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## ACT Bioenergy Comments on NY State Draft 2013 State Energy Plan

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Dear Ms. Salisbury:

### **Background of ACT Bioenergy**

Advanced Climate Technologies, LLC (ACT Bioenergy) is a Schenectady-based manufacturer of high-efficiency, commercial-scale wood boiler systems. ACT's wood boiler customer list includes: Clarkson University, SUNY School of Environmental Science and Forestry, The Natural History Museum of the Adirondacks, and the U.S. Army. The prime reason for these customers' interest in wood boiler technology is that they can reduce the cost and volatility of their energy budget with a low-cost, clean-burning, state-of-the-art, fully automated system. The typical return on investment for ACT Boilers is 2-6 years when replacing fuel oil. ACT has secured competitive project funding through the New York State Energy Research and Development Authority (NYSERDA) to help develop and commercialize its high-efficiency biomass-gasification boiler technology. NYSEDA has been especially helpful in supporting the verification of the low-emissions and energy-efficiency attributes of the wood boiler technology.

### **Relationship of High-Efficiency Solid Fuel Biomass Heating with the 2013 Energy Plan Objectives**

ACT fully supports the five key policy objectives of the New York Energy Plan. ACT wants to ensure that the strategies outlined in the plan do not miss out on the significant contribution that solid-fuel biomass thermal energy systems can provide to support the Plan's success. Since most State and National renewable energy policies and programs to-date have focused on transportation fuels and electricity; it is not surprising that thermal applications have received the least attention in the present draft of the State Energy Plan. However, we view this as a serious oversight considering the fact that heating and cooling of buildings accounts for approximately 1/3 of total primary energy use and thermal heating is an area where biomass thermal technologies can have significant economic and environmental benefits.

According to the "Renewable Energy Assessment 2009" which was undertaken for the previous plan - thermal biomass (primarily residential wood heating) accounts for 22% of existing primary renewable energy in New York and there is a potential to triple biomass use in the next 10 years. Other sources of renewable heat i.e. solar thermal and geothermal produce negligible energy quantities in comparison to biomass. Already the growth in solid fuel biomass heating is evidenced by the fact that in 2007, the largest wood pellet mill in the Northeast was opened near Utica, another major pellet mill opened in Massena last year, and another mill will open near Binghamton this year. Furthermore, the NY State Common Retirement Fund recently announced a \$3.2 million investment in Biomaxx Wood Pellets of Wellsville, NY. In addition, New York State has a significant number of conventional and biomass boiler manufacturing companies -four manufacturers (ACT, Alternative Fuel Boilers, Evotherm and Thermo Control Heating Systems) are currently producing high-efficiency wood heating systems and at least two other boiler manufacturing companies are considering entering the biomass boiler market. Furthermore, several heating oil distribution and service companies have expanded their business into renewable solid fuel heating sales and service. These businesses are all creating jobs in New York and helping to position New York as a leader in the solid-fuel biomass heating sector.

### **Background to High-Efficiency Wood Boiler Technology**

Although simple wood combustion systems have a long history in the U.S., over the last 15 years European manufacturers have improved wood pellet and wood chip boiler systems to achieve reliability, efficiency, ease of use, and low emissions that are comparable with modern gas and oil boilers. The leading countries for these gasification or staged-combustion type boilers are Austria, Sweden, and Germany where high domestic energy costs and supportive environmental policies have helped advance the technologies. The commercial success of

high-efficiency solid-fuel biomass is attested-to by the fact that in Austria wood boilers now outsell oil boilers; and in the region of Upper Austria, the government has committed to 100% renewable heating of buildings by 2030, using predominantly biomass boilers and solar thermal systems.<sup>1</sup> These advanced technologies have started to be introduced in the U.S. at the residential scale with wood pellet stoves, but ACT Bioenergy is the first U.S.-based manufacturer to produce these advanced commercial-scale wood pellet and wood chip boiler designs based on state-of-the-art European designs. These gasification-type boilers achieve efficiencies of 85-90% and reduce particulate emissions by more than twenty-times lower inefficient wood boilers typically used in the U.S. NYSERDA-sponsored testing has documented the efficiency and emission results from these boilers.<sup>2</sup>

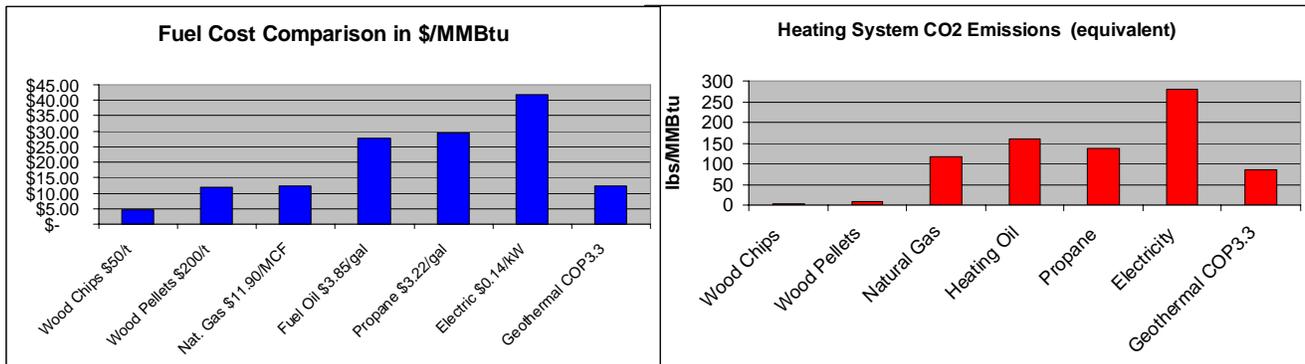
**High-efficiency Wood Biomass links specifically to the State Energy Plans Strategies as follows:**

