[redacted]

[redacted]

[redacted]

[redacted]

From: Charles D. Johnson [mailto:cdjohnson@aluminum.org]
Sent: Tuesday, January 29, 2013 3:37 PM
To: LNGStudy
Cc: Myers, Edward
Subject: Aluminum Association Comments

The Aluminum Association respectfully submits these comments to the DOE request for comments to the LNG Export Study. The Association was granted an extension for the comment period as referenced in the attached procedural order.

Thanks You,

Charles Johnson
VP, EH&S
The Aluminum Association
w. (703) 358-2981
c. (202) 486-6601

UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC	FE Docket No. 10–161–LNG
Lake Charles Exports, LLC	FE Docket No. 11–59–LNG
Dominion Cove Point LNG, LP	FE Docket No. 11–128–LNG
Carib Energy (USA) LLC	FE Docket No. 11–141–LNG
Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC	FE Docket No. 11–161–LNG
Cameron LNG, LLC	FE Docket No. 11–162–LNG
Gulf Coast LNG Export, LLC	FE Docket No. 12–05–LNG
Jordan Cove Energy Project, L.P	FE Docket No. 12–32–LNG
LNG Development Company, LLC (d/b/a Oregon LNG)	FE Docket No. 12–77–LNG
Cheniere Marketing, LLC	FE Docket No. 12–97–LNG
Southern LNG Company, L.L.C.	FE Docket No. 12–100–LNG
Gulf LNG Liquefaction Company, LLC	FE Docket No. 12–101–LNG
CE FLNG, LLC	FE Docket No. 12–123–LNG
Excelerate Liquefaction Solutions I, LLC	FE Docket No. 12–146–LNG
Golden Pass Products LLC	FE Docket No. 12–156–LNG

PROCEDURAL ORDER

BACKGROUND

On December 5, 2012, the Office of Fossil Energy of the Department of Energy (DOE/FE) issued a Notice of Availability (Notice) within the above-referenced dockets announcing the availability of the 2012 LNG Export Study (Study). The Notice, published in the Federal Register on December 11, 2012 (77 FR 73627), requested the public to submit comments regarding the Study. Pursuant to the Notice, initial comments were due no later than 4:30 p.m., eastern time, on January 24, 2013, and reply comments are presently due no later than 4:30 p.m., eastern time, on February 25, 2013. The Notice also stated that DOE would post all of the comments received on an internet web page created for this purpose and the Study and the comments would be considered in the disposition of the dockets listed above.

In response to the Notice, DOE/FE has received in excess of 30,000 initial comments. Some of these comments, due to capacity constraints on the agency's computer system, were not timely received or, if timely received, were not posted by 4:30 p.m., eastern time, on January 24, 2013. One commenter, The Aluminum Association, also filed a timely motion for an extension of three business days until 5 p.m., eastern time, on January 29, 2013, in which to submit its initial comments; the additional time was sought due to problems in securing responses from its membership in support of the filing in time to meet the January 24 filing deadline. Other commenters apparently filed one or two days out of time without setting forth an explanation for the lateness of their filing and without requesting leave to file out of time; many of these late filers were members of the public that filed one page letters as part of an initiative sponsored by a public interest organization.

FINDINGS

On consideration, DOE/FE finds that all initial comments that were received for filing in these proceedings as of 11:59 p.m., eastern time, on January 27, 2013, should be accepted for filing. This is in recognition of the difficulties engendered by the effort to produce and transmit a large volume of submissions from a broad spectrum of the public and is intended to be a reasonable accommodation to ensure broad public participation in the present proceedings. Moreover, DOE will have posted all such comments by the date of the present order. Inasmuch as all of the initial comments will be available for public inspection by today's date, there will be ample opportunity for review by interested persons and there is no need to extend the period for the submission of reply comments. Therefore, the due date for such comments will continue to be February 25, 2013.

Additionally, DOE/FE finds that The Aluminum Association has established good cause for the requested extension of time.

ORDER

It is ordered that:

A. All initial comments that were received in these proceedings as of 11:59 p.m., eastern time, on January 27, 2013, are accepted for filing.

B. The motion of The Aluminum Association for an extension of time until 5 p.m., eastern time, on January 29, 2013, is granted.

Issued in Washington, D.C., on January 28, 2013.

John A. Anderson
Manager, Natural Gas Regulatory Activities
Office of Oil and Gas Global Security and Supply
Office of Fossil Energy

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The Aluminum Association

VIA ELECTRONIC DELIVERY

January 29, 2013

Mr. John Anderson
U.S. Department of Energy (FE–34)
Office of Natural Gas Regulatory Activities
Office of Fossil Energy
Forrestal Building, Room 3E–042
1000 Independence Avenue SW
Washington, DC 20585

RE: Comments on 2012 LNG Export Study 77 Fed. Reg. 29894

Dear Mr. Anderson:

The Aluminum Association submits these comments in response to the U.S. Department of Energy's (DOE) Office of Fossil Energy request for comments in the December 11, 2012 Federal Register notice appearing at 77 Fed. Reg. 29894. The Federal register notice seeks input on the liquefied natural gas (LNG) export cumulative impact study (the LNG Export Study). The Aluminum Association, Inc. (the Association) is the trade association for U.S. producers of primary aluminum, recyclers, and semi-fabricated aluminum products. Member companies operate more than 200 plants in 35 states.

