



 Steel Recycling Institute

The Mississippi Solid Waste and Recycling Conference



May 16, 2018

 Steel Market Development Institute

The New Steel 



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 Steel Recycling Institute

Founded in 1988, Now Part of SMDI



American Iron and Steel Institute



Steel Market Development Institute



Steel Recycling Institute

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About AISI



American Iron and Steel Institute

- Serves as the voice of the North American steel industry in the areas of public policy, trade, market development and technology innovation.
- 19 member companies, both integrated and electric furnace steelmakers, who represent 75% of steel in North America.
- U.S. steel industry operates more than 100 steelmaking and production facilities, producing 87 million tons in steel shipments valued at \$75 billion in 2014.
- U.S. steel industry directly employs about 142,000 people.
- U.S. steel industry, directly or indirectly, supports almost one million U.S. jobs.
- Labor productivity has seen a five-fold increase since the early 1980s, going from an average of 10.1 man-hours per finished ton to an average of 1.9 man-hours per finished ton of steel in 2015.

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 Meet SMDI

 **Steel Market Development Institute**

Investor Companies **Partner Alliances**

 AKSteel	 Auto/Steel Partnership	 Metal Building Manufacturers Association	 Cool Metal Roofing
 ArcelorMittal	 Steel Framing Alliance <i>Steel The Better Builder</i>		 SHORT SPAN STEEL + BRIDGE ALLIANCE
 NUCOR	 CFSEI COLD-FORMED STEEL ENGINEERS INSTITUTE	 METAL INITIATIVE	 Canned Food Alliance <i>The Easy Way to Eat Right.</i>
 SSAB			 Steel Recycling Institute

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 Meet SMDI Sustainability Group

 **Steel Market Development Institute**

Mark A. Thimons
Vice President, Sustainability, SMDI

Kishore Mahbubani
Sustainability Analyst

Brandie Sebastian
Director, Life Cycle Assessment

David Keeling
Director, Recycling

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 Steel Recycling Institute



Meet the New SRI





The Steel Recycling Institute is an industry association with the mission of promoting and sustaining steel recycling. It is the primary information and technical resource for entities interested in steel recycling and the use of steel in sustainable construction.

The SRI also serves as the clearinghouse for life cycle assessment data for the North American Steel Industry. The SRI documents the environmental performance of steel products through life cycle assessment (LCA) studies and environmental product declarations (EPDs).


-Since 1990, the industry has reduced energy intensity by 31 percent and CO2 emissions by 36 percent per ton of steel shipped. Through recycling, the steel industry saves the energy needed to power 20 million homes for one year.

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President




Vice Chair




Secretary




Wisconsin Council on Recycling
Chair




Board Member



Advisory Board Member



Advisory Board Member

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Why recycle Steel?

Economics - saves money - substitution cost

Environment - conserves resources

Energy: 5450 BTU saved per lb. Of steel

Saves per ton of steel

Coal - 1,400 lbs

Iron ore - 2,500 lbs

Limestone - 120 lbs

Saves landfill space

1 cubic yard whole steel cans = 150 lbs

1 cubic yard flattened steel cans = 850 lbs

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A Partnership in Steel Making

Two Production Methods:

