



COMMENTS SUBMITTED BY

SKYLINE INNOVATIONS, INC

&

STARPHIRE NEW ENERGY TECHNOLOGIES

to

New York's Regional Greenhouse Gas Initiative Operating Plan Amendment for 2014

Skyline Innovations, Inc (Skyline) and Starphire New Energy Technologies (*Starphire.Net, Inc.*) respectfully submit comments to the May 2nd draft of New York's RGGI Operating Plan Amendment for 2014.

Starphire.Net, Inc. is a New York Corporation founded in 1999 and active in the voluntary renewable energy market, having sold and delivered over 1 Million Megawatt Hours of renewable energy via the NYS Environmental Disclosure process. Starphire recently acquired *EarthKind Energy, Inc.*, a NYS Corporation that was founded in 2007 and is a developer of several megawatts of solar PV energy projects in both the standard offer and competitive bid processes of the customer-sited tier of the RPS, as well as commercial solar hot water and solar air heating (solar thermal) projects via NYSERDA, ARRA, and RGGI funded programs. Starphire continues "doing business as" *EarthKind Energy* throughout New York and the U.S.

Skyline Innovations is the nation's largest financer and developer of solar water heating systems. Our services include building, operating and maintaining those systems while guaranteeing our customers' savings by providing a fixed discount to their utility rates for water heating. This is done at no upfront cost to our customers. Based in Washington, DC, Skyline also has offices in Los Angeles, San Diego, and Puerto Rico and operates in seven states.

In general, we fully support New York's Regional Greenhouse Gas Initiative efforts and agree that "the RGGI portfolio is designed to achieve greenhouse gas emission reductions by:

- Deploying commercially available energy efficiency and renewable energy technologies
- Building the State's capacity for long-term carbon reduction
- Empowering New York communities to transition to cleaner energy
- Stimulating entrepreneurship and growth of clean energy companies in New York
- Creating innovative financing to increase adoption of clean energy in the State"

We are particularly pleased to see the increased investment in thermal technologies and approaches, especially Renewable Heat NY, as Buildings and Industry emit 72% of New York's total greenhouse gases; the majority of Greenhouse Gas emissions in NYS buildings are due to combustion for heat and hot water;

and thermal measures have been grossly underfunded in most of the state's other efficiency and renewable efforts.

Since electricity measures are funded by New York's Renewable Portfolio Standard, Energy Efficiency Portfolio Standard, and Systems Benefit Charge, we believe and strongly advocate that the majority – if not all – of RGGI's funding should go toward reducing carbon emission from thermal sources. That said, the \$963,779 proposed in the current draft budget allocations is too meager to impact the market in a positive and productive manner. We believe the Commission should consider a much larger investment in order to develop New York's solar thermal market into a leader across the US.

New York State included solar thermal in its RPS – but, since the program was only for customers with electric hot water customers, the vast majority of NYS buildings – who use oil and gas for their hot water needs – do not qualify for the current NYS RPS Solar Thermal program.

We specifically propose that New York use RGGI funds to establish a \$25 Million Fuel-Neutral solar thermal program that will enable oil, gas, propane, and electric hot water customers to develop solar thermal projects.

Solar Thermal technologies have been misunderstood and dramatically underutilized in New York State. While Solar Thermal qualifies for incentives in many other state RPS programs, in the NYS RGGI allocation schedule it is underfunded and even misclassified as an energy efficiency measure. The resulting lack of policy support means that other states are facilitating the development of their own solar thermal industries, attracting millions of dollars of financial capital, and shifting the thermal energy consumption away from fossil fuels.

As a comparison: California's Solar Water Heating and Efficiency Act of 2007, AB 1470 authorized the creation of a \$250 million incentive program to promote the installation of 200,000 SWH systems that displace the use of natural gas in California homes and businesses by 2017. Of this amount, \$180 million is allocated for general market incentives, and \$25 million is allocated for low-income incentives. In addition, Senate Bill 1 (Stats. 2006, Ch. 132) earmarked up to \$100.8 million in funds from the general market CSI photovoltaic program for solar thermal projects that displace electric hot water consumption.

