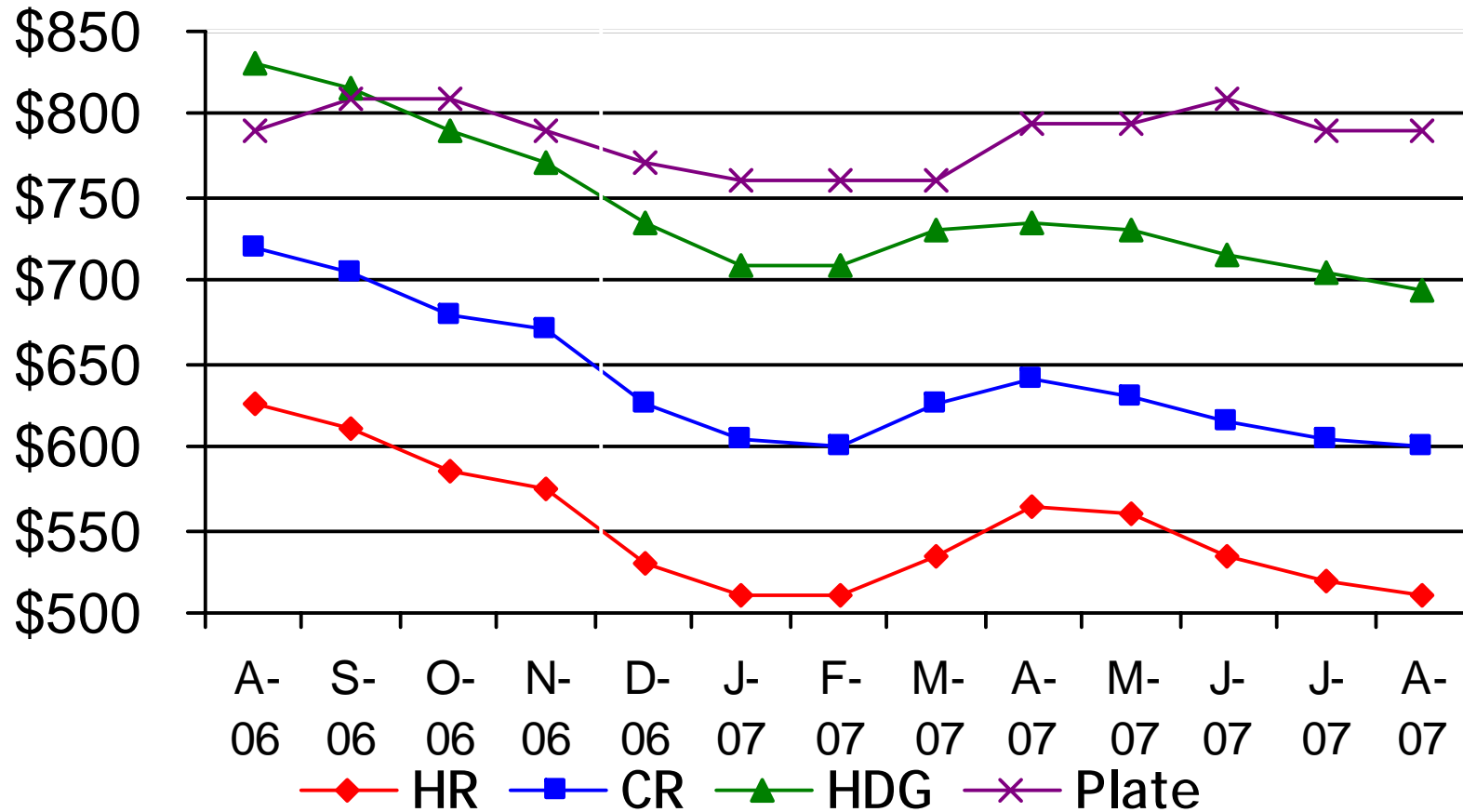
$$C.E. = C + \frac{Mn}{6} + \frac{Cu + Ni}{15} + \frac{Cr + Mo + V}{5}$$