Currently, exports of Natural gas must be approved by the Department of Energy unless, "not consistent with the public interest," that requirement is waived for Free Trade Agreement (FTA) countries. The purpose of the LNG Export Study is to assess the public's interest in the possible approval of 15 pending applications for LNG exports to non-FTA countries. It is critical that DOE accurately account for the impact of LNG exports on the Aluminum industry and other Energy Intensive trade Exposed (EITE) industries.

The Industry

The United States Aluminum industry directly employs more than 100,000 men and women. Direct shipments are estimated at over $30 Billion annually. Attached is an economic impact study which illustrates both the direct contribution the industry makes to the U.S. economy, as well as the indirect multiplier effect that basic materials manufacturing has on the economy through its contribution to various product streams and industries.

Recent developments in shale gas production in the United States have had positive impact on the production and recycling of aluminum in The United States. Natural gas is utilized

extensively in molten aluminum operations. Affordable and predictably priced natural gas supports the production and recycling of aluminum. It is estimated that aluminum industry in the United States directly consumes about 100 trillion Btu of natural gas each year. And the U.S. aluminum industry is among the cleanest and most efficient in the world. Over the past two decades, the overall energy efficiency for per unit primary aluminum production has increased 17%, and the overall energy efficiency for secondary aluminum production and aluminum processing and fabrication has increased for more than 20%.

Summary of Comments

The Association is not prepared, at this time, to submit a position on the possible impact of LNG exports on natural gas prices. Comments herein focus on the underlying data and analysis provided to DOE by NERA Consulting (NERA study) for the LNG Export Study, as well as the Energy Information Administration's analysis of macroeconomic impact.

- The NERA analysis of LNG Export on EITE industries is flawed and incomplete. The study is based on previous research which has already been extensively critiqued by The Aluminum Association as well as representatives of other EITE industries.
- The NERA Study is based on outdated EIA Data, and does not acknowledge the significant demand projection differences that newer (2013) data
- The NERA Study makes unsubstantiated claims regarding the industries exposed to natural gas prices.

Discussion

Shale-based natural gas is currently allowing U.S. based manufacturing to reopen, and repatriate capacity at a pace unheard of in recent history. The window to take advantage of the U.S. lead in shale gas exploration and production is short, as these deposits are globally distributed. For these reasons, it is vital that the information upon which regulatory decisions for possible export of LNG be accurate and complete. Unfortunately, the recent analysis performed by NERA Economic Consulting for the DOE LNG Export Study is neither.

The study performed by NERA Consulting for the DOE, "*Macroeconomic Impacts of Increased LNG Exports from the United States,*" suffers from several faults, and is unsuitable for assessing the impact of LNG exports.

Previous research has been addressed by EITE industries, and shown to be incomplete.

The NERA study relies heavily on a 2009 analysis (Interagency Report) of proposed legislation to address climate change, to assess the impact of gas prices on EITE industries[1]. The attached letter from the American Materials Manufacturing Alliance provides a detailed analysis of the Interagency Report.

1. The report estimates that EITE industries can lower their energy intensity by 20-45% by 2020. As noted above, the Aluminum industry (similarly to other energy intensive industries) has already made profound advances in energy efficiency. The assumption that major advances can still be made in this area is optimistic at best. In order to make further significant improvement in energy efficiency in the aluminum industry, new

[1] U.S. Government Agencies, "The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries: An Interagency Report Responding to a Request from Senators Bayh, Specter, Stabenow, McCaskill, and Brown," December 2009.

breakthrough technologies must be developed and deployed, and cannot simply be assumed.

2. The report provides only a partial accounting of the impact of energy prices on EITE industries, and particularly, does not address the shift of energy costs to end users as various market pressures introduce volatility into the energy market. Since this volatility is exactly the concern raised regarding LNG exports, this omission from the Interagency Report is very relevant[2].

The Interagency Report cannot substitute for actual research and analysis of gas price impact on EITE industries in the NERA study.

Energy Outlook data from EIA is outdated.

The United States energy market has evolved in a few years from applications to import LNG, to the current applications to export the same. Energy pricing, availability, and future estimation have been subject to major swings and revisions. This is demonstrated clearly with the EIA data from the 2011 Annual Energy Outlook (AEO) on which the DOE analysis of future demand is based. The more recent 2013 AEO, which was unavailable to NERA for their study, indicates that the 2011 AEO underestimates future demand for natural gas by 10%.

This increase is a function of several factors, including the switch to natural gas by utilities, and fuel switching as a result of environmental regulation. Most notably, increased demand from a revived manufacturing sector is a factor in that increased demand estimate. Any action by DOE that would negatively affect that increased demand must be based on the most current data and future estimates, given the demonstrated uncertainty in this analysis.