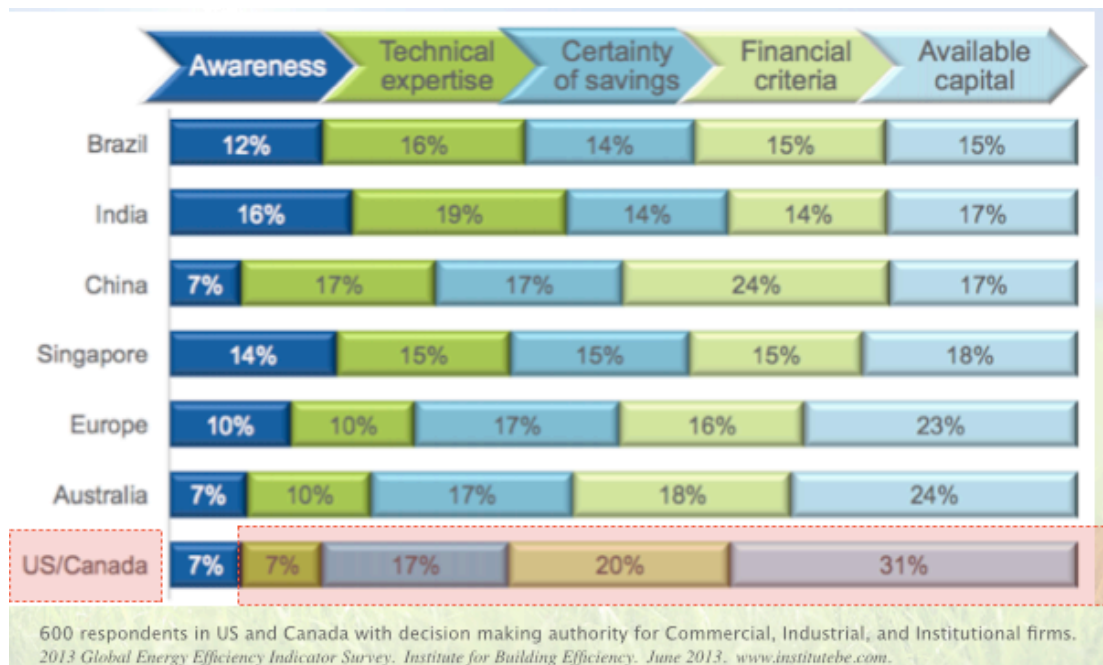
Additionally, the Delaware Sustainable Energy Utility, funded primarily from RGGI auction revenue, set aside up to \$1 million for a fuel-neutral, solar thermal program in May 2013. This program would operate statewide in Delaware on a pilot basis, with opportunity for additional RGGI funds to be allocated based on program participation. It is Skyline's experience in the more mature solar thermal markets in the US, that program demand will result in the Sustainable Energy Utility running a solar thermal program that is larger than what is proposed in the draft RGGI Operating Plan Amendment for 2014.

Through Skyline's experience in developing multiple state solar thermal markets, we have identified three primary market barriers hindering development of the solar thermal industry:

1. First Costs. Consumers lack the capital needed to invest in solar thermal systems, or they are unwilling to hold a long-term asset on their balance sheet.

2. Financial Capital. High barriers to financial capital restrict the ability of solar thermal companies to remove those traditional first cost barriers through leases, power purchase agreements, or other financial structures.
3. Consumer Risk. Consumers' lack of a desire to adopt a technology without fully understanding the technological and financial risk of owning a solar thermal system.

As the below graphic indicates, the top barriers to energy efficiency and renewable energy remain the availability of capital, consumer credit, and risk assessment (e.g. consumers lack the desire to make an investment in energy efficiency and renewable energy because they do not fully understand the financial returns, or savings, and the technical undertaking of owning these assets).



