Testimony to the United States Senate Committee on Energy and Natural Resources
The Honorable Senator Jeff Bingaman, Chairman

August 7, 2007

Reducing Barriers to Growth of Emerging Energy Technologies – Relationships among Federal, State and Local Governments

Mr. Chairman and distinguished members of the Committee, my name is Rusty Schmit. I am co-founder and CEO of Advent Solar, a solar cell and module manufacturing company located in Albuquerque, New Mexico. I would like to thank you for providing me the opportunity to testify before you today:

Advent Solar is a privately funded, early-stage company. We began operations in July, 2003 based on a proprietary "Emitter Wrap Through" solar cell technology licensed from Sandia National Laboratories in Albuquerque, New Mexico. We have raised $120M in equity capital and $25M in debt. Today Advent occupies a new 25MW manufacturing facility at *Mesa del Sol* with close to 200 well-paid employees.

Even though Advent Solar is a U.S.-based company utilizing U.S.-based technology, most of its sales are in Europe, and virtually all of its $30 million in manufacturing equipment was purchased from industry-leading European equipment vendors. Most of our key raw materials also come from European suppliers.

The photovoltaic (PV) industry is booming. In 2006, global solar cell production topped 2.5GW, a five year increase of 632% from 400MW in 2001. This is a global industry and the global competition in formidable. In 2006, the top PV producing countries or regions were: Japan with a 36% market share; Europe (primarily Germany) with 28%, and China and Taiwan with 22%. The U.S. share of global production totaled 7% (174MW), and a large portion of this was from European and Japanese companies with U.S. operations.

Most industry analysts believe that China will be the world's largest nation PV producer in a very few years. Currently, China exports 95% of its production.

All of the leading PV producing countries have advanced their industries with national energy policies providing supply and demand incentives for PV and other renewable energies and with policies that are intended to promote economic and energy security and environmental goals. This is not the case in the United States.

Just sixty days ago, the 2007 Senate Energy Bill was stripped of its demand incentives providing federal tax credits for prospective residential PV users in the United States. This was an enormous setback for the advancement of the PV industry in the U.S. and for Advent Solar. The PV world was watching with the expectation that the U.S. was on the verge of asserting its market strength and potential, and instead the status quo prevailed.

In its *World Energy Outlook 2006*, the International Energy Agency (IEA) projects that world electricity demand will double by 2030. That is, whatever the issues are today, multiply them by two over the next 23 years. Just last month, the National Petroleum Council in its report entitled *"Facing the Hard Truths about Energy"* stated that the world would need 60% more energy by 2030, and that there are accumulating risks to continuing expansion of oil and natural gas production from conventional sources. The report called for increased energy efficiency and for the expansion and diversification of energy resources.

The global and domestic drivers for renewable energy and other emerging energy technologies have never been more vivid, and I do not need to recite them for you. We live with the consequences of our energy policy or lack thereof day in and day out. The quality of life and standard of living for future generations of Americans and global citizens will be impacted by your wisdom and sensibilities as U.S. legislators and policy makers.

With this backdrop, and from the perspective of Advent Solar, I would like to cite three barriers to *Emerging Energy Technologies*. The issues and contrasting interests may be complex at a micro level, but they are obvious from a perspective on national policy.

Removing barriers will require bold leadership and enlightened public policy with the long-term public interests in mind.

My three observations are simple and straightforward:

1. A long-term National Energy Policy

Energy is ubiquitous, it is a global commodity; and it is a global industry. As a U.S.-based industry, solar cell and module manufacturing faces enormous global competition and huge barriers to having any footprint at all. If we are to be successful, it will not be solely as an exporter.

Like the host countries of our industry-leading competitors, The U.S. needs a long-term energy policy that provides incentives for the production and consumption of emerging energy technologies in the U.S. market. This has been highly successful in other countries.

Japan was the first to provide market incentives for solar electric power as an integral part of their energy policy to diversify the sources of electric power generation. This policy led to growth in the amount of solar electricity generated, and also led that country to be the leader in manufacturing of solar photovoltaic products. That industrial leadership continues today, even though the market demand in Japan has been far surpassed by that in Germany.