Value Added Industries

The NERA Study asserts that industries vulnerable to natural gas pricing are not, "high value-added industries." The Aluminum Association takes exception to this claim. Attached is a 2009 analysis of the economic impact of the U.S. Aluminum Industry, which illustrates the higher than average wage for the more than 100,000 jobs directly within the industry, and the downstream impact of aluminum production on various other industries.

Conclusion

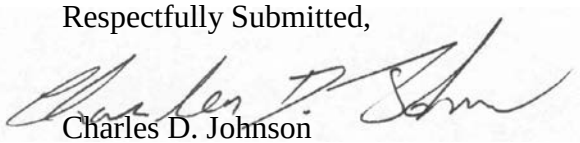
The Aluminum Association and its members fully support the DOE approach of research and analysis to understand the possible impact of LNG exports on the public interest. That analysis must be based on up to date and complete data. The NERA study, in its present form, does not constitute either an accurate or a complete assessment, and should not be used to inform LNG export policy.

The Aluminum Association recommends that the DOE re-assess their model by incorporating more complete analysis of gas pricing on EITE industries, and update the model with 2013 AEO information. In the interim, no permitting decisions should be taken that have unforeseen impacts on the energy market

[2] American Materials Manufacturing Alliance, Letter to Senators Bayh, Specter, Stabenow, McCaskill, and Brown, December 10, 2009.

The Aluminum Association appreciates the work the DOE has undertaken here, and values this opportunity to provide input. The impact of LNG exports is a major concern for our industry and we look forward to working with the Department of Energy as these assies are addressed. For further information or clarifications, please contact me at (703) 358-2981, or cjohnson@aluminum.org.

Respectfully Submitted,



Charles D. Johnson
Vice-President, Environment, Health & Safety

cc. Edward Myers

AMERICAN MATERIALS MANUFACTURING ALLIANCE

The Honorable Evan Bayh
The Honorable Arlen Specter
The Honorable Sherrod Brown
The Honorable Claire McCaskill
The Honorable Debbie Stabenow
United States Senate
Washington, DC 20510

Dear Senators:

The Effects of HR2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries [the "Interagency Analysis"] can be read in a positive light if one focuses on the statement "we consider this report to be a first step in the Administration's engagement with stakeholders…" as this signals the beginning of a process leading to getting climate policy right for energy-intensive, trade-exposed industries [EITEs]. On the other hand, if one focuses on the statement "the modeling also finds that the allocations to LDCs and "trade-vulnerable" industries can eliminate almost all—and, in some cases, more than all—of those cost impacts…" and concludes the competitiveness issue is solved by the measures in Waxman-Markey, there can only be negative consequences for both climate policy and energy-intensive, trade-exposed industries.

The Interagency Analysis concludes, on a theoretical basis, HR2454 can effectively eliminate the competitiveness impacts of US climate legislation on energy-intensive, trade-vulnerable manufacturers. To achieve that desired outcome all the variables and moving parts built into the design of the Waxman-Markey program have to work exactly right. Design mistakes can have enormous consequences for manufacturers and the millions of Americans whose jobs depend on a competitive and healthy domestic manufacturing sector. For example:

- From the EPA analysis [by state] and the Minnesota Power analysis [by utility company; both attached], we know that coal-intensive utilities, typical of those operating in Michigan, Indiana, Ohio, Pennsylvania and Missouri, will be severely under-allocated. These are generally states where EITEs operate. This means they will have to buy allowances just to meet their *direct emissions* obligations. This also means there will be no allowances left over to use to offset the cost of replacing coal capacity with gas or wind [which includes new transmission infrastructure for wind and solar]. All of these substantial costs will be passed on to EITEs as much higher energy prices. Any program to regulate greenhouse gases must mitigate against the impact of these uncompensated energy costs or EITEs will become uncompetitive and leakage is certain.

- The suggestion EITEs can lower energy intensity 20-45% by 2020 is a key assumption leading to the conclusion the EITE allowances are sufficient. This

assumption is false. EITEs have reduced energy use substantially from 1990-2007 and most are on the flat part of the curve (e.g., steel energy intensity is down 33% from 1990 levels, chemicals absolute emissions are down 16% vs. 1990; aluminum CO2 equivalent emissions are down 50% from 1990; paper's energy intensity is down 11% from 1990-2006). Explanatory charts are attached.

- The Interagency Report does not recognize the 15% allowance cut required to meet CBO scoring rules, further reducing LDC and EITE allowance sufficiency.

The idea LDC and EITE allowances are sufficient is the foundation of the conclusion of the Interagency Analysis, i.e., "… that the allocations to LDCs and "trade-vulnerable" can eliminate almost all—and, in some cases, more than all—of those cost impacts…"

The Interagency Analysis recognizes the challenges of implementing such a complex emissions trading program have not been "fully considered." An example is the enormous amount of work still needed to devise an allowance distribution system that does not unfairly penalize competitive manufacturers and result in production migration within and outside of the US. The potential for a system to unfairly create "winners and losers" in the marketplace must be avoided at all cost. Similarly, we would like to delve deeper into the assumptions leading to a $20/t carbon price to determine their feasibility in comparison to modeling that has yielded higher carbon cost.