As we have witnessed in the solar PV market, financing options can largely help overcome these market barriers. However, financing options are currently unavailable to much of the solar thermal market because a) installed system prices are too high for financiers to earn a decent return and b) solar thermal systems are relatively new, and largely unknown, assets in the capital markets and therefore investors who are willing to provide financing demand a very high cost of capital. The current market instability, and lack of system deployment, is keeping project investors on the sidelines while also causing system prices to remain high due to high margin across the solar thermal supply chain.

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The table¹ below compares the build price required to develop a solar thermal system given different costs of capital and at different fuel values given today's incentive rates. Based off of industry data and Skyline's experience across state markets, many installers are much closer to \$125 per square foot, or between \$1.82 per watt [equivalent] and \$2.50 per watt [equivalent]. The U.S. Energy Information Administration reports that commercial natural gas delivered retail prices are currently between \$0.70/therm and \$1.11/therm. Therefore, according to the data available – given current New York State policy – a consumer is unable to achieve a positive return on investment given today's per watt equivalent build prices. Additionally, because most financiers are unfamiliar with solar thermal technologies the cost of capital is often on the upper tier of the range provided in the table below.

The graph below demonstrates projects that provide a positive return on investment given today's current build rate of \$1.82 per watt [equivalent] and \$2.50 per watt [equivalent], and given today's cost of capital requirements.

Comparing Cost of Capital with Today's Build Costs						
	Fuel Unit	Cost of Capital				
	Costs	5%	7%	10%	12%	15%
Natural Gas (\$/therm)	\$1.10	\$0.83	\$0.73	\$0.60	\$0.53	\$0.45
	\$1.50	\$1.15	\$1.00	\$0.81	\$0.72	\$0.61
	\$1.93	\$1.48	\$1.28	\$1.05	\$0.93	\$0.78
	\$2.10	\$1.61	\$1.39	\$1.14	\$1.01	\$0.85
Fuel Oil (\$/gal)	\$4.18	\$2.30	\$1.99	\$1.63	\$1.45	\$1.23
	\$4.28	\$2.36	\$2.04	\$1.67	\$1.48	\$1.25
	\$5.18	\$2.86	\$2.47	\$2.02	\$1.79	\$1.52
Propane (\$/gal)	\$3.62	\$3.01	\$2.61	\$2.14	\$1.89	\$1.60
	\$3.99	\$3.32	\$2.87	\$2.35	\$2.09	\$1.77
Electricity (\$/kWH)	\$0.16	\$2.96	\$2.54	\$2.07	\$1.83	\$1.54
	\$0.17	\$3.14	\$2.70	\$2.20	\$1.94	\$1.64
	\$0.18	\$3.32	\$2.86	\$2.33	\$2.06	\$1.73
(\$/watt equivalent)						

A New York State solar thermal program should help overcome these barriers by spurring market growth, resulting in increased deployment volume, and decreased installed cost; however current policy has not done enough to develop the market.

As noted previously, the cost of project capital is currently high for solar thermal technologies, but through a critical mass of deployments, financiers' will become more familiar and increasingly comfortable with solar thermal technologies and their return profiles – this will result in a reduction in the cost of capital enabling more projects to be financed. This cycle will result in more solar thermal systems deployed at a