Following the example of Japan, Germany implemented an incentive program to drive market demand for solar power. Here again, it was part of a broader national energy policy for long-term diversification away from a dependence on coal and nuclear. This market demand led to the build-up of the manufacturing base in Germany.

The private and social benefits make a broader-based national energy policy a sure winner for the twenty-first century.

2. Open Domestic Markets

Change happens. In fact, it is a hallmark of an advancing and prosperous society.

Emerging energy technologies will not emerge if they are easily squashed and obstructed by vested, status quo opponents who fear the loss of franchise and annuity income status. Emerging energy technologies in the U.S. need open access to the largest energy market in the world. Our home base is our special advantage.

We will not grow our domestic manufacturing industry by selling only into foreign markets. China will beat us at that game.

The U.S. needs political leadership and progressive public policy at Federal, State, and Local levels to bridge diverse energy interests and accommodate change.

It is past time to claim our energy independence and get to work.

3. Federal, State, and Local Economic Development Incentives Aligned with the National Energy Policy

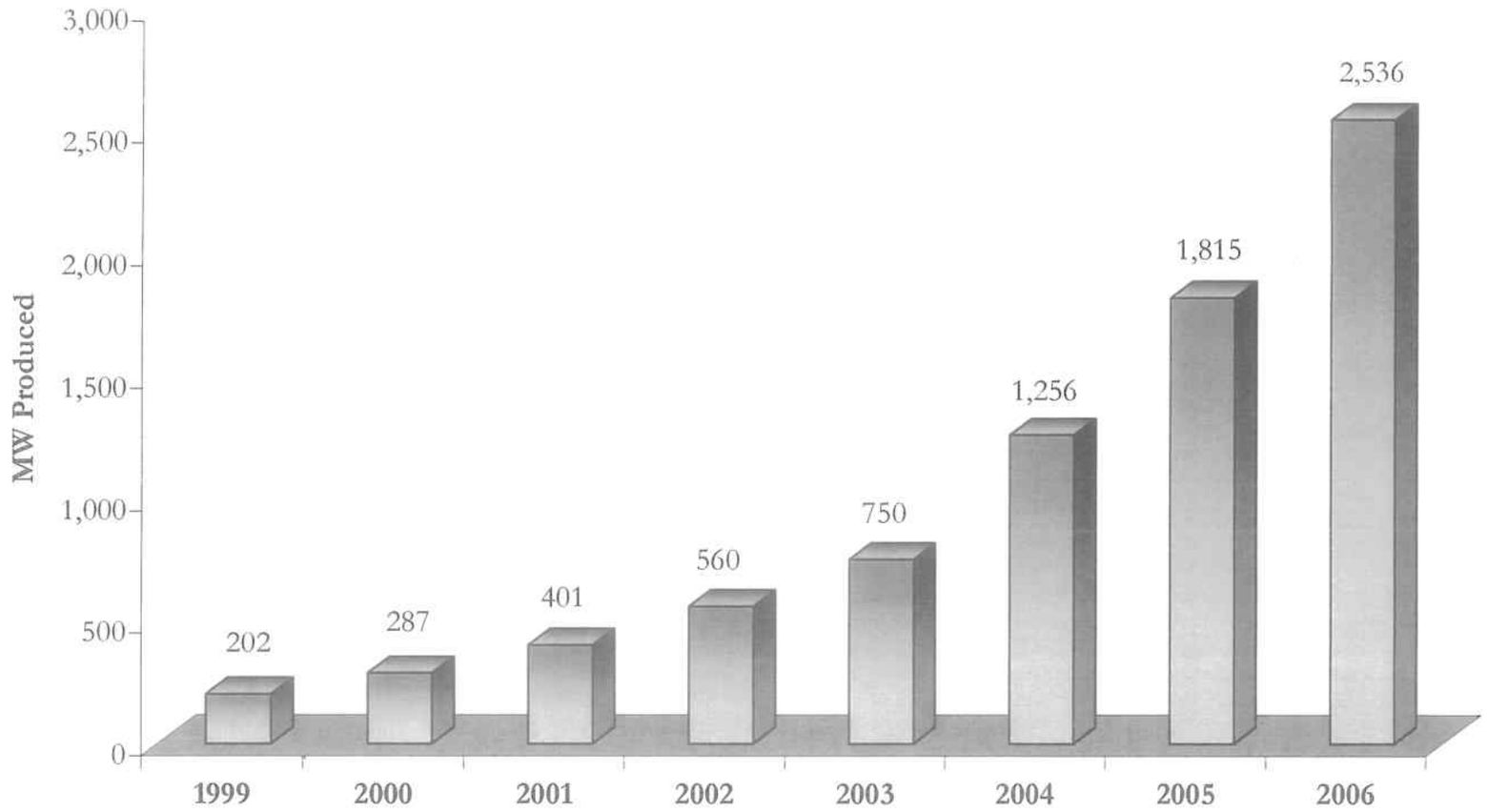
Though often called industrial policy and therefore frowned upon in the U.S., the reality is that companies such as Advent Solar compete in a global market. In that global market virtually all other countries align economic development with national policy. In the solar energy business, for example, we are at a huge disadvantage with our competitors in countries such as Germany because of the grants and other aid provided to companies that locate there.