The Waxman-Markey measures for EITEs are inadequate. The absence of consideration of all of the costs that EITEs will confront in a carbon capped economy and the absence of a fair allowance distribution system call into question the ability to properly design an economy-wide cap and trade mechanism. Further, a poorly designed program will impact more than just our direct employees [the employment levels used in the Interagency Analysis] as the men and women whose businesses depend on healthy EITE sectors number in the millions.

More work, the Interagency Analysis says, will need to be done to improve assessments of competitiveness impacts and to address various implementation challenges presented by output-base allocations. We agree. An analysis of cost and job impacts on EITEs using proper and practical assumptions regarding LDC allowances, EITE efficiency and other parameters will tell the true story… a story that could lead to a climate policy construct that lowers CO2 emissions while growing manufacturing jobs and encouraging the development of transformational industrial processes.

EITEs look forward to the next steps with the Administration to build on our long record of developing policy solutions that help create jobs and reduce emissions.

Aluminum Association
American Chemistry Council
American Forest and Paper Association
American Iron and Steel Institute
The Fertilizer Institute

Attachment I

EPA was asked to provide technical assistance on the following questions. EPA's responses are provided below the questions.

Do you have any analysis of the effects of distributing allowances to utilities based on W-M formula vs. based 100% on emissions vs. 100% load (any regional/state break-down; any calculations of %age of emissions covered)? I understand EEI might have some of this too. I believe this is what my boss discussed with the Administrator, and is the issue my boss is hearing a lot about from the state. And what is the Agency's read on often over-looked insertion before House floor vote that appears to prevent a utility from receiving more allowances than its emissions? Does EPA agree that this language trumps the formula and would in fact prevent windfalls for major energy producers of low-carbon emitting sources (e.g., nuclear)? There seems to be a split interpretation of this restriction.

EPA RESPONSES:

Allocation Estimates

Estimates for state allocations are included in Table 1. Note that these are rough estimations based on the best currently available data, described in more detail below. Actual allocations will be different, since the owner or operator of each LDC has the ability to define their baseline as a period of any 3 consecutive years from 1999-2008. Furthermore, this analysis does not consider the impact of new coal generation built prior to 2013.

Only 2012 allocations are presented, as the following years will change proportionately (absent updating based on number of customers). In 2012, LDC allocations are equal to 43.75% of the total allowance pool after 1% of allowances are withheld for strategic reserve auctions. We assume the maximum allocation to merchant coal generators (10% of LDC allocations, phasing out over time), and withhold that value from these estimates.

Delivery estimates are based on sales reported in EIA 861, taking the average of 2006 and 2007 total retail sales by distribution company.

Emissions were estimated using the average of 2006 and 2007 EIA 861 retail sales by delivery state and applying EPA eGRID regional emission factors. These emission values are rough estimates, since the emission factors are based on large geographic regions (see figure 1), and were calculated using available 2005 emission and generation data.

Prohibition against excess distributions in Sec. 783(b)(4)

The language prohibiting distribution of more allowances than "necessary to offset any increased electricity costs to [the electric distribution company's] retail ratepayers, including increased costs attributable to purchased power costs, due to enactment of this title" does take precedence over, and sets a limitation on each electric distribution company's [LDC's] annual distribution of allowances under, the language establishing an allowance distribution methodology based on LDC emissions and deliveries. This is because the prohibition language states that the prohibition applies "notwithstanding" the distribution methodology language.

However, the prohibition provision would be very difficult to implement because it would require a great deal of speculation. First, the Administrator would need to determine (either through projection before the year for which allowances are distributed or through actual data after the year for which allowances are distributed) the total cost of the electricity distributed to its customers each year starting with 2012. Second, the Administrator would need to estimate (again either up front or after the year of the allowance distribution) what each LDC's total cost of electricity would be each year in the absence of the ACES GHG cap and trade program. Total electricity costs would depend on a number of factors that would have to be projected, including the sources and amounts of purchased power, the mix of generation of purchased and LDC generated power, fuel costs, technology advancements (e.g., in generation), transmission constraints, and electricity demand. Any attempt to remove the impact of the cap and trade program on these factors and thus on total electricity costs would be speculative at best. The Administrator might also have to consider the ability of each LDC to pass through these costs to its customers. The difference between these two total cost figures for a given year, divided by the market value of an allowance for that year, would be the limitation on the amount of allowances that an LDC could be distributed for that year. The limitation could be implemented by limiting up front the distribution or by requiring the LDC to return later to the Administrator any amount of allowances in excess of the limitation. The excess allowances would be redistributed to other LDCs, but an iterative process would be required to ensure that the redistribution of excess allowances would not increase any LDC's total allowance distribution above that LDC's limitation. EPA notes that the prohibition provision could reward higher costs to LDC retail ratepayers in that the higher the level of an LDC's costs, the higher the limitation on the LDC's allowance distribution.