*Produce, Deliver and Use Energy More Efficiently*

In a recent report, the International Energy Agency concluded “Solar water heating, biomass for industrial and domestic heating, and geothermal heat pumps are amongst the lowest cost options for reducing both CO2 emissions and fossil fuel dependency.”<sup>3</sup> In the case of heating with woody biomass in New York, the costs per unit of wood chip heat is currently about 70% less expensive per Btu that oil heat; which allows commercial scale biomass customers to significantly reduce their heating costs and achieve paybacks between 2-6 years for commercial scale biomass boiler systems.

In the case of resource efficiency, the energy consumed to produce a wood chip is about 1% of the total content of the end product; in the case of a wood pellets, it is about 2%. This is significantly better than in the case of fossil fuels which is typically 10-12% of their own energy content that is used for refining the product.<sup>4</sup> This is also better than the 60% conversion losses to produce ethanol<sup>5</sup> or 65-75% of energy lost producing electricity from biomass. Utilizing the biomass for thermal heating applications achieves a highly efficient use of the biomass resource and allows non-renewable petroleum and natural gas to be diverted and conserved for other uses such as transportation fuels where solid fuel woody biomass is not readily substitutable.

The following tables showcase the cost savings and avoidance of GHG gases by replacing fossil fuels and electricity with high efficiency biomass heating.



Notes: Pellets = 15.6 MMBtu/ton, chips @30% moisture = 12. MMBtu/ton, no adjustment for efficiency. NY State Power Pool emission rates (yr.2000)  
 Data Source: [www.nyserdera.org/Energy\\_Information/energy\\_prices\\_supplies.asp](http://www.nyserdera.org/Energy_Information/energy_prices_supplies.asp)

<sup>1</sup> Egger, C., Öhlinger, C. Biomass Innovation Along the Value Chain. O.Ö. Energiesparverband. Sept 12, 2009. ([http://www.energiesparverband.at/esv/fileadmin/esv\\_files/Info\\_und\\_Service/Biomass\\_Hamburg\\_09.pdf](http://www.energiesparverband.at/esv/fileadmin/esv_files/Info_und_Service/Biomass_Hamburg_09.pdf))  
<sup>2</sup> Clarkson University Test Data funded by NYSERDA to be published in late 2010.  
<sup>3</sup> Langniss, O., Seyboth, K., Beurskens, L., Wakker, A., Sims, R., Frasch, F., et al. (2007). *Renewables for heating and cooling: Untapped potential*. Paris, France: International Energy Association.  
<sup>4</sup> Planning and Installing Bioenergy Systems: A Guide for Installers, Architects and Engineers. James & James, Ltd. 2005.  
<sup>5</sup> Renewable Energy Assessment New York State Energy Plan 2009. August 2009.

*Support for In-State Energy Supplies.*

Woody biomass is readily available in New York State and can be sustainably harvested to significantly reduce greenhouse gas emissions. In New York, in the Department of Environmental Conservation reports that in the Adirondack Region alone, there are over 1 million tons of wood residues that are the by-product of commercial harvesting of lumber and pulpwood. These wood residues which currently are not marketed, could provide sustainable heat for 3-4000 typically-sized schools. In fact, the wood resource in New York has increased significantly over the past 100 years such that total forest land cover has increased from about 25% in 1890 to 61% today.

**Summary**

In summary, high-efficiency solid-fuel biomass heating systems support the goals of the State Energy Plan by providing cost-effective, resource-efficient and environmentally-sound heat that will contribute to energy security and economic development in New York; and therefore deserves specific consideration under the plan.

We suggest the following recommendation for the 2013 State Energy Plan:

1. Recognize the importance the thermal component of energy use in New York State by having a top-level “Thermal” section in the Plan on par with “Electricity” and “Transportation”.
2. Renewable thermal energy programs should be specifically recognized as a valuable component for achieving New York’s overall renewable energy and carbon reduction goals. This could be encouraged by the development of a renewable thermal energy roadmap that addresses the opportunities for high-efficiency biomass, solar thermal, and geothermal heat pumps.
3. Support energy targets that incentivize results rather than provide prescriptive solutions so the market and technical innovation can determine the most efficient way to deliver heat, electricity, and transportation based on a balance of costs, in-State economic benefits, emissions (including GHG emission), and other externalities.

Sincerely,



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