AIF RESEARCH INITIATIVE PROPOSAL
RESEARCH NEEDS STATEMENT
SUSTAINABILITY OF BITUMINOUS (ASPHALT) ROOFING

Problem Statement

Research proposals are needed to develop practices and methodologies that will enhance the sustainability of bituminous (asphalt) roofing.

Background Information

Research into the sustainability of the bituminous (asphalt) roofing materials should focus on significant issues that ultimately will ensure a sustainable future of the asphalt roofing industry. There are multiple means to view sustainability. Alternative roofing materials are an ongoing challenge the asphalt industry. Thermoplastic roofing materials have largely eaten into the share of bituminous and modified bituminous membranes in the low slope market. Metal and alternative products have grown in market share in the steep slope roofing market in recent years. Asphalt shingles have been banned from landfills in certain areas as the debris from re-roofing after storms is rapidly filling existing landfills.

When considering these market trends, the asphalt industry needs to find ways to express the sustainability of the asphalt roofing products. Environmental Product Declarations (EPDs) have been written for asphalt products in both steep and low slope roofing. Shingles and low slope roofing are often warranted for 20 or more years, and are expected to function for long term performance, with or without maintenance.

Research is needed to address two principal questions:

1. What are the necessary requirements for sustainable asphalt roofing? Research should consider, but not be limited to the following:
    a. Identifying the characteristics and properties of sustainable roofing materials.
        i. How could the performance and life cycle of roofing products be improved to sustainably compete with alternative products in the market? Are there additional parameters needed to be designed or considered?
    b. Evaluating manners to more effectively recycle roofing materials (shingles and/or roll goods) that result in a more sustainable product for the building industry.
        i. Evaluate means to use pre- or post-consumer recycled shingle or roll material in new shingles or roll goods without reducing the long-term performance of the new product.
        ii. Evaluate areas other than paving or roofing where shingles may be recycled that is not restricted by transit or other market influences.
    c. Identifying research that will enable the roofing industry to effectively utilize recycled waste materials without reducing the long-term performance of the roofing materials.
        i. Non-limiting examples include granules, fine mineral backing, waste plastics, reclaimed asphalt singles (RAS), Ground Tire Rubber and other possible future waste streams – provided that the life cycle of the roofing product performance is not compromised (or possibly improved beyond the current practices) while having no negative impact on future recyclability. An ideal solution may be a mode-of-research approach, including accelerated aging, that provides a hierarchy of procedures or practices to address waste streams as they arise.
    d. Evaluating how sustainable practices may lead to a reduction in the environmental footprint of the bituminous shingle industry.
        i. An example is the effective utilization of waste streams and reduction in the public's exposure to odor.

   ii. Emissions from oxidation of roofing asphalt may result in plants being classified as major sources.
   iii. Can the potential impact on the environment be quantified?
2. What strategies can be advanced to enable asphalt roofing manufacturers to provide materials with improved sustainability?
   a. Who are the partners in this effort (e.g. material suppliers, researchers, equipment engineers, contractors, recyclers, specifiers, insurance)?
   b. What is the role of government agencies in such an environment?
   c. How can innovation be encouraged to provide sustainable roofing without compromising fair trade?
   d. How could cost impacts be marketed as an industry to the consumer?

Expected Impacts

By assuring the sustainability of the end-product (i.e. bituminous roofing materials), the sustainability of the component materials (specifically bitumen or liquid asphalt) are also assured.