BOF or Integrated Mill

About 40% of overall U.S. production

Uses coke to convert Iron ore to Pig iron

Typically 65-75% molten iron
and 25-35% scrap

EAF or Mini Mill

About 60% of U.S. production

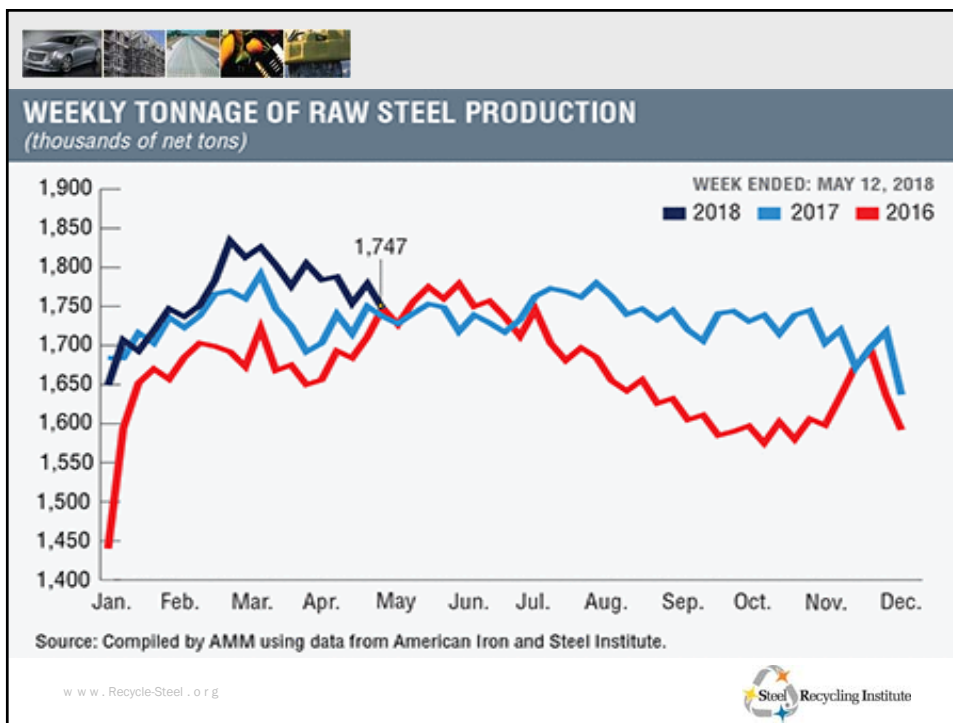
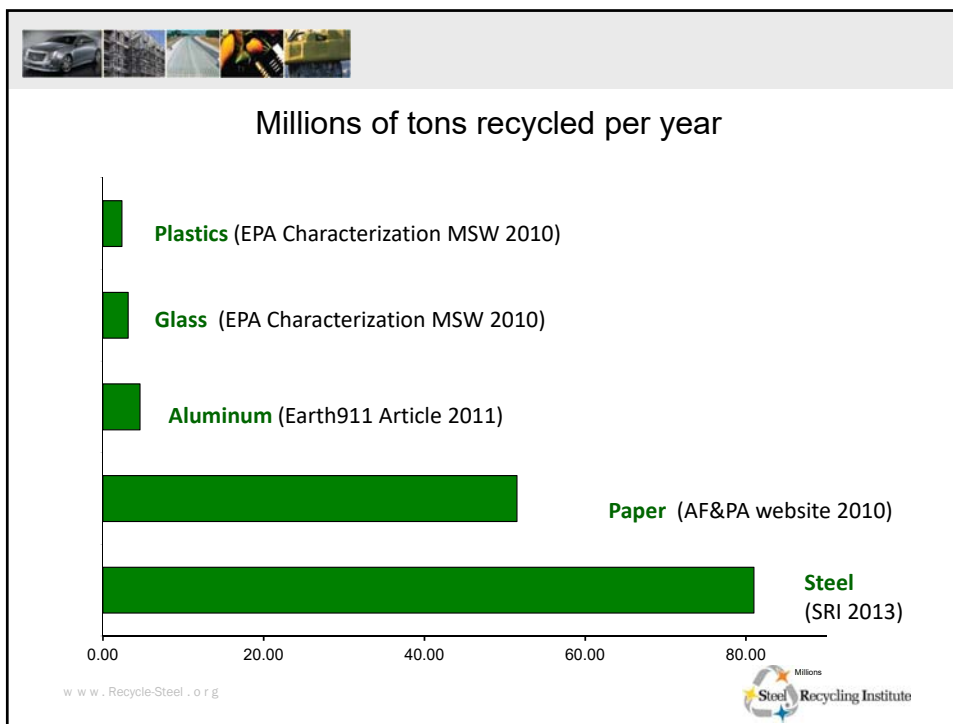
Uses primarily scrap and
direct-reduced iron (DRI)

Typically 0-25% iron and 75-100% scrap



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World Steel Market (2016)

- World Production = 1,628,500,000 metric tons
- Chinese Production = 808,000,000 metric tons
- US Production = 79,000,000 metric tons

