Navigating the Biomass Thermal Project Decision Making Process: Understanding and Responding to Needs of Stakeholder Groups

A Focus on Commercial and Institutional Class Buildings

Purpose of this Document

The decision making process on using biomass technology to sustainably heat and cool commercial buildings is influenced, either directly or indirectly, by a myriad of stakeholders. Project developers and system manufacturers need to approach these stakeholders and navigate the relationships among them carefully in order to build consensus and support for their renewable energy projects. Engaging one's community can be the difference between project success and failure.

This document offers an overview of these stakeholders[i], their decision making dynamics, and suggestions for developing an understanding on the value and limitations to implementing biomass thermal energy systems. This document provides guidance for biomass projects based on universal principles in project development, but is not designed to present an all-inclusive list of stakeholders.

The Value of Biomass for Commercial Buildings

Biomass fuels are unique among renewable energy sources as they are concentrated, transportable, and capable of a controlled, on demand release. This unique property increases the versatility of the technology in commercial building design, creating a vast, largely untapped market, an opportunity which has insufficiently been seized by biomass thermal equipment manufacturers.

Architects and engineers serve a critical role in realizing the potential of biomass thermal equipment in commercial buildings. Their responsibilities in the construction of commercial class buildings requires them to be knowledgeable in all relevant technologies[ii] that can reduce fossil fuel consumption and achieve energy efficiency levels required under new federal energy legislation[iii] and Executive Orders[iv]. New design standards[v], which biomass systems comply with, also influence renovation design of large commercial buildings or construction of new multi-story special purpose structures.

Additional Resource

A collection of national and international publications supplements this document and is available[I] on the BTEC website. Included with each document is an executive summary that details the purpose of the document. This resource collection is accessible at: biomassthermal.org/library

Architects and engineers can make an impact in future industry growth if they are given the information they need to rely on this technology in their building design. When asked, Heating, Ventilation, and Air Conditioning (HVAC) designers see themselves as potential adopters of biomass thermal systems, but specifically identify a lack of technical knowledge that prohibits them from adopting this technology. Through the creation and distribution of technical information[vi] and engagement of stakeholders, biomass thermal equipment manufacturers can significantly increase their market presence.

A New Market Opportunity

Commercial class real estate, corporate campuses, and institutional facilities are a new market that is different from traditional markets for biomass energy equipment[vii] in important ways, such as purchasing practices, staffing, operational considerations, and public awareness factors. This new market presents a major opportunity for manufacturers, as a successful project implemented in this new market can have a signaling effect to other potential adopters. The result is a build-out in further installations, bringing economies-of-scale effects and national prestige to the developers.

The Role of Perceptions in the Decision Making Process

To avoid opposition, the selection of commercial building equipment and construction decisions must take the perceptions of the end users into account early in the decision making process. Negative public perception of biomass is generally based on a lack of information and is rooted in environmental concerns about timber cutting, fear of noxious smoke, noise, traffic, disinterest in handling solid fuel, and concerns about system reliability, performance, and maintenance.

This perception often comes from an antiquated understanding of the technology and does not account for the tremendous progress made in system design, efficiency, and emission reduction. However, misinformation and discontent from an individual stakeholder can negate any progress made with other stakeholders. Moving forward, an open dialog with all stakeholders is necessary for disseminating factual information. The dialog must include an active role in listening and responding appropriately to voiced concerns, particularly those that are founded in misperceptions, and a willingness to compromise.

Examples of Stakeholder Perceptions of Biomass Thermal Installations

Equipment manufacturers and project developers can expect to see increased consumer confidence in their products and services if they involve stakeholder groups in the environmental decision making processes. That requires a deep understanding of the motivations of these groups and continued interaction with them to address concerns and provide appropriate solutions. Critical groups and their roles include:

Boards of Directors are essential governing bodies in companies and organizations. Board Members generally share the following traits. In their position, they:

1. Focus on the organization's mission and resist distractions from the stated core business;
2. Perceive convenience, reliability, and manpower as highly important, whereas potential energy savings are deemed secondary;
3. Lack knowledge of details and are time-restrained in their deliberation of projects and technologies;
4. React to perceptions of influential groups like neighbors and the media about anticipated problems like truck traffic, dust, noise or resource exploitation, and sustainability issues, regardless of the actual legitimacy of these concerns.

Board members are typically averse to spending project resources on technologies that they consider risky due to their perceptions. They consider the risk of renewables to be higher than traditional heating sources, with marginal comparative benefits, and therefore typically avoid investing in the technology.