Germany has created an estimated 100,000 jobs in the renewable energy field over the past several years, with over 35,000 jobs reported in solar energy alone last year. This has been driven not only by the market incentives mentioned above, but also through grants from the European Union, the German national government, and often from the German states. This combination of grants, which are linked to job creation, often amounts to 50% or more of the total project investment. It is very difficult for a U.S. company to compete in this global industry with these types of incentives.

The federal, state, and local economic development efforts should be coordinated through grants or other near-term cash incentives to lower the barrier to investment for companies involved in strategic new energy technologies.

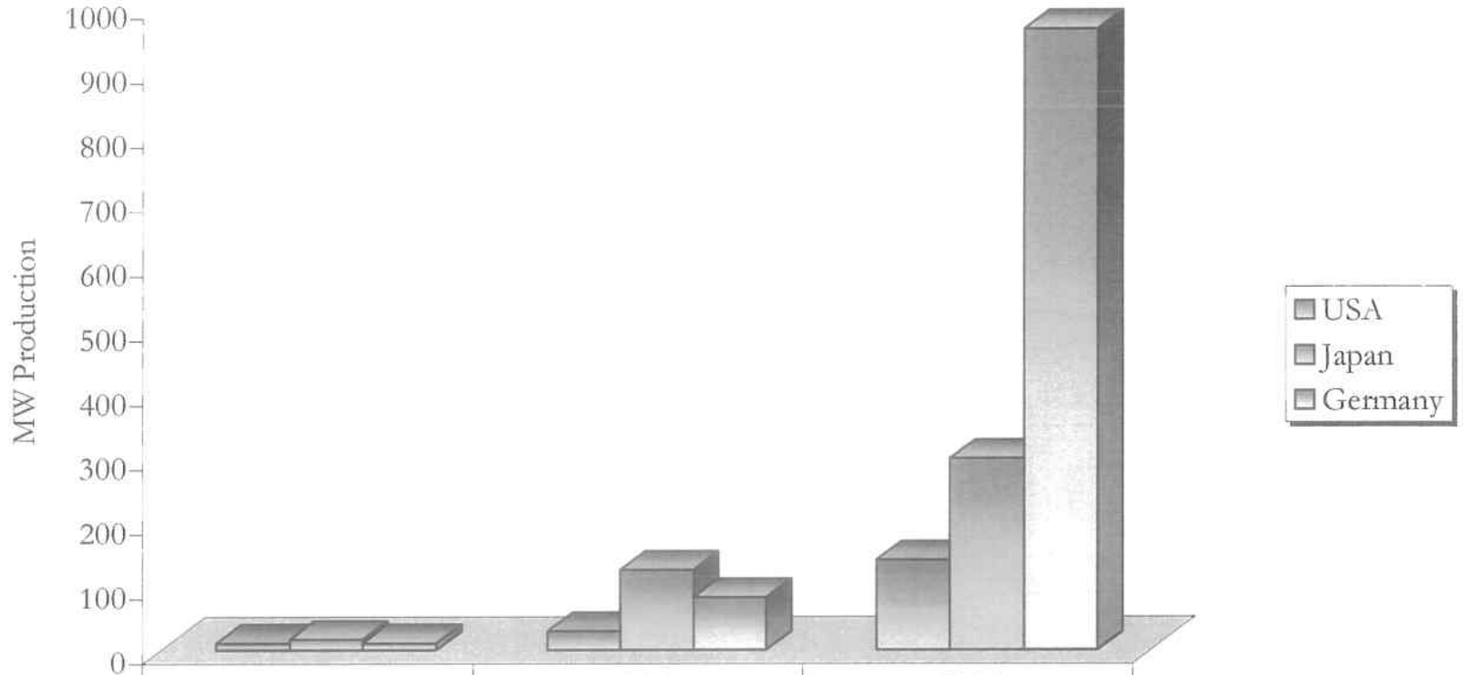
Once again, thank you for providing me with the privilege to address this committee. I thank you for your interest and leadership, and I would be pleased to answer your questions.