Table 1. Allocation Estimates by Delivery State

		2012 Allocation (Million Tons)					2012 Allocation (Million Tons)		
Delivery State	Annual Emissions Estimate (Million Tons)*	HR 2454 Formula (50/50 Emission /Load)	100% Emissions-Based	100% Load-Based	Delivery State	Annual Emissions Estimate (Million Tons)*	HR 2454 Formula (50/50 Emission /Load)	100% Emissions-Based	100% Load-Based
AK	3	3	3	3	MT	6	6	5	7
AL	62	47	50	44	NC	67	58	54	62
AR	26	22	21	23	ND	10	7	8	6
AS	0	0	0	0	NE	23	16	19	13
AZ	45	36	36	36	NH	5	5	4	5
CA	87	99	70	127	NJ	41	36	33	39
CO	43	30	35	24	NM	14	11	11	11
CT	14	14	11	16	NV	19	16	15	17
DC	6	5	5	6	NY	57	58	46	69
DE	6	5	5	6	OH	110	82	89	76
FL	138	111	112	111	OK	41	30	33	27
GA	92	70	74	66	OR	20	20	16	23
GU	1	1	1	1	PA	84	70	68	72
HI	8	6	7	5	PR	14	11	11	10
IA	36	25	29	21	RI	3	3	3	4
ID	10	9	8	11	SC	42	37	34	39
IL	107	78	87	70	SD	9	6	7	5
IN	75	56	61	52	TN	72	54	58	51
KS	35	24	29	19	TX	205	165	166	164
KY	62	47	50	44	UT	11	11	9	13
LA	42	36	34	38	VA	61	51	49	53
MA	24	23	19	27	VI	1	0	0	0
MD	35	29	28	31	VT	2	2	2	3
ME	5	5	4	6	WA	35	35	28	41
MI	77	57	62	52	WI	55	39	44	34
MN	56	39	45	33	WV	23	17	19	16
MO	70	49	57	40	WY	8	7	7	7
MS	29	23	24	23	Total	2,234	1,802	1,802	1,802

* Estimate calculated using 2006-2007 retail sales and eGRID emission factors

Figure 1. eGRID Emission Factor Regions

Sampling of Utilities for Waxman Markey Impact Comparison

Utility (Sampling)	2006 Tonnes CO_2 per MWH	2006 Reported Emissions (1000s of tonnes CO_2) Purchased Energy Not Included	2012 Estimated Free Allowance Allocations (1000s) Merchant Power Not Included	Percent coverage of 2006 historic emissions	2012 Market Value of First Year Surplus or (Shortfall) $ Millions at $15 per tonne	2012 Benefit or (Shortfall) $/MWH
PG&E	0.013	430	7,384	1717%	$ 104	$3.13
Exelon	0.068	10,386	36,971	356%	$ 398	$2.61
Entergy	0.264	30,457	36,024	118%	$ 84	$0.73
Florida P&L	0.332	46,978	47,086	100%	$ 2	$0.01
Constellation	0.346	16,948	16,765	99%	($ 3)	($0.06)
PSEG	0.360	22,583	21,795	97%	($ 12)	($0.19)
Dominion	0.500	51,693	41,151	80%	($ 158)	($1.53)
Westar	0.708	18,422	12,303	67%	($ 92)	($3.54)
Wisconsin Energy	0.722	20,921	13,841	66%	($ 106)	($3.66)
Southern	0.740	149,238	97,704	65%	($ 773)	($3.83)
Xcel	0.768	61,402	39,512	64%	($ 328)	($4.11)
DTE Energy	0.785	33,663	21,456	64%	($ 183)	($4.27)
AEP	0.826	154,561	96,419	62%	($ 872)	($4.66)
MidAmerican	0.860	65,438	40,126	61%	($ 380)	($5.00)
ALLETE (Purchased Power Included)	0.986	10,647	6,185	58%	($ 67)	($6.21)
Great Plains	0.995	20,412	11,817	58%	($ 129)	($6.29)
ALLETE (unadjusted)	1.036	6,278	3,580	57%	($ 40)	($6.60)
Basin Electric Coop	1.101	18,102	10,100	56%	($ 120)	($7.32)
Great River Energy	1.130	11,714	6,475	55%	($ 79)	($7.62)