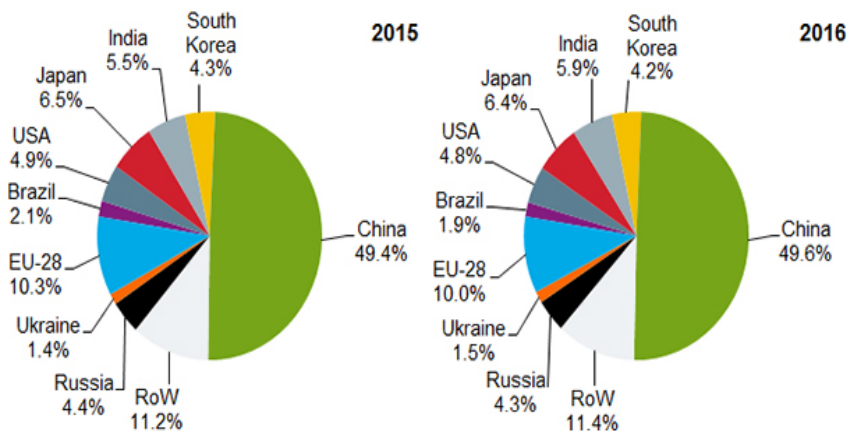
Arcelor Mittal #1 in world
 Nucor #14 in world
 US Steel #24 in world

China- 808 million metric tonnes
 Japan- 105 million metric tonnes
 India- 95 million metric tonnes
 USA- 79 million metric tonnes

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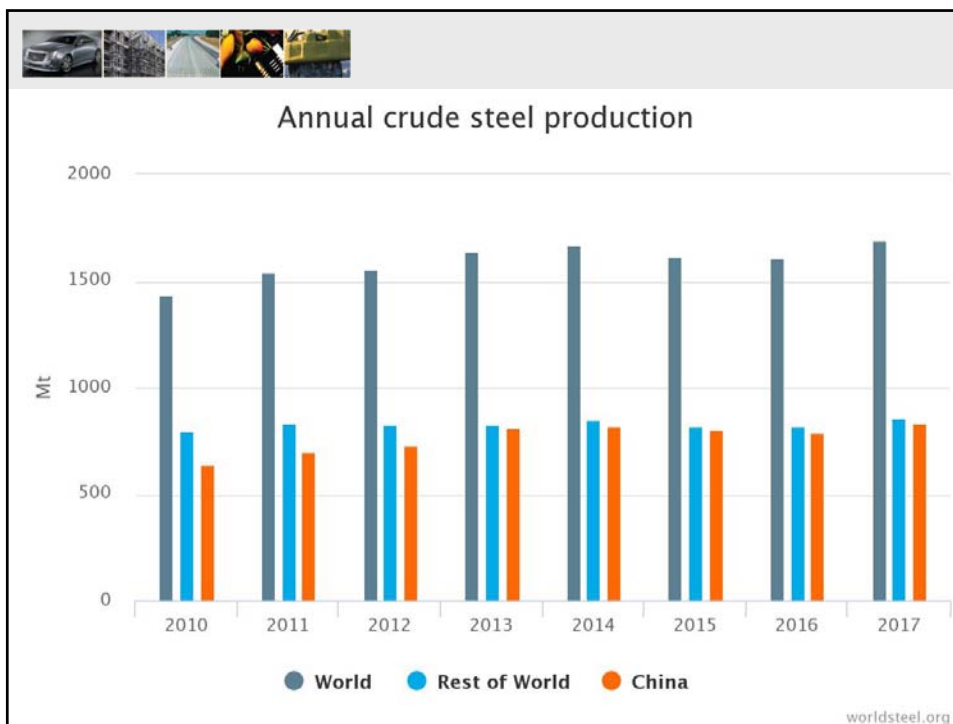
Share of world crude steel production 2015 & 2016



worldsteel.org

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Overall Steel Recycling Rate:	76% (64.5 million tons recycled)
Automobile Steel Recycling Rate:	87% (14.3 million tons recycled)
Appliance Steel Recycling Rate:	88% (2.7 million tons recycled)
Container Steel Recycling Rate:	71% (1.3 million tons recycled)
Construction Structural Rate:	98% (*based on C/D survey)
Construction Reinforcement:	71% (*based on C/D survey)

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Steel cans in the marketplace



Steel food cans make up 90% of the steel can marketplace



Steel Aerosol cans are 7% of the steel can marketplace



Steel paint cans are 3% of steel cans in the marketplace



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Evolution or Devolution



StarKist Chunk Light TUNA IN WATER



StarKist chunk light TUNA IN WATER



?