Developers and facility managers see energy as a tool for creating comfort and light, enabling productivity, or as a means to an end. As stakeholders, their core criteria for energy technology options include safety, reliability, convenience, and capital cost. Sustainability attributes, or lower operating costs, are typically an interest at a later point in time.

Commercial tenants pay energy costs for their leased spaces. Although they have an interest in paying the least amount of money per unit of energy, they are generally unaware of potential savings from a low cost renewable fuel. Commercial Tenants may have an apprehension of biomass thermal systems due to the initial capital cost of installation as opposed to conventional fossil fueled HVAC systems.

Staff and contracted maintenance firms are typically opposed to any additional labor, particularly physical, that is required beyond the traditional effort required for gas, oil, or electric HVAC system.

Homeowners and wood product firms, contrary to the previous stakeholders, would benefit from the savings and security of supply offered by an investment in biomass thermal systems. Therefore, these stakeholders are typically willing to invest the additional labor costs associated with these installations.

Stakeholder Relationships and Their Influence on Project Development

To better illustrate the relationships of the different stakeholders in a commercial class biomass thermal project, their level of engagement is represented graphically below. Each "circle" represents a set of stakeholder groups, with the innermost circle including parties involved in the immediate transaction, and the expanding circles representing groups of stakeholders that, while further removed from the decision making process, have opinions that may be relevant. Each stakeholder group has previously been recognized as favoring or opposing biomass thermal energy projects[viii]. This should help focus on characteristics that help to identify stakeholders, rather than trying to classify specific individuals or organizations.