Solar Cell Production (1999 to 2006)



Source: PHOTON International, March 2007

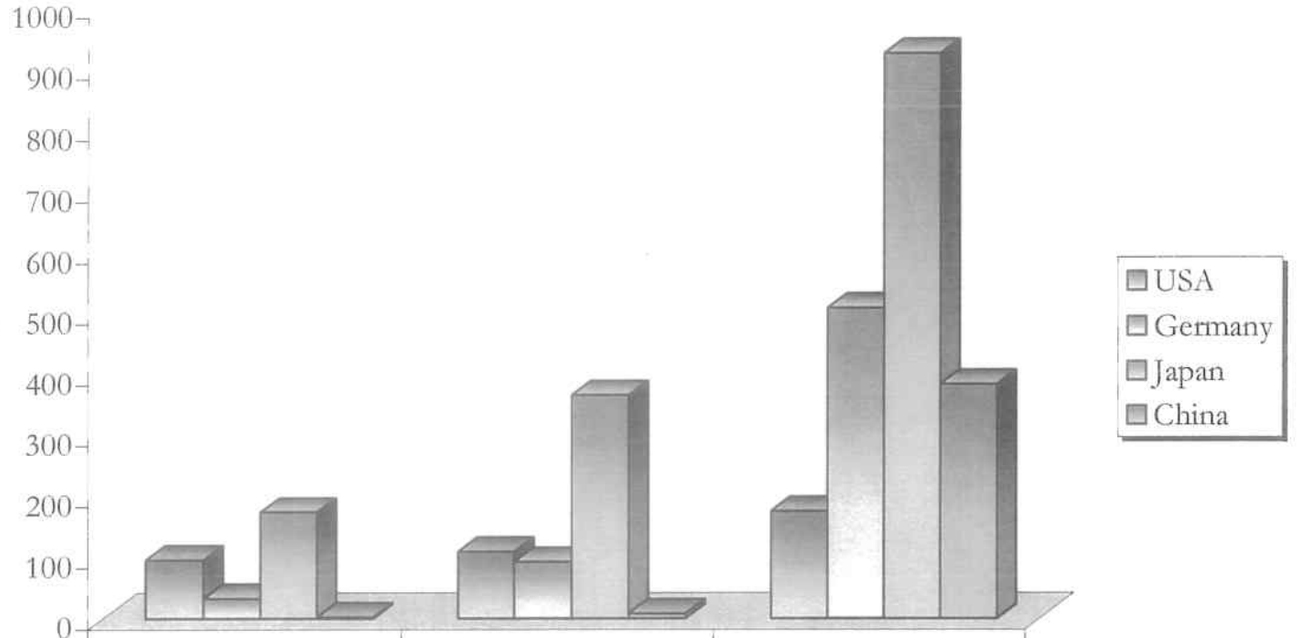
Photovoltaic Sales by country (1996-2006)



	1996	2001	2006
USA	10	29	139
Japan	16	123	296
Germany	10	81	960

Sources: http://www.iea-pvps.org,
http://www.solarbuzz.com/Marketbuzz2007-intro.htm

Photovoltaic Cell Production (2001-2006)



	2001	2003	2006
USA	95	109	174
Germany	32	92	508
Japan	173	365	922
China	1.7	7.5	383

Sources: PHOTON International, April 2002, March 2004, March 2007