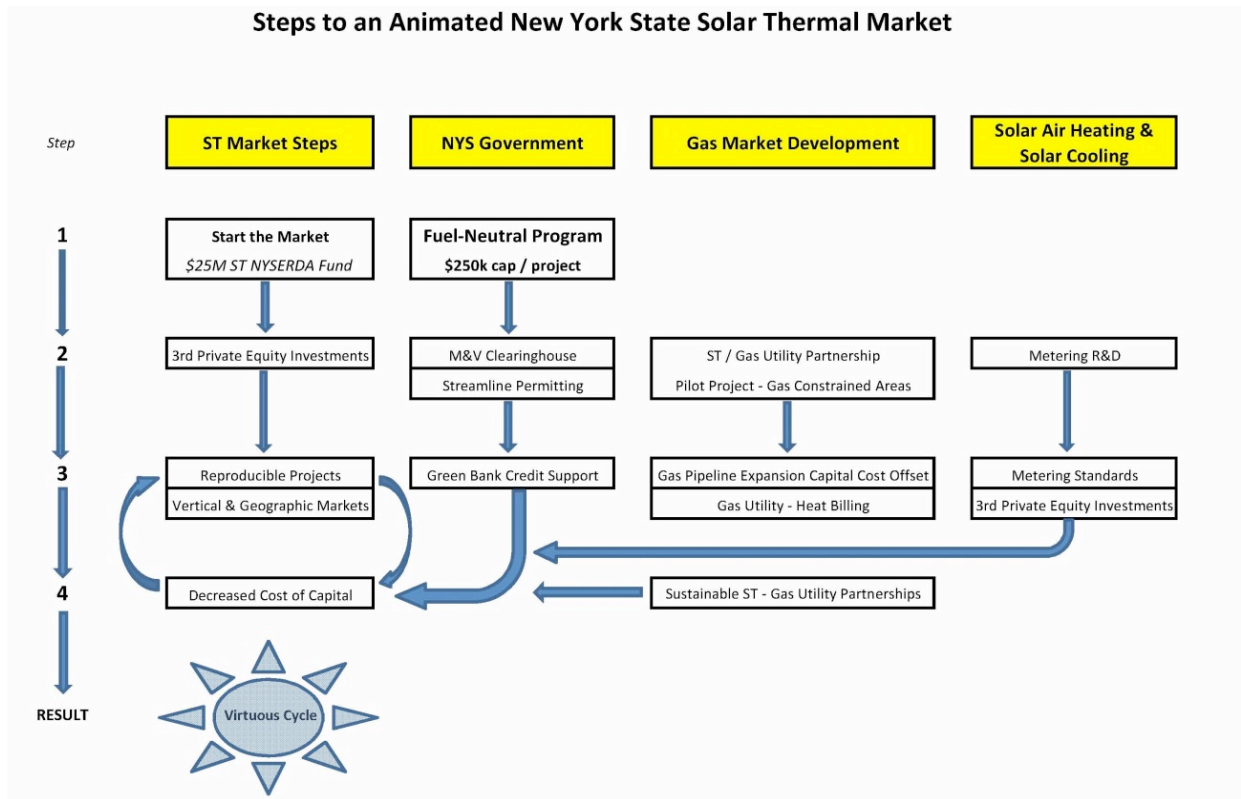
¹ Figure assumes a power purchase agreement length of 15 years with a 1.5% annual escalator, 35% tax rate, 30% Federal Income Tax Credit, 30,000 BTUs per collector per day, and 82% gas water heating efficiency rating. Natural Gas prices derived from The U.S. Energy Information Administration's (EIA) California delivered price data. http://www.eia.gov/dnav/ng/ng_pri_sum_dc_u_SCA_m.htm

lower total installed price, and requiring less public support through RGGI over time. However, RGGI funds applied appropriately to the state’s solar thermal market will create the spark needed to spur millions of dollars of system deployment over time.

A meaningful investment in solar thermal technologies will significantly reduce install costs; down from \$1.82 per watt [equivalent] and \$2.50 per watt [equivalent] to \$0.77 per watt [equivalent] and \$1.50 per watt [equivalent]. Additionally, the cost of capital available to solar thermal technologies will decline as system performance and cash flows are better understood, resulting in a significantly greater number of solar thermal systems that are eligible to be built while reducing the need for incentives over time. The graph below demonstrates how a RGGI investment in solar thermal technologies via an incentive program will impact the New York solar thermal market.

