

COMMENTS AND RECOMMENDATIONS ON TVA STRATEGIC PLAN**SHARP ELECTRONICS CORPORATION,
SOLAR ENERGY SOLUTIONS GROUP****May 3, 2007****INTRODUCTION**

Thank you for the opportunity to comment on the strategic plan for TVA.

Sharp Corporation is the world's leading manufacturer of solar photovoltaic (PV) equipment, and is the market leader in the U.S. Sharp Manufacturing Company of America (SMCA), based in Memphis, Tennessee, is Sharp's only U.S. manufacturing site. Sharp inaugurated a solar PV manufacturing line in Memphis in 2003, with a production capacity of 20MW per year. That capacity was doubled to 40MW in 2004, and increased again to more than 60MW in 2005, making it the largest PV module production plant in the U.S. Another significant capacity expansion is underway in 2007. There are over 200 jobs that have been created at SMCA as a result of this fast-growing solar PV business, and even more jobs have been created in the companies that Sharp serves as customers, companies who design and install PV systems on homes and businesses.

Unfortunately, only a very small fraction of the PV products that Sharp produces in Memphis are sold to customers in the TVA region, and very few if any new solar-related project development and installation jobs have been created in the TVA region. This is in stark contrast to other states, e.g. New Jersey and California, where progressive solar energy policies have led to the creation of thousands of new jobs and hundreds of millions of dollars in venture and public market investments into fast-growing solar companies, and where solar PV installations are playing an increasingly important role in providing pollution-free peak-demand energy.

SOLAR PV MARKET OVERVIEW

Solar PV is one of the world's fastest-growing energy resources today. The global market for PV was approximately \$12 billion in 2006, with approximately 1,700 MW of solar PV installed around the world. Approximately 140MW were installed in the U.S. World market growth has averaged 42% per year for the past five years.

The largest market for solar PV in the world today is Germany, a country that has approximately 40% less solar energy available than the TVA region. The driver for market growth in Germany and in other leading markets have been long term policies that provide economic incentives to solar PV system owners, and that ensure that solar PV system owners do not face unreasonable barriers when seeking to interconnect their PV energy systems to the electric grid.

In addition to Germany, there are many examples of U.S. states that have launched initiatives to ensure that solar PV is a significant part of the long term energy generation mix in those states. The following are some examples of this:

- California. The California Solar Initiative (www.gosolarcalifornia.org) was launched in January 2007. Under this ambitious initiative, the state has committed approximately \$3 billion to fund end-user incentives over the next 10 years for solar PV systems, targeting the cumulative installed capacity of 3,000 MW by 2017, and targeting the phase-out of end-user rebates over the term of the program. In addition, California has accelerated its Renewable Portfolio Standard goals, now targeting a goal of 20% of total electricity sales to be sourced from renewable resources by 2010.
- New Jersey. New Jersey Board of Utilities voted in 2006 to extend the Renewable Portfolio Standard for New Jersey to a target of 10% of total electricity sales by 2021. 10% of this amount (approximately 1,500 MW total) is to be sourced from solar PV. (<http://www.njcleanenergy.com/>). New Jersey currently provides up-front rebates to solar PV system buyers, but plans to phase out these rebates and develop a market for tradeable solar renewable energy credits as the primary mechanism for financing solar PV projects.
- Colorado. In 2004, Colorado enacted an RPS requiring investor-owned utilities to source 20% of electricity sold from renewable resources (including 4% from solar electric) by 2020. Governor Ritter is promoting an expansion of these RPS targets.
- Maryland. In April 2007, Maryland enacted RPS legislation requiring 9.5% of electricity sold in 2022 be sourced from “Tier 1” renewable resources, including 2.2% (approximately 1,400 MW) from solar PV. (<http://www.psc.state.md.us/psc/electric/rps/home.htm>)
- Pennsylvania. In 2004, Pennsylvania enacted an Alternative Energy Portfolio Standard. The legislation included a specific provision for solar PV, setting a target of approximately 800MW to be installed by 2022. In addition, Governor Rendell in February 2007 announced a new “Energy Independence Strategy”, including a provision of approximately \$200 million to fund rebates for solar PV system owners and manufacturers.
- Other. In addition to the above, there are strong solar PV incentive policies in place in several other states. Approximately 20 states have enacted renewable energy portfolio standards, and 41 states plus DC have enacted net metering rules that assure solar PV system owners that they will capture the full value of the electricity they produce on their homes or businesses.
 - http://www.dsireusa.org/documents/SummaryMaps/RPS_Map.ppt
 - http://www.dsireusa.org/documents/SummaryMaps/Net_Metering_04_07.ppt
- Federal Government. The Federal Government has significantly increased its recognition and support for solar PV and other renewables. The Energy Policy Act of 2005 included a key provision allowing solar PV system owners to claim a 30% tax credit (capped at \$2000 for residential system owners). This tax credit is scheduled to expire in 2008; however legislation has been

