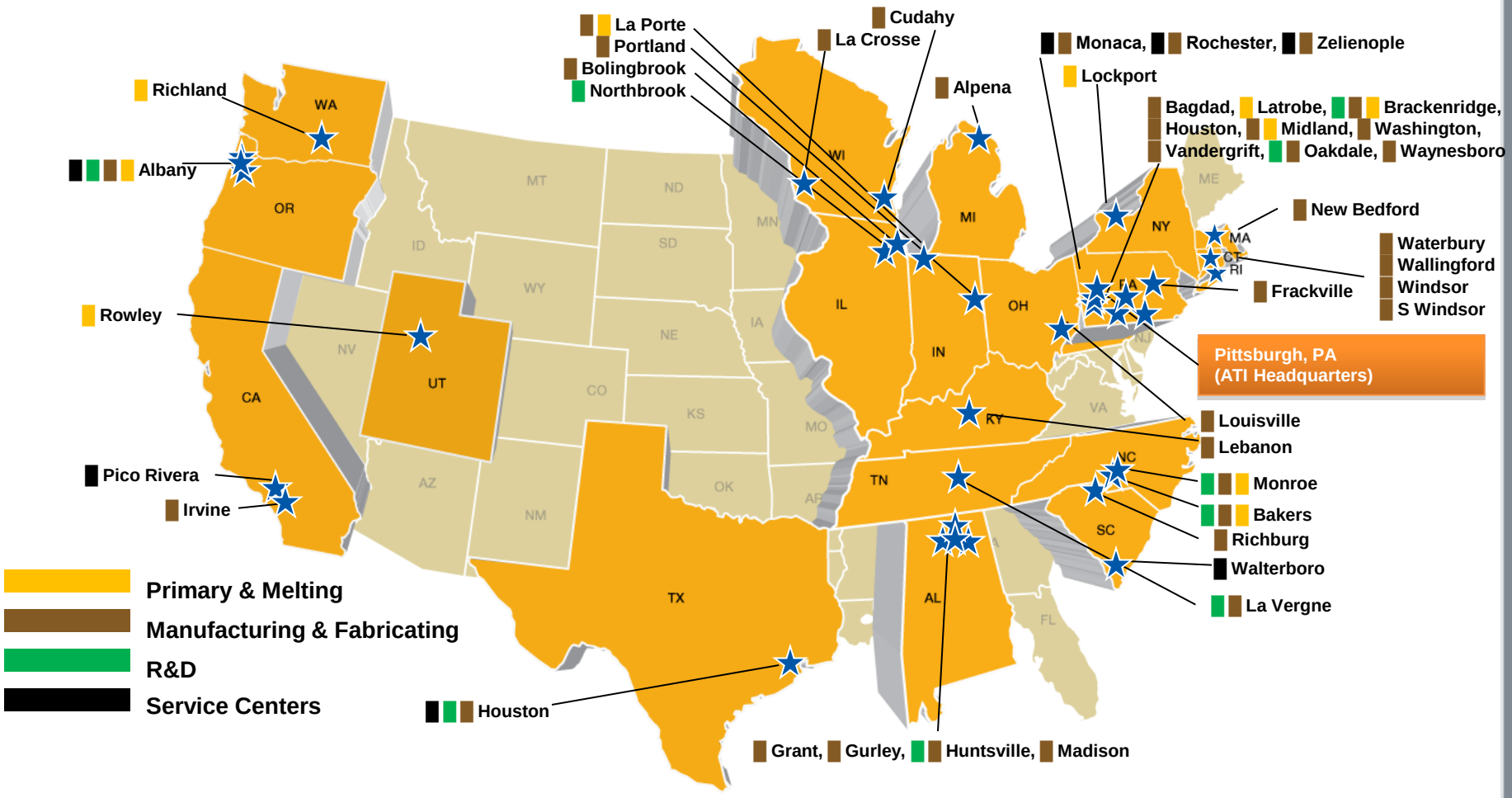
Overview
DOE / OMB Documents
Distribution Transformers – Rulemaking

Allegheny Technologies (ATI) Overview

ATI is one of the largest and most diversified specialty metals producers in the world. We use innovative technologies to offer global markets a wide range of specialty metals solutions.