Comparing Cost of Capital with Build Costs post RGGI Investment						
	Unit Fuel Costs	Costs of Capital				
		5%	7%	10%	12%	15%
Natural Gas (\$/therm)	\$1.10	\$0.83	\$0.73	\$0.60	\$0.53	\$0.45
	\$1.50	\$1.15	\$1.00	\$0.81	\$0.72	\$0.61
	\$1.93	\$1.48	\$1.28	\$1.05	\$0.93	\$0.78
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(\$/watt equivalent)						

Skyline and Starphire.Net Inc. propose that NY RGGI allocate \$25 Million toward the development of an animated and ultimately self-sufficient solar thermal market in NYS, with 4 tracks and steps:



Step 1: Jump-Start the Market

1. Make the current NYSEDA solar thermal program “fuel neutral”
2. Increase per project cap size to \$250K
3. Tier incentive deployment:
 - \$1.25/kWH for first \$8MM deployed
 - \$1.00/kWH for next \$8MM deployed
 - \$0.75/kWH for final \$8MM deployed

Step 2: Increase Private Sector Capital Deployment

1. Third Party Equity Investments start
2. Establish M&V Clearinghouse
3. Streamline Permitting
4. Include Solar Air Heating and other thermal technologies into the NYSEDA solar thermal program

Steps 1 & 2 Results

1. Jump-Start the market for solar hot water, solar air heating and other solar thermal technologies
2. Reduce installed costs by increasing installation volume
3. SWH workforce development creates labor efficiencies
4. Familiarize consumers and investors with additional solar thermal technologies (e.g. cash flows)

5. Attract private capital into the market
6. Increase capital deployment rate for solar thermal investors

Step 3: Solar Thermal as Critical Infrastructure

1. Work with natural gas utilities to identify capacity constrained pipeline
2. Develop a utility project fund with Green Bank to deploy solar thermal assets in capacity constrained areas; utility receives cash flows with potential yields of 4%-12%
3. Solar thermal revenues can flow back into natural gas infrastructure investments
4. Reduces long-term impact on natural gas rate-payers through solar thermal deployments
5. Utility could also look at rate-basing solar thermal assets in capacity constrained areas as a secondary option

Steps 3 Results

1. Significant solar thermal deployment reduces total installed system prices
2. Prices align with investor yields
3. Cost of capital reduces as investors become more familiar with technology and more investors enter the market
4. Investor yields increase with more capital deployed across a broader group of assets
5. Develop win-win-win model for consumers, solar thermal industry, and natural gas utilities

RGGI funds will be applied to the development of a robust solar thermal market. The market participants, given the ability to grow, scale up, and adopt greater efficiencies, will be less dependent on incentives as a result. A major tool in this market maturation will be RGGI funds helping to lower barriers to financial capital.