Del Monte Fresh Cut CUT GREEN BEANS, WHOLE KERNEL CORN, SWEET CORN CREAM STYLE



Evolution of packaging: cans to pouches and smaller cans.




Steel Food Can Facts

Can Manufacturers Institute

Did You Know?

- 34** FOOD THAT IS CANNED IS FOOD THAT ISN'T WASTED HELPING TO OFFSET THE 34 BILLION TONS OF FOOD WASTED IN THE UNITED STATES
- RECYCLING 1 TON OF STEEL CANS CONSERVES 2,500 LBS OF IRON ORE, 1,400 LBS OF COAL & 120 LBS OF LIME STONE
- CANNED FOOD IS PICKED AT THE PEAK OF RIPENESS & IMMEDIATELY CANNED LOCKING IN ITS FLAVOR & NUTRITION
- 26 NUMBER OF HOURS TO POWER A 60 WATT BULB FROM RECYCLING 7 STEEL CANS
- 71% THE RECYCLING RATE OF STEEL CANS
- STEEL CANS ARE 100% RECYCLABLE OVER & OVER AGAIN, FOREVER
- 1810 YEAR THE STEEL CAN WAS INVENTED TO FEED NAPOLEON'S ARMY
- 80%-90% OF ALL STEEL EVER PRODUCED IS STILL IN USE TODAY
- LOOKING TRIM CANS TODAY WEIGH 33% LESS THAN 25 YEARS AGO
- \$777 BILLION ANNUAL COST TO AMERICANS FROM FOODBORNE ILLNESS
- CANS MAKE FOOD SAFER WITH 100% CONTAMINATION PROTECTION


FOR MORE INFORMATION VISIT CANCENTRAL.COM



Over 5900 programs collect empty aerosols in their steel can mix


72 OF TOP 100 CURBSIDE PROGRAMS INCLUDE EMPTY STEEL AEROSOL CANS

According to a recent SPC study, over 70% of Americans have access to programs which include empty aerosol cans.





PLEASE RECYCLE WHEN EMPTY

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Paint Cans: Empty with Dry Skin!

Approximately 4800 programs include empty steel paint cans

Steel paint cans still have 55% of paint container market

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Steel Content in Today's Automobile

2010 Light Vehicle Content Material Content

Material	Weight (Pounds)	Percentage
Flat Rolled Steel	1628	42%
Other Steel	604	15.6%
Aluminum	330	8.6%
Iron	305	7.9%
Copper	838	21.9%
All other Materials	103	3%
Other Metals	55	1%

Total of 3,863 pounds **58% steel**

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Vehicle Life Cycle Assessment Study

- Purpose
 - How important are material production emissions?
 - Are there unintended GHG consequences due to lightweighting vehicles when focusing only on the use phase?
- Two-part approach
 - Attributional LCA: Vehicle-to-vehicle comparisons
 - Consequential LCA: Large-scale shift or decision

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Attributional LCA Preliminary Findings

Lightweighting with Aluminum over AHSS:

- Significantly increased production emissions (~30-60%) for all vehicle types
- Increased total life cycle GHG emissions in roughly 50% of the cases tested...but only when using the most favorable recycling methodology assumptions
- ...In all other cases, the aluminum vehicles resulted in a net increase in emissions vs. the AHSS vehicles

Attributional LCA study preliminary conclusion

There is no certainty tailpipe-only regulations will result in a decrease in emissions from lighter vehicles ... and an increase is likely

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Summary-Consequential Life Cycle GHG study

- Fuel economy targets becoming increasingly stringent
- Use of GHG-intensive lightweighting materials to help meet these targets will:
 - Always lead to higher GHG emissions initially
 - Can result in higher total vehicle life cycle emissions
- Changes in aluminum import levels and increasing demand point to even greater GHG consequences in the future
- Ensuring improvements in production phase emissions while reducing driving phase emissions avoids unintended consequences

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APPLIANCE RECYCLING

A typical appliance is produced using about 65 percent steel which is the primary reason nearly 90 percent of discarded appliances are recycled each year.