introduced in the House and Senate (HR 550 / S 590) to extend this tax credit for an additional 8 years. In addition, the Federal budget for solar PV research and development was doubled in 2007, and at the same time a new “Solar America Initiative” was launched by the Department of Energy to encourage R&D partnerships with leading and emerging solar PV companies. (http://www1.eere.energy.gov/solar/solar_america/)

KEY DRIVERS FOR SOLAR PV POLICIES

There are several key benefits that solar PV provides that have led policymakers to enact increasingly strong policies to encourage investment by both customers and suppliers in the fast-growing solar PV market. These factors include:

- **Environmental Benefits.** In the face of growing concern about climate change and other environmental problems, solar PV offers a bountiful energy resource that has no air pollution, no water pollution, no noise pollution, no radiation risk, no solid waste from operations.
- **Energy Security.** Solar PV systems can be a part of a strategy to reduce our dependence on imported fuels. In addition, fuel-free solar PV systems can be an effective hedge against increasing and volatile conventional energy prices.
- **Peak Energy Value.** Solar PV typically generates the highest amount of energy during those periods when electric demand is at its highest, and can be an effective part of a strategy to “shave” peak demand.
- **Proven Reliability.** Solar PV technology is well-proven in some of the most harsh environments in the world, and typically solar PV modules (which have no moving parts) are sold with a manufacturer’s warranty of 20 years or more.
- **Economic Development.** Solar PV generates significantly more regional jobs per installed MW than other conventional energy sources. This can be seen clearly by the economic boom in this sector that has occurred in those countries and states that have been among the early leaders in enacting strong favorable solar PV incentives and policies.

POLICY RECOMMENDATIONS

- We recommend that TVA include in its strategy a clear and ambitious target for solar PV as a significant part of the medium and long term generation mix for the TVA region. The renewable energy and solar PV targets should be commensurate on a pro-rata basis with the targets established by California, New Jersey, Maryland For example, the plan might include a target of 10% of total electricity to be sourced from non-hydro renewables by 2020, with 10-20% of this amount to be from solar PV.
- To the extent that the strategic plan includes details of a program structure that would be most successful in accelerating investment in and usage of solar PV, we would recommend that the following be included:

- As a starting point, TVA should maintain the voluntary Green Power Switch Generation Partners Program for an additional 5 years or more, to provide a clear signal to solar PV suppliers and installers that there will be continuity in this voluntary program.
- In addition to the voluntary Green Power Switch Generation Partners program, TVA should consider additional economic incentives (rebates) for solar PV system owners to encourage accelerated investment and regional market growth and to achieve strategic targets for installed solar PV capacity. Incentive level should initially be high enough to ensure that solar PV system owners can expect a reasonable rate of return on their investment (including consideration of Federal tax credit), and incentive levels should be decreased over time. Incentives for larger systems should be lower than for smaller systems, and should be performance-based, i.e. paid out based on actual PV energy produced. Program duration should be long term with binding long term budgets and/or RPS targets. This long term transparency will greatly accelerate regional investment (and associated jobs growth) by the solar PV industry in developing manufacturing and market channel infrastructure.
- Net metering and interconnection policies to assure solar PV system owners that they can connect to the grid without prohibitive hassle or cost. Model standards have been developed by Interstate Renewable Energy Council (www.irecusa.org).

CONCLUSION

We appreciate the opportunity to comment on TVA's new strategic plan, and strongly encourage that the TVA strategic plan include a strong commitment to accelerate the installation of solar PV and other renewables in the TVA region. Sharp is the world solar PV market leader, and its solar production plant in Memphis is the largest and fastest-growing U.S. solar module production facility. Sharp has a strong stake in the establishment of TVA strategic goals and policies that will accelerate the growth of the regional solar PV market. We look forward to working further with TVA to flesh out the details of the strategic plan recommendations in this area, and later to working with TVA on development of a successful policy framework, based on Sharp's extensive experience and lessons learned in other solar PV markets and programs in the U.S. and abroad over the past decade.

QUESTIONS

For any follow up questions or comments, please contact:

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