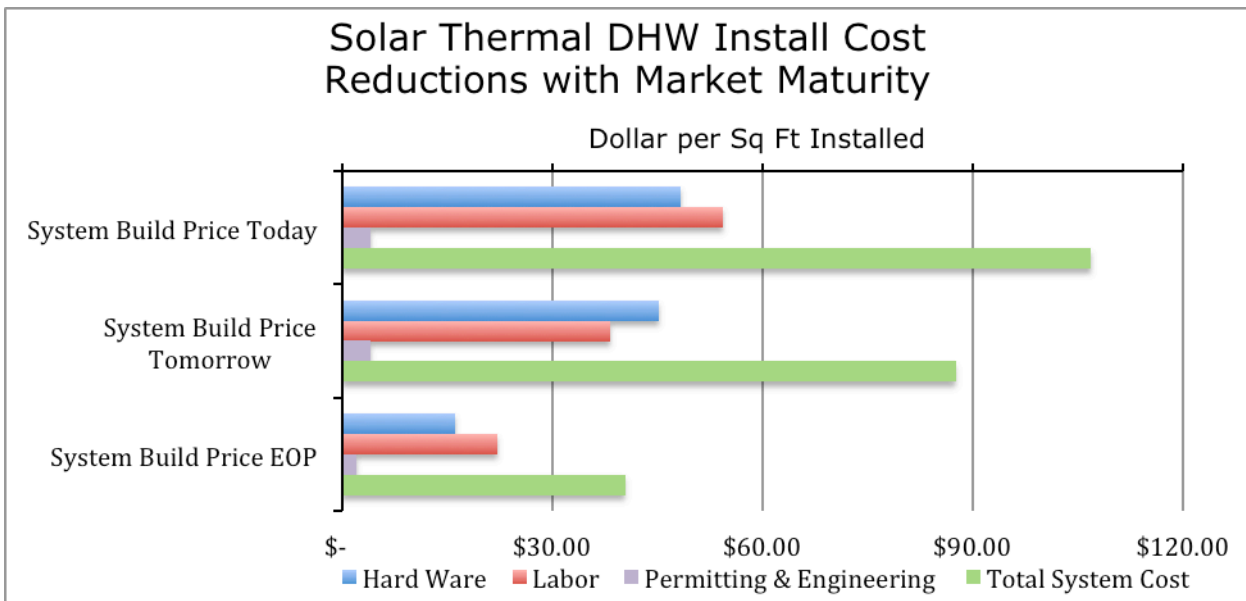
While financing options entering the market is not the end goal, Skyline believes it is an important means to the end. A noteworthy metric of nearly any maturing industry is financing options becoming available to consumers. Whether its automobiles, housing, television and audio equipment, or energy sources such as photovoltaics, financing is a critical indicator that the market is moving in the right direction. Unfortunately, the CSI-Thermal program is currently not on this track and if action is not taken soon to correct this, we believe the program could actually move backwards in this regards, primarily because current deal flow is so low due to the significant restrictions in the available market.

Skyline emphatically believes that without financing options entering New York State's solar thermal market, any statewide program will not be successful. It is our belief that financing options – even if system financing is focused on a particular market segment or project class, to start will benefit the industry as a whole in the long run. As previously mentioned, financing will help enable the industry to overcome the current market barriers, which will increase the number of systems deployed, and, as we have experienced in other markets, increased system volumes reduces installed cost.

Furthermore, as the market begins to warm and capital starts flowing, market participants, especially manufacturers, will start reinvesting in their business, catalyzing research and development and enabling

manufactures to launch new products. New, innovative solar thermal products have the potential to dramatically decrease system costs allowing the market to thrive well beyond any solar thermal program in New York State.

The graph below shows the current installed price. Today’s installed price is akin to the installed price Skyline has witnessed in other markets, such as Maryland, before the market began to mature. “System Build Price Tomorrow” demonstrates the reduction in installed prices that Skyline has witnessed in the more mature markets in which we operate. Lastly, Skyline believes solar thermal technology innovation, and labor efficiencies, will provide significant cost declines in the future. Skyline is already beginning to test some of these technologies and we believe that, if successful, a New York State program will greatly help to expedite the commercialization of these technologies and installation streamlining (as well as permit streamlining and the reduction of other soft costs).



Lastly, it is not expected that financing will immediately become available in the residential program class, but this is similar to the development in the PV industry. After all, *before there was a SolarCity there was a Sun Edison*. Therefore, we anticipate multifamily and commercial sectors will pave the way for solar thermal system financing, but the residential market will ultimately benefit from such financing maturity in much the same way the PV residential market has developed.

Consumer capital constraints and unwillingness to bare the financial and technical risks associated with system ownership will be overcome. This proposal will:

1. Attract private capital into the market quickly
2. Increase system deployment volume
3. Decrease installed costs
4. Decrease cost of capital
5. Increase investor yield

Thank you for the opportunity to comment. We look forward to continuing to participate in the RGGI Stakeholder process.

Respectfully Submitted,

A handwritten signature in cursive script that reads "Ron Kamen".

Ron Kamen CEO
Starphire.NET, Inc.

A handwritten signature in cursive script that reads "Michael Healy".

Michael Healy, Vice President
Skyline Innovations