The steel content drives the recycling of appliances!

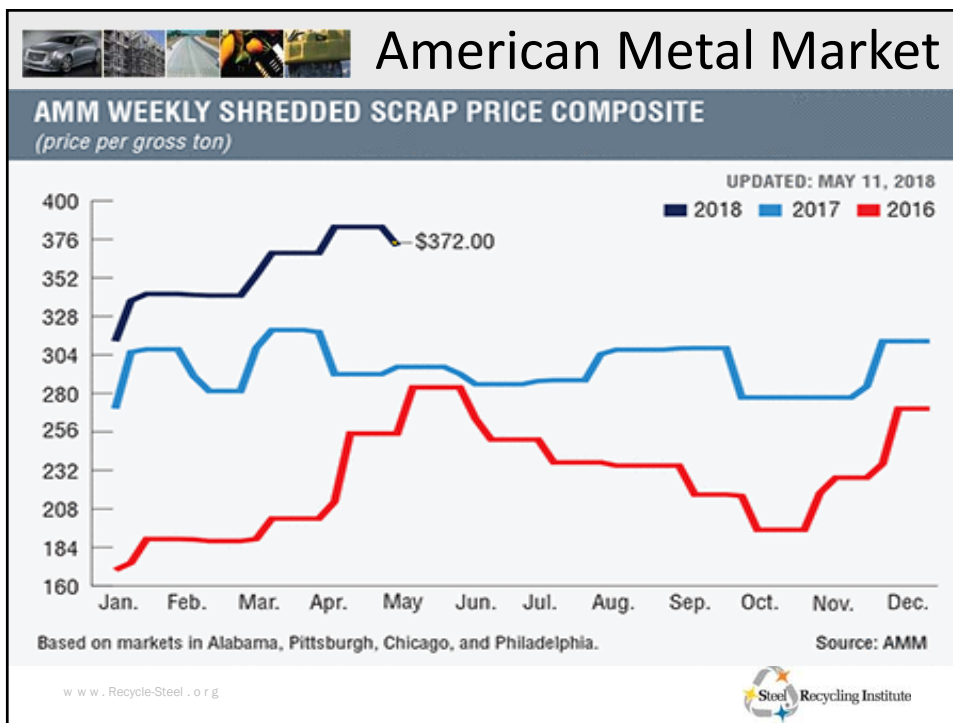


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Structural recycling rate steady for last 10 years!





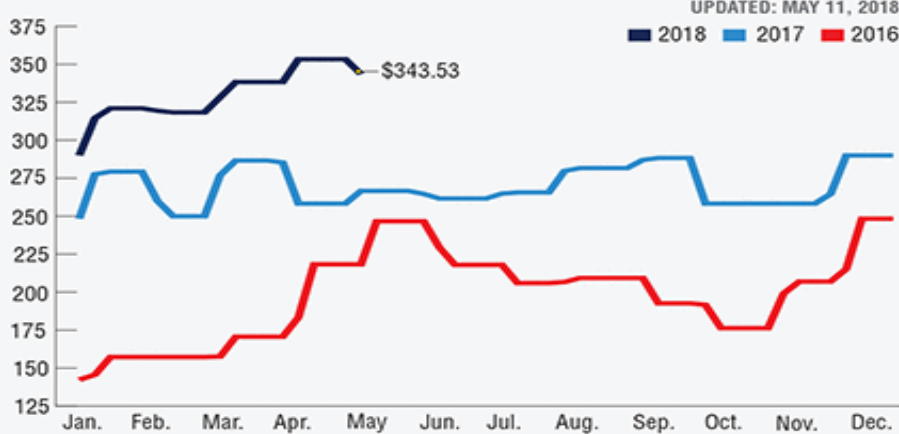
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American Metal Market

AMM WEEKLY NO. 1 HEAVY MELT PRICE COMPOSITE
(in dollars per gross ton)