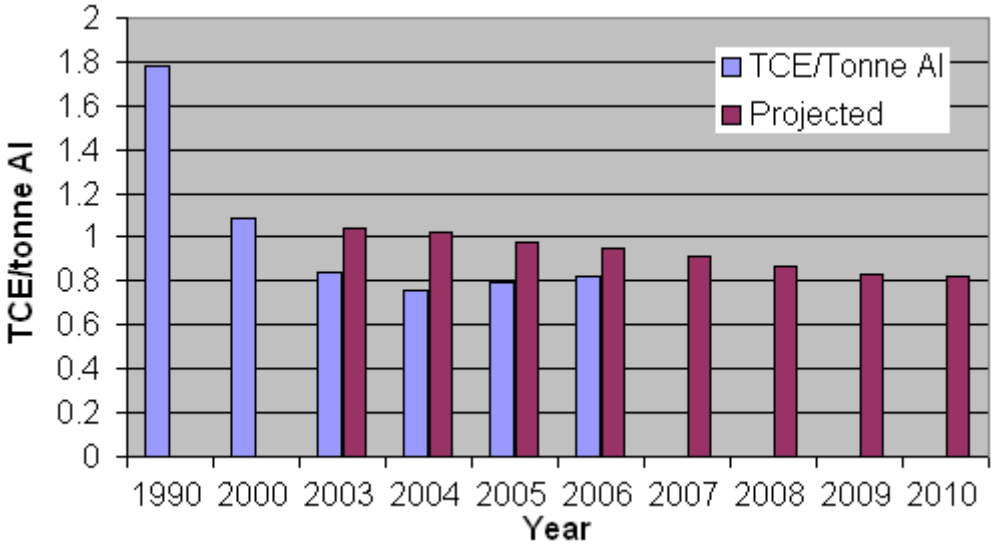
http://www.nrdc.org/air/pollution/benchmarking/default.asp

Reference: Data derived from PSEG/NRDC/CERES Top 100 Utility Emissions 2006. Cost of WM renewables and power purchase emissions not included.

Att't II

MN Power Analysis

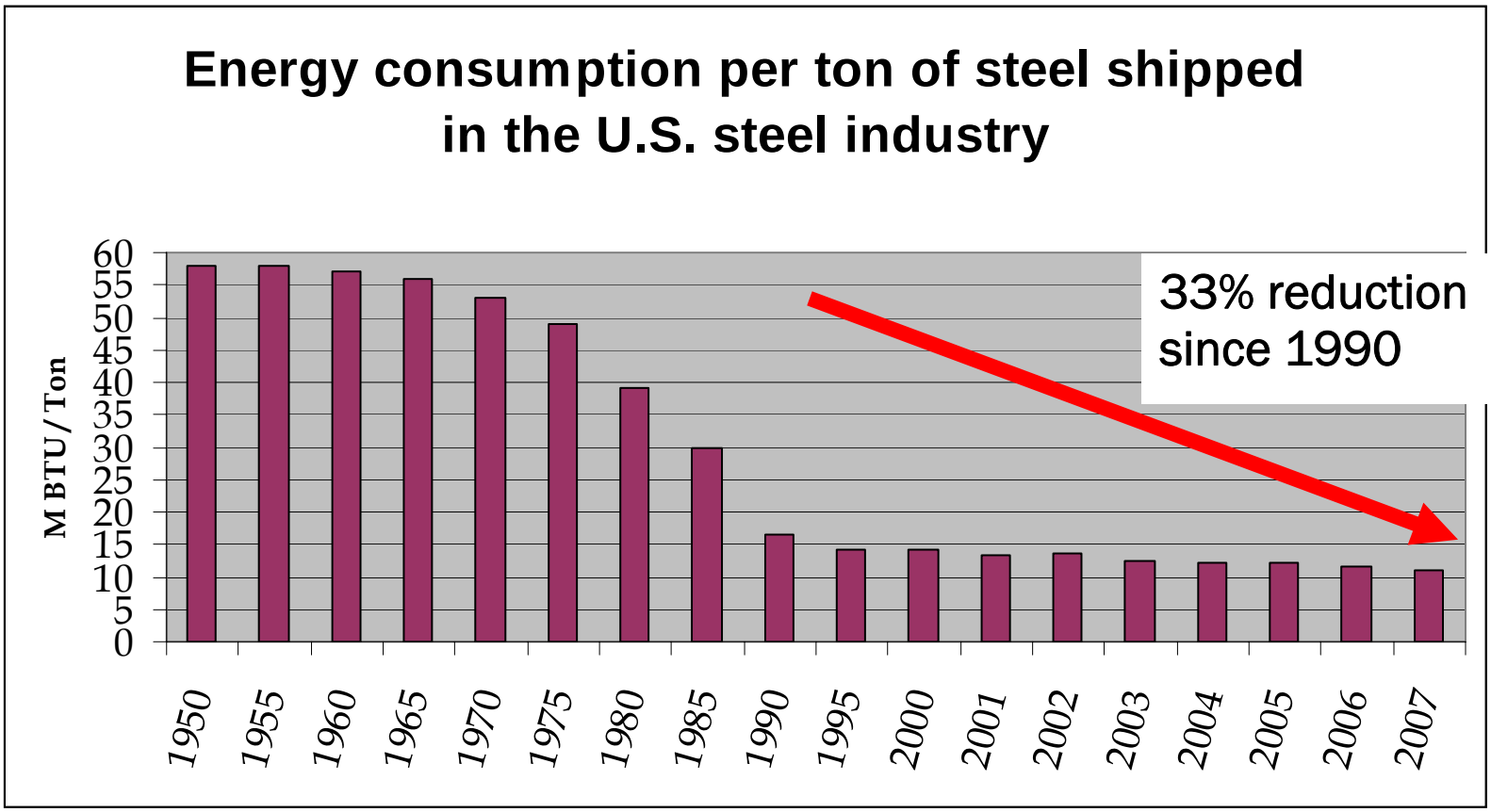
Attachment III
DOE's Climate VISION program – Primary Aluminum



TCE/tonne Al = Tonne of Carbon Equivalent per tonne Al

Note the flattening of the actual data and the projection. Source—Climate VISION Website

Attachment IV
Steel Industry Energy Efficiency Improvement



Note the flattening of the curve during the 2000's as performance approaches physical limits.

