Testimony Of

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On Behalf Of The

Infinia Corporation

At The

Committee on Energy and Natural Resources
U.S. Senate

Hearing On

S. 3521, The Rare Earth's Supply Technology and Resources Transformation Act of 2010

September 30, 2010

Madam Chairman, Ranking Member Risch and Members of the Subcommittee, I am Peter Brehm, the Vice President of Business Development & Government Relations for Infinia Corporation. We are headquartered in the State of Washington, and we have operations in New Mexico, Michigan and California, as well as Spain, India and Japan. We have over 130 employees, 100 of whom are based at our headquarters in the Tri-Cities in Washington State. Notably, being nearby, we also have several key business partners, suppliers and consultants in and/or from Idaho. It is an honor to appear before you and testify on behalf of Infinia.

Let me first tell you a bit about my firm. Infinia has developed and manufactures the PowerDish™, a unique, high-performance solar power system that uses a Stirling engine and a parabolic mirror to convert sunlight, which is free, into electric power, which is valuable. Our system is not a PV or solar panel-based system, but instead a unique U.S.-developed and manufactured Concentrating Solar Power system. Each PowerDish™ produces 3 kW of grid-quality AC electricity. Our systems do not consume water – which

is in short supply in the West – nor do they need flat or graded ground to operate. And through scalability, we can size our projects to fit within existing transmission and distribution system constraints.

Notably, we manufacture here in the United States and, at a time when the auto industry is facing historic difficulties, our technology is perfectly suited to being manufactured on automotive supplier assembly lines. In fact, virtually our entire supply chain is automobile industry suppliers, most of which are based in the hard-hit Midwest including, Michigan, Ohio, Indiana and Iowa.

Infinia PowerDish™ Installation in Yuma, Arizona

Although our primary focus is the commercialization of the PowerDish™ solar power system, we are actually a very diversified renewable and alternative energy technology developer and manufacturer. In addition to our solar power system, we have over a dozen renewable and alternative energy development programs funded by the Department of Defense (DOD), Department of Energy (DOE) and commercial partners in such diverse areas as tactical power systems, remote power systems, combined heat & power systems, coolers, cryocoolers and air conditioners.

Stirling engine

Stirling engines on assembly line

With such a diverse portfolio of technologies, Infinia is a member of several renewable and alternative energy related trade associations. We are a member of, and I represent Infinia on the Board of Directors for the Solar Energy Industries Association (SEIA) and the Commercial Coalition for the Application of Superconductors (CCAS). Infinia is also a member of the United States Clean Heat & Power Association, the Clean Technology and Sustainable Industries Association, the Washington State Clean Technology Alliance and the Large-Scale Solar Association among others. On a related note, I was appointed by Governor Christine Gregoire in 2009 to the Washington State Clean Energy Leadership Council, which advises Washington State's Governor and Legislature on Clean Energy Policy.

Stirling Cooler

Stirling Cryocooler

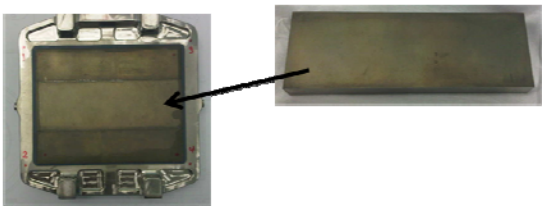
With significant interest and investment in such a broad range of renewable and alternative energy technologies, Infinia brings a somewhat unique perspective to this hearing. Not only do we use Rare Earth Metals (REM) in our core technology, but many of our customers also use Rare Earth or closely related materials.

As technical background, Infinia's core technology are Stirling Cycle devices including Stirling engines which covert heat into electricity and Stirling coolers, cryocoolers, heat pumps and air conditioners which convert electricity into heat, cooling and cryocooling. The key component of all of the above described Stirling Cycle devices is a linear alternator.

This is where the Rare Earth Metals come into play. The linear alternators use what are known as permanent magnets and the most powerful and compact permanent magnets use REM's. In our case, we currently use Neodymium magnets which are made of the REM Neodymium. Additionally, we also use some small Samarium-cobalt magnets which use the REM Samarium.