UPDATED: MAY 11, 2018



Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2018	290	320	330	340	343.53	340	340	340	340	340	340	340
2017	250	275	250	280	260	260	260	260	280	260	260	280
2016	140	160	170	210	240	240	210	210	210	180	210	250

Based on markets in Pittsburgh, Chicago and Philadelphia. Source: AMM

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- **Ultra light Steel Auto Body** 
- **Steel Bridges** 
- **Steel Utility Poles** 
- **Residential Steel Framing** 

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The Strength and Sustainability of Today's Steel

Willis Tower, Chicago, IL



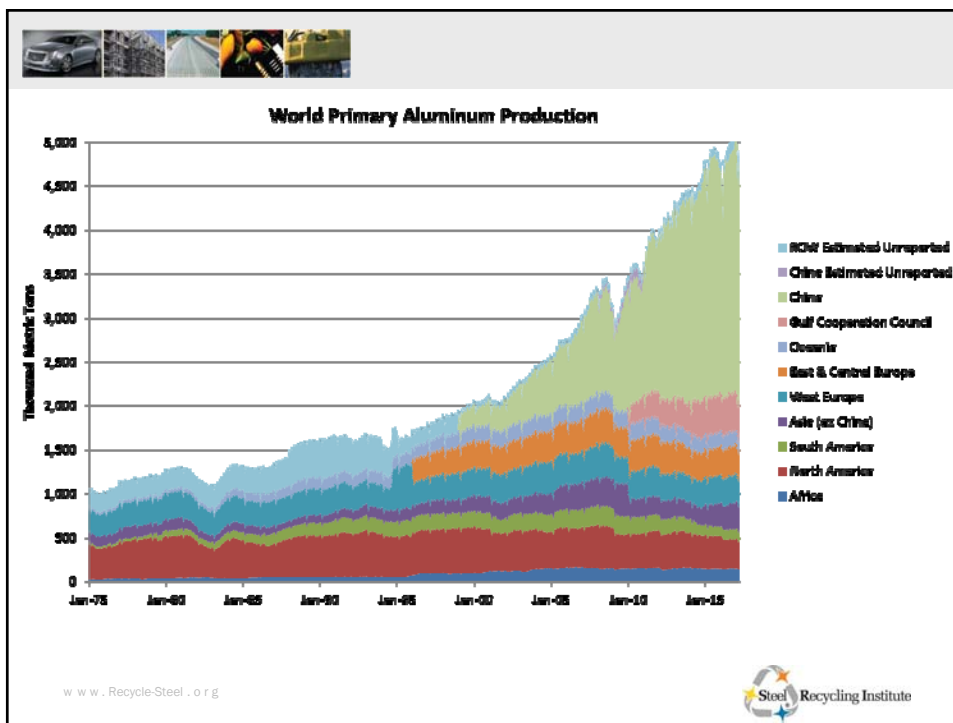
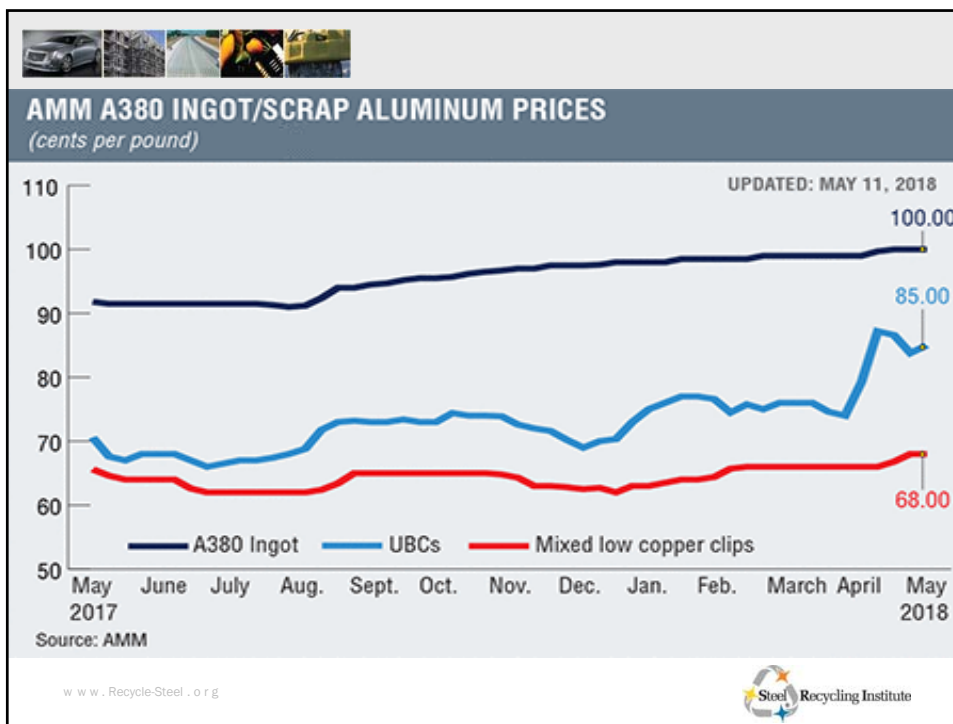
Then (1972)