Source: AISI Statistics

The Economic Impact of the Aluminum Industry in the United States

Snapshot of the Aluminum Industry (2009)

Output and Production Facilities	
Value of Output/Shipments* ($ billion)	$31.8
Alumina, aluminum & aluminum products (billion pounds)	33.7
Production Facilities	3,884
Jobs and Payroll	
Jobs	106,219
Total Payroll ($ billion)	$6.0
Average Wage	$56,400
Taxes on Payroll	
Federal Income Tax ($ billion)	$0.9
State & Local Income Tax ($ billion)	$0.2
FICA Taxes ($ billion)	$0.9
Exports ($ billion)	$8.4
Capital Expenditures ($ billion)**	$1.0

* includes margin for wholesalers and metal service centers
** data for 2008

Sources: Aluminum Association, Census Bureau, Bureau of Labor Statistics, US Geological Survey, US International Trade Commission, and Internal Revenue Service

Economic Impact of the Aluminum Industry (2009)

The US aluminum industry created $31.8 billion in output in 2009 and employed more than 106,000 workers paying them $6.0 billion in payroll. The economic activity generated by the US aluminum industry created an additional $59.9 billion in output and 357,200 jobs. For each job in the aluminum industry, an *additional* 3.4 jobs are created elsewhere in the economy. Thus, a total of 4.4 jobs are created in the economy for every aluminum industry job. These jobs generated $20.7 billion in payroll and $3.1 billion in federal personal income taxes.

Total Economic Impact of the Aluminum Industry (2009)

				Taxes on Personal Income		
	Output		Payroll	Federal	State & Local	FICA
	($ bill)	Jobs	($ bill)	($ bill)	($ bill)	($ bill)
Direct	31.8	106,219	6.0	0.9	0.2	0.9
Indirect	59.9	357,195	14.7	2.2	0.5	2.1
Total	**91.8**	**463,414**	**20.7**	**3.1**	**0.7**	**3.0**

September 2010

The aluminum industry receives income from the sale of its products. With this income it purchases raw materials, supplies, energy, transportation services, etc. It also pays its employees and pays various taxes. The industry's suppliers in turn purchase the materials, supplies, and services they need to run their businesses and it pays their own employees. Employees take their wages and spend them on housing, groceries, consumer goods, etc. Thus, these cycles of spending and respending generated $91.8 billion in total output and $20.7 billion in payroll supporting more than 463,000 jobs in 2009.

Total Economic Impact of the Aluminum Industry (2009)

	Output ($ mill)	Employment	Payroll ($ mill)
Agriculture, forestry, fishing, and hunting	808	7,426	116
Mining	1,491	3,035	218
Utilities	2,627	4,578	382
Construction	344	3,131	124
Manufacturing	18,395	26,357	2,016
Wholesale trade	4,435	34,293	1,730
Retail trade	2,637	37,557	886
Transportation and warehousing	4,002	28,105	1,237
Information	2,314	10,147	624
Finance and insurance	4,211	17,617	1,147
Real estate and rental and leasing	4,836	12,309	322
Professional, scientific, and technical services	2,860	22,055	1,247
Management of companies and enterprises	1,934	11,079	933
Administrative and waste management services	1,632	25,138	667
Educational services	469	7,870	208
Health care and social assistance	2,951	35,880	1,416
Arts, entertainment, and recreation	484	9,412	196
Accommodation and food services	1,559	35,858	588
Other services	1,934	25,348	630
Total Indirect	59,922	357,195	14,688
Aluminum Industry*	31,832	106,219	5,996
Total Economic Impact	**91,754**	**463,414**	**20,684**

Aluminum Products Support the US Economy

Because of aluminum's strength, flexibility, anti-corrosive properties, light weight, electrical conductivity, attractiveness, and other unique features it is used in literally hundreds of thousands of applications in the manufacturing and construction sectors. In fact, nearly one-third of manufacturing depends on the products produced by the aluminum industry. Industries that use aluminum products generated $1.6 trillion in shipments in 2009 and provided jobs to more than 4 million manufacturing workers.