# Steel Pricing

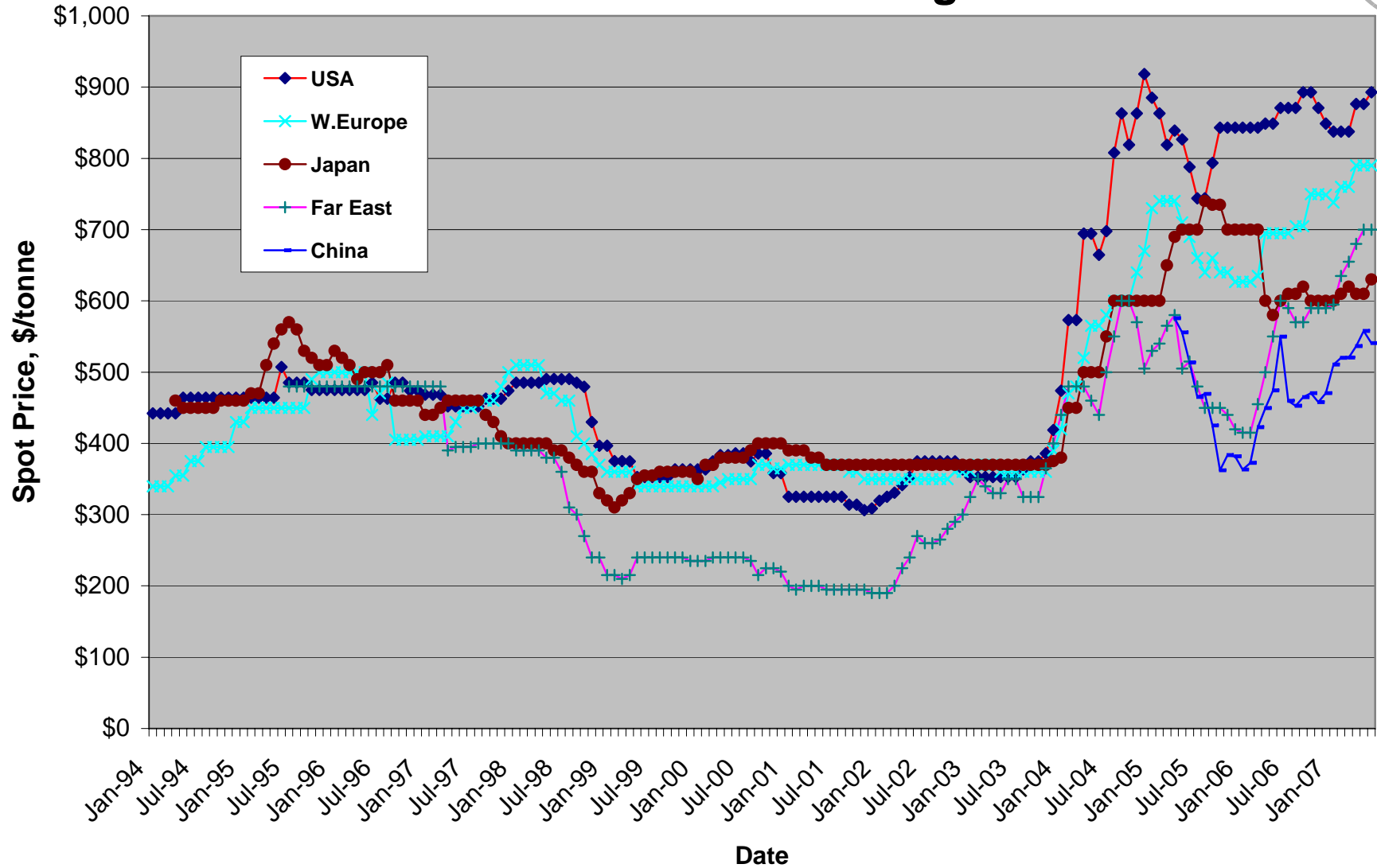
Woodrow Wilson Bridge



# CRU Base Price

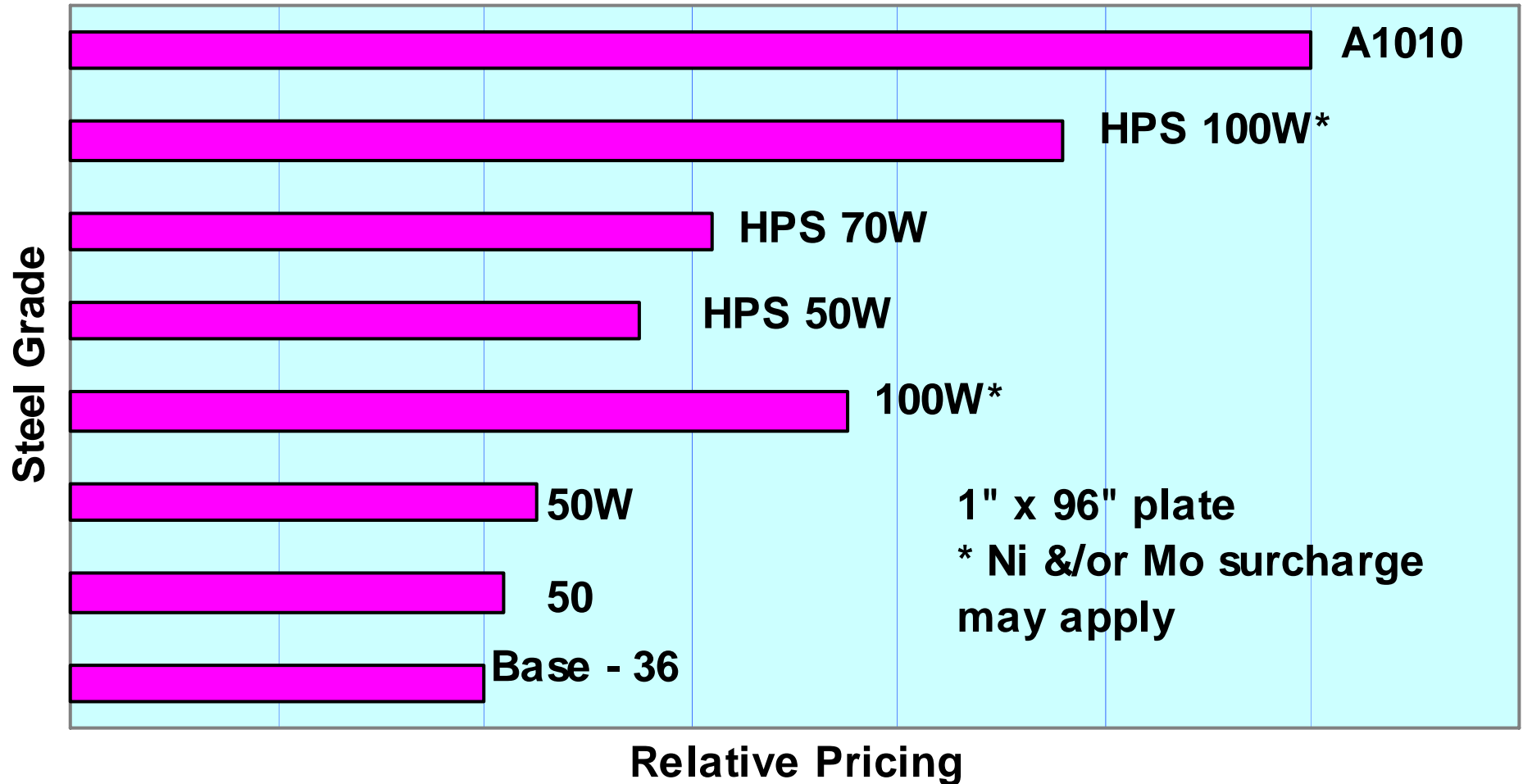


# Worldwide Plate Pricing





# Relative Bridge Steel Pricing ASTM A709 Grades and A1010



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*Latest Steel Bridge Information at*

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



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