- Sears Tower
- 76,000 tons of steel
- 20% recycled content (est)

Now (2013)

- Willis Tower (second tallest in hemisphere)
- 60,000 tons of steel (strength)
- 90% recycled content (for structural steel)
- 43,000 automobiles
- 7,000 tons of steel cans from curbside-drop off
- 10,000 tons of industrial scrap
- 876,000 fewer man-hours
- 58% smaller carbon footprint
- 74% less embodied energy

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Ferrous Scrap Dealers

Years of steel recycling experience

Convenient locations

Container and transportation capabilities

Complete processing equipment

Strong relationships with end markets

Look for additional consolidation/vertical integration

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On Thursday, September 7, 2017 at about 9:30 am, the Pepin County Sheriff's Office contacted the Northwest Region State Patrol requesting assistance with a potential motor carrier violation.

The Pepin County Sheriff's Office had report of a disabled semi unit on USH 10 near the Pepin/Pierce County Line west of Durand.

The semi unit had left St. Paul, Minnesota at approximately 7 pm on September 6th destined to deliver its load to a location in Neenah, WI.

At about 8 pm two tires blew out on the semi-trailer where it became disabled.

The driver contacted a tire repair service to respond to the scene to replace the tires.

The repair service was not able to lift the trailer in order to change the tires due to its weight. The following morning a second repair service attempted to change the tires.

That service contacted a heavy tow truck operator to lift the rear of the trailer to allow the tire changes.

The tow operator contacted the Pepin County Sheriff's Office to advise them of the obvious overweight issue.

Pepin County Deputies then requested a State Patrol unit to assist. Sergeant Wm. Berger responded to the scene to assist.

The initial tow truck was not able to lift the rear of the trailer so a second, larger 50 ton rotator tow truck responded and was able to lift the rear of the trailer to change the tires.

Due to the extreme flexing of the frame and the potential for a catastrophic failure of the trailer frame system extra blocking and jacks had to be used to support the center the trailer while it was being lifted.

The unit was eventually weighed on a set of the Wisconsin State Patrol's portable scales.

The unit had a gross weight of 165,900 lbs.

The legal gross weight of the unit was 80,000 lbs. All of the tires on the semi-tractor and trailer, with the exception of the steering tires, were significantly exceeding the tire manufacturer's maximum tire weight rating.

Some of the tires were carrying more than double the allowable weight allowed by the tire manufacturer's rating.

The driver was issued a citation for failure to place the required emergency warning devices for a stopped vehicle in the area around the disabled semi unit.

The unit was partially in a traffic lane for over 10 hours without anyone contacting law enforcement or placing the safety devices.

The company was issued a citation for an 85,900 lb. axle group overload.

The bond amount for the overweight citation was \$20,287.86.

A second citation was issued to the carrier for exceeding the tire weight ratings.

Nine other axle weight warnings were issued along with 12 out of service violations for exceeding the tire weight rating limitations.

A final warning was issued to the driver under the Federal Safety Regulations for Reckless Driving.

The unit was escorted approximately 4 miles where it could be safely offloaded.





Steel Recycling Institute

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