Aluminum Consuming Manufacturing Industries

	Jobs (2009)	Payroll ($ mill) (2009)	Shipments ($ mill) (2008)
Metal Products	916,696	42,817	295,378
Machinery	485,466	26,628	187,797
Electronic Components and Equipment	296,340	19,427	72,818
Electrical Equipment and Appliances	332,006	17,916	116,824
Motor Vehicles and Other Transportation Equipment	725,482	40,756	451,970
Aircraft	495,383	40,385	173,231
Furniture & Furnishings	107,094	4,296	32,841
Paper & Paperboard	116,389	8,214	82,923
Beverages & Food Packaging	267,474	13,361	124,826
Miscellaneous (abrasives, surgical equip.)	266,247	16,174	85,830
Total Aluminum Consuming Industries	**4,008,577**	**229,973**	**1,624,439**
Total Manufacturing	11,854,054	651,035	5,486,266
Aluminum Consuming as % Total	33.8%	35.3%	29.6%

Source: Bureau of Labor Statistics, Census Bureau

The US Aluminum Industry

At the beginning of the aluminum supply chain, alumina refining facilities process raw bauxite ore into alumina, the first step in aluminum production. At primary aluminum facilities, alumina is smelted into primary aluminum ingot. Aluminum is recovered from recycled scrap aluminum and combined with other metals at secondary smelting and alloying plants. The output from primary and secondary aluminum facilities is then distributed to sheet, plate and foil producers, extruders, and foundries to produce the semi-finished and finished products of aluminum that are used in our economy. They are distributed to consuming industries by way of wholesalers and metal service centers.

Components of the US Aluminum Industry (2009)

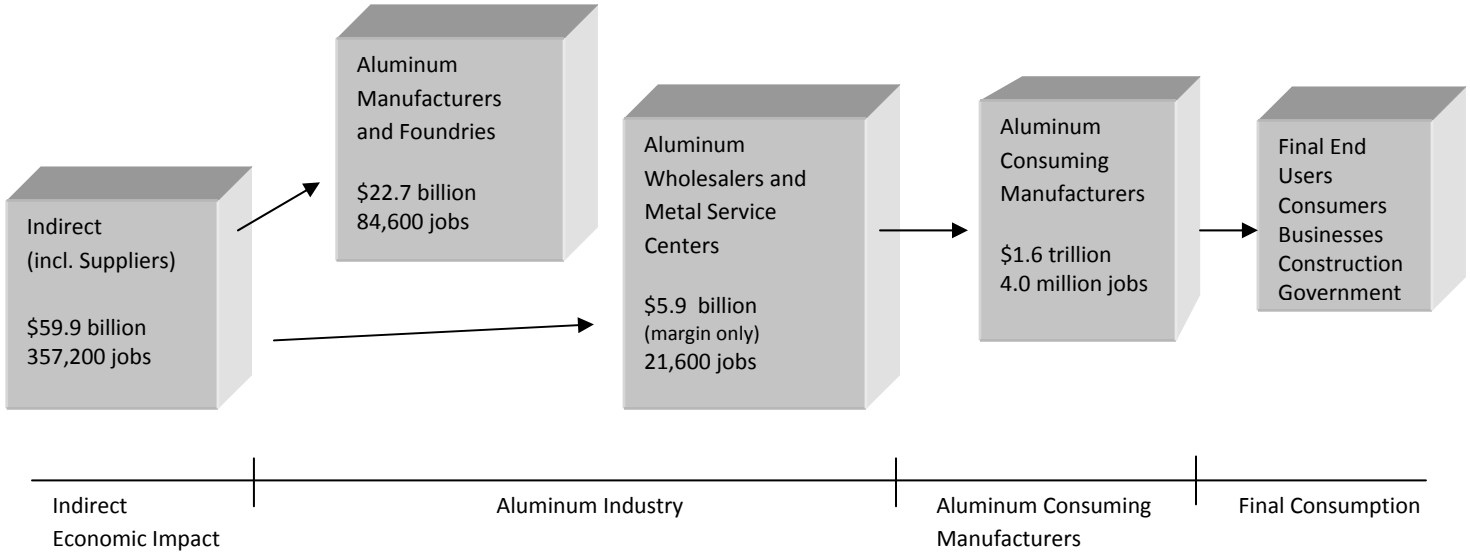
	Production Facilities*	Jobs	Payroll ($ mill)	Shipments ($ mill)
Alumina refining	4	1,900	121	828
Primary aluminum production	18	9,334	651	4,172
Secondary smelting and alloying of aluminum	224	4,548	215	5,176
Aluminum sheet, plate, and foil manufacturing	67	14,208	883	8,244
Aluminum extruded product manufacturing	361	18,357	816	2,709
Other aluminum rolling and drawing	63	6,617	338	1,595
Aluminum foundries	730	29,639	1,233	3,253
Total aluminum manufacturing	**1,369**	**84,603**	**4,257**	**22,723**
Wholesalers & metal service centers**	2,515	21,616	1,739	5,855
Total aluminum industry	**3,884**	**106,219**	**5,996**	**31,832**

* Multiple products are made at certain facilities, thus one facility may be listed several times. Total reflects number of individual production facilities with no double-counting.

** Shipment value represents margin only

Sources: Aluminum Association, Census Bureau, Bureau of Labor Statistics, and US Geological Survey

The US Aluminum Industry in the Broader Economy (2009)



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