- 11,200 employees – worldwide
- $5 billion in Sales in 2012
- Global presence – Operations in 18 countries
- Provides customer focused specialty metals solutions
  - Titanium and titanium alloys
  - Nickel-based alloys and superalloys
  - Stainless steels, grain oriented electrical steel & duplex alloys
  - Zirconium, Hafnium and Niobium alloys
  - Tungsten metals & carbide cutting tools
  - Powdered metals
  - High performance forgings, castings and machining capabilities

ATI US Operating Facilities



Bagdad Plant (GOES Production)

Position Statement

- ATI Allegheny Ludlum is on record as supporting **no change** to the distribution transformer efficiency standards which went into effect on January 01, 2010
- The existing standards are globally among the most stringent **mandatory** efficiency levels for distribution transformers
- For some MVLT designs, the efficiency levels were set well above those requested by conservation advocates during the 2007 rulemaking process
- During the 2011 negotiated rulemaking process, ATI Allegheny Ludlum supported the NEMA proposal for increased mandatory efficiency levels across most MVLT distribution transformer designs as a compromise in an attempt to reach a consensus which was fair to all parties involved in the process
- Mandatory efficiency levels higher than the NEMA proposal will violate several of the seven factors used to judge the final ruling, notably those related to economic impact on manufacturers and consumers and the impact of lessening of competition

Document #1 DOE – Request for Comments

- The DOE requested expert feedback on issues related to transformer technology and economics prior to the issuance of the NOPR
- ATI Allegheny Ludlum responded to several questions
- Primary response was related to input materials prices (question #18)
  - The 2011 price data was incorrect (30% lower than actual market prices) for readily available high-end grades of conventional grain oriented electrical steel (e.g. M-2 and M-3), which are used for MVLT wound core transformers
  - 2011 prices were not discounted as significantly for high permeability electrical steel and amorphous ribbon cores and were representative of actual market prices
  - The model using the 2011 data generated MVLT transformers with M-2 and M-3 grain oriented steel cores with artificially lower cost (7-12%) than alternative configurations containing high permeability or amorphous cores
  - The resulting analysis was skewed in favor of higher efficiency levels

Document #2 ATI Summary Review

- Provided to the DOE on April 10, 2012 after the NOPR was issued
- Endorsed the NOPR TSL as compatible with the NEMA compromise (below) proposed during the Negotiated Rulemaking process

Design Line	Efficiency Level	Efficiency
01	EL 1	99.16%
02	EL 0 (baseline)	98.91%
03	EL 1	99.48%
04	EL 1	99.16%
05	EL 1	99.48%

- Restated ATI Allegheny Ludlum's position opposed to higher mandatory efficiency levels due to a significant negative impact on the cost and reliability of the distribution of electrical energy

Document #3 ATI White Paper – Cross-Over Efficiency Points

- Provided to the DOE on April 10, 2012
- Detailed analysis of the impact of the various efficiency levels for each design line in the MVLT superclass
- The full Navigant data set was distilled to a set of **cross-over points**
- Cross-over points are efficiency levels where the cost of a transformer of a given size rating and configuration is independent of core material (i.e. grain oriented steel or amorphous ribbon)

Design Line	Equipment Class	Efficiency Level	Efficiency
DL01	1A	EL 1.3	99.18%
DL02	1B	baseline	98.91%
DL03	1B	EL 0.7	99.46%
DL04	2A	EL 1	99.16%
DL05	2A	EL 0.7	99.44%

- The NOPR TSL was found to favor amorphous ribbon in some cases and to be neutral in others
- In general, the efficiency levels established by the NOPR TSL were found to be compatible with the NEMA compromise

Document #4 Response to DOE's May 29, 2012 Notice of Public Meeting

- Analysis of the impact of four new TSL's (A, B, D and C)
  - TSL A is similar to TSL 1 without scaling effects for Design Lines 01 and 02
    - Both TSLs give amorphous cores a commercial advantage relative to M-3 conventional electrical steel
    - TSL A is less equitable than TSL 1 due to minor increases in efficiency, notably for Design Line 02
  - The Navigant data indicates that adopting TSL's B, C, or D would place electrical steel at a significant disadvantage
    - M-3 wound cores at a **12-24% price disadvantage** relative to amorphous ribbon wound cores
    - The resulting core price difference would make M-3 transformer acquisition cost about **25-75% higher**
- Adopting TSL's B, C or D would potentially disrupt the economics of the core material supply chain and of the analysis itself
  - One potential result is a significant reduction in the selling price of conventional core steel, leaving transformer manufacturers dependent on a single foreign owned supplier of amorphous ribbon
  - An alternative outcome would be significantly higher selling prices and margins for amorphous ribbon unilaterally dictated by the sole manufacturer, which would preserve core material options but would reduce or eliminate any savings which are projected from the LCC analysis
- Allegheny Ludlum's response restated support for a cross-over TSL where conventional electrical steel and amorphous ribbon would be able to compete on merit