On May 23rd, 2006, Kevin Greenawalt, Senior Vice President and President, North America, Novelis, Inc., spoke on a panel at the Alliance to Save Energy's Great Energy Efficiency Debate on behalf of the Aluminum Association Auto & Light Truck Group.

The panel, titled "U.S. Oil Addiction – Is the Cure Plugging-In, Moving to Alternative Fuels, or Improving Fuel Economy of Conventional Vehicles?," also included the following speakers:

Moderator: Matt Wald, New York Times
Edward Cohen, Vice President, Government & Industry Relations, Honda North America
Keith Cole, Director, Legislative & Regulatory Affairs, General Motors
Brian Foody, President, IOGEN
Ed Kjaer, Director of Transportation, Southern California Edison
Dan Lashof, Deputy Director, Climate Center, Natural Resources Defense Council

Mr. Greenawalt focused his comments on lightweighting with aluminum as a smart and available solution to the current fuel economy crisis. His full opening statement is below.

Kevin Greenawalt
Novelis
President, North America
Opening Remarks
Alliance to Save Energy
May 23, 2006

- First, I'd like to thank the Alliance to Save Energy for hosting this forum today. It's a very important and timely topic.

- As Americans, our way of life – socially and economically – is based on the internal combustion engine. Our dependency on the oil that drives these engines and fuels our way of life and economic and political security looms large. Everyone in this room understands the situation. "Oil shock" is upon us

- The good news is that automakers, suppliers including the aluminum industry, technology companies, oil and alternative fuels producers, and the federal government recognize that something has to give. The race is on to create short and long-term, energy-saving solutions that are efficient, safe and affordable.

- As then Chrysler CEO Bob Eaton said a few years back, "In the 20th Century the automobile changed society. In the 21st Century…society will change the automobile." Without a doubt, that prediction is becoming reality. As you are hearing today, more efficient engines, clean diesels, hybrids, and ethanol and ultimately fuel cells all promise to improve the internal combustion engine, or even replace it altogether. Each one offers advantages over the status quo and I believe the competitive marketplace will produce a real solution, if not a range of solutions.

- One thing is common to all of these energy-saving solutions. That is mass. Regardless of the energy source or power train technology, the greater the mass – that is, size and weight – the more energy is required to move that mass. Reducing mass has been and will continue to be an important energy saving strategy…and the most effective way achieve that <u>today</u> is through advanced low weight materials like aluminum, but also magnesium, plastics, composites and to some extent, lighter weight steels.

- In terms of aluminum, a six to eight percent fuel savings can be realized for every 10 percent reduction in weight from substituting aluminum for steel. As an important environmental

bonus, each pound of aluminum replacing two pounds of iron or steel can save a net 20 pounds of CO_2 equivalents over the typical lifetime of a vehicle. So aluminum boosts fuel efficiency while curbing greenhouse gas emissions.

- The historical problem associated with mass reduction has been safety. The laws of physics cannot be denied. Downsized vehicles – that is vehicles that reduce both size AND weight to increase fuel efficiency– do not perform as well in a crash as its larger and heavier predecessors. But the safety equation does not end there.

- There is a growing body of evidence confirming that vehicle size, not weight, is the best determinant of vehicle safety. Studies show that with smart design, weight can be reduced safely as long as size is maintained or even increased to maximize energy absorbing crush space. Honda has done some outstanding research in this area and NHTSA agreed with this point when it recently created size-based fuel economy standards for SUVs, pickups and vans. NHTSA's stated intent was to encourage automakers to build larger, yet lighter vehicles by opting for high-strength, low- weight materials to increase fuel economy without compromising safety. As NHTSA looks toward passenger cars, I believe size-based standards offer similar promise, as well.

- Jaguar's flagship sedan, the XJ, is a real-world example of this new dynamic. Originally made with heavier steel, the new Jaguar XJ upgraded to an advanced aluminum frame and body panels. The resulting car is longer, taller and wider, improving safety by offering greater crash protection…yet its 400 pounds lighter. The larger, lighter version achieves four more miles per gallon on the highway, earning it the best fuel economy in its class. Aluminum did not "downsize" this vehicle, aluminum "right sized" it. Just think how that might apply to SUVs.

- Finally, we recognize that aluminum's upfront costs have been a barrier to even greater use. On this point let me just say two things. Aluminum continues to be the fastest growing automotive material the world over, so clearly it is cost effective in the right applications and volumes.

- Second, we have a new technical study that documents the metal's true potential value in the future for high volumes in terms of cost savings from downsized engines, transmissions and suspensions, not too mention money saved at the pump. These savings can more then offset upfront materials costs. Automakers are showing a willingness to invest in new technologies with higher upfront costs but longer term benefits for all, and we believe the same applies to advanced materials.

- In conclusion, when you think of energy security and fuel saving technologies, mass reduction – or should I say "right sizing" – will continue to be an important technology regardless of the power train technology that is chosen. While it is not as sexy as the hybrids or fuel cells or biodiesel or ethanol, aluminum can enhance the efficiency of each of those technologies. More importantly, aluminum is here today. It's a proven technology to boost fuel economy and cut emissions while maintaining or even improving safety. That's because, simply put, aluminum helps build a better car...and a better truck. Thank you.