As an example, the tables and pictures below describe the REM used by Infinia's PowerDish™. As the slides indicate REM's are vital to our products.

| Part | Rare Earth | Rare Earth Mass/Part |
|---|---|---|
| Alternator Magnets (1 set) | Neodymium (<6% is substituted with Dysprosium) | .76 kg |



PowerDish™ Stirling Engine Rare Earth Metal Usage

| Part | Rare Earth | Estimated Part Mass |
|---|---|---|
| Hall Magnets (2 per engine ) | Samarium | 1 g |
| Hall Magnets (2 per concentrator) | Samarium | 4 g |
| Misc Permanent Magnets for electric motors | Neodymium (assumed) | .38 kg (assumed) |

PowerDish™ Rare Earth Metal Usage

Rare earth magnets in our linear motors or alternators are a critical part of all Stirling engines, cryocoolers and heat pumps/air conditioners being developed or commercialized by Infinia. Neodymium based magnets provide the highest possible energy product and represent Infinia's dominant need for rare earth elements. Samarium is required for some applications with magnets that operate at significantly elevated temperatures. Samarium/cobalt magnets are the only possible alternative to the neodymium/iron/boron magnets. These have reduced but acceptable performance, but they still use a rare earth element. Any other alternatives such as Alnico magnets will increase system size and weight and reduce power and efficiency to levels that are not viable for practical applications.

Access to and a commercial supply of REM's is clearly of critical importance to Infinia, our suppliers and our customers. Policies to ensure this supply are of great interest. It should be noted that, in spite of the impression one might get from their name, REM's are reasonably available and we (and to the best of our knowledge, our vendors) have never had an issue securing the Neodymium or

Samarium. The problem is the supply is concentrated and apparently, considering recent events, subject to political disruption.

The loss or disruption of the REM supply would be catastrophic to Infinia in terms of price spikes, production volume and related supply chain disruptions that would drastically limit our ability to develop and manufacture our products. Weight and efficiency are insurmountable hurdles when alternatives are assessed for Infinia's Stirling cycle devices. REM's are simply a necessity for the development, manufacturing and advancement of Infinia's technology, as well as many other modern essentials.

Infinia strongly supports efforts such as S.3521 to help ensure the supply of REM's. However, we are concerned that one aspect of this proposed legislation is to extend the DOE Loan Guarantee Program to domestic REM production. While we conceptually support broadening the DOE Loan Guarantee Program to encompass a domestic REM supply chain, we are troubled that this may jeopardize loans needed by other renewable projects. Recent testimony by the DOE's Loan Guarantee Program management appears to indicate that DOE does not have adequate funding to support the existing pipeline of renewable energy related DOE loan guarantee projects and proposals, much less an expanded pipeline that might result from S.3521 or similar legislative or regulatory proposals.

As the committee is keenly aware, funding representing over half of the authorization for the DOE's Loan Guarantee Program has already been reallocated on two separate occasions apparently leaving the DOE's Loan Guarantee Program insufficient funding to support its existing backlog of projects and proposals – one of which is a proposal by Infinia to invest in our automotive industry supply chain in Washington State, Utah, Michigan, Indiana and several other states. The DOE Loan Guarantee Program and adequate funding for this program is of great import to Infinia and our renewable energy industry colleagues.

On a related note, we would also like to bring to the attention of the committee that there are promising U.S. invented and developed technologies, namely High Temperature Superconducting (HTS) motors and generators, that require virtually no REM's and are

direct substitutes for similar traditional motors and generators requiring large quantities of REM's. The development and commercialization of these and other HTS applications would significantly reduce the demand for REM's, which would lessen the threat and/or effect of supply disruptions.

Despite the value of HTS technologies, the DOE appears to be in the process of winding down and ultimately terminating the HTS program. We would respectfully like to suggest, especially considering the recent disruptions to the supply of REM's, that the committee strongly encourage the DOE to rethink their apparent decision to wind down and/or terminate the DOE's High Temperature Superconducting program.

Thank you for the opportunity to testify on behalf of Infinia and our renewable energy industry colleagues.

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