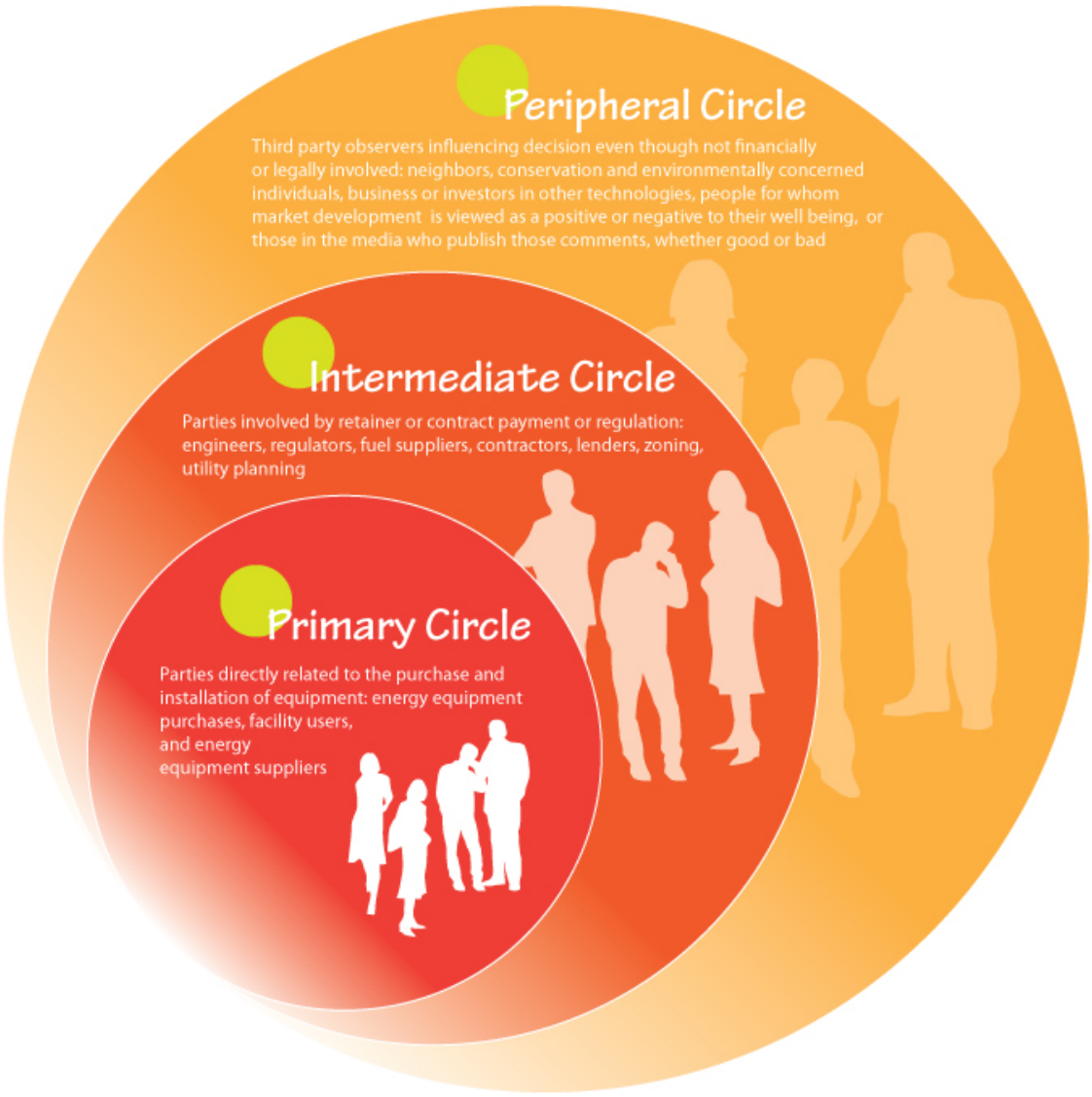

Figure 1: Graphic illustrating energy project implementation and the stakeholder decision making process for biomass thermal equipment at three levels of influence

Primary Circle - Purchase and Installation

The Primary Circle is indicative of where the buyer and seller come to agreement and initiates the installation of biomass thermal equipment. The types of stakeholders included in the Primary Circle are:

I. User facility or purchase decision making entity
   a. Administrator or manager
   b. Operations Staff
   c. Building occupants
   d. Finance department
   e. Board of Directors
   f. Sustainability committee

II. Biomass equipment supplier
   a. Manufacturer
   b. Distributor
   c. Installer

III. Energy services performance contractor or similar operating third party (* optional)

Intermediate Circle – Financial or Legal Involvement

The Intermediate Circle consists of individuals involved with design, site planning, permitting, or other due diligence. Potential stakeholders in the Intermediate Circle include:

I. Design and Engineering
   a. Long range
   b. Project implementation level

II. Local HVAC
   a. Parts supplier
   b. Service contractors

III. Fuel provider
   a. Source level
   b. Processing level
   c. Delivery level

IV. Regulatory agencies
   a. Air quality
   b. Solid waste
   c. Water management
   d. Zoning and community planning
   e. Energy regulators, like utilities or Public Services Commissions
   f. Other

V. Funding sources
   a. Traditional loans
      i. Banks, credit unions or agribusiness
      ii. Private loans from individuals or foundations
   b. Low interest or guaranteed loans
      i. Government
      ii. Private “green energy investment” funds
   c. Grants that need not be repaid
      i. Federal, state, or local government

ii. Private institution such as a foundation

VI. Co-investment regardless of ownership or participation rights from benefitting stakeholders
   a. Fuel supply firm
   b. Forest landowner
   c. Wood recycling organization
   d. Equipment manufacturer
   e. Wildfire management organization
   f. Public entity at local, state or federal level

VII. Other parties involved by contract payment or law

Peripheral Circle – Indirect Effects

The Peripheral Circle encompasses the individuals who are not involved in the decision making process, but may be impacted by the choice to use biomass thermal and therefore influence the decision makers.

I. Generally supportive
   a. Land managers for forested watershed properties seeking markets for low-grade wood
   b. Insurance companies having interest in reducing wildfire danger
   c. Manufacturers of equipment used in forest harvesting, chipping, and transportation
   d. Manufacturers of equipment used in related thermal or heat-led Combined Heat and Power (CHP) applications
   e. Local branches of conservation and environmentally oriented Non-Governmental Organizations (NGOs)
   f. Local fire fighting organizations

II. Potentially opposed
   a. Neighbors (commercial, residential, or both)
   b. Local branches of human health and emission oriented NGOs
   c. Local media outlets, including newspapers, radio and TV, blogs
   d. Local manufacturers concerned about new competing users of wood fiber as feedstock
   e. Local dealers and installers of other renewable energy system equipment
   f. Fossil fuel energy (oil, propane, natural gas or electricity) concerned about loss of sales

How to Use This Information

Many of the stakeholder groups that may benefit from the implementation of biomass thermal projects in their region are rarely included in the discussion, or are even aware of how the change may benefit them as part of the community at large. Identifying a communications strategy that explains the benefits to these groups may be a key in developing strong community support for projects. For example, outreach could include the following groups and strategies:

Fire-fighting organizations typically respond to emergency situations, therefore their core mission does not involve determining appropriate heating and cooling technologies. If approached for an opinion, a Fire Chief may say, “I have no opinion – it doesn’t affect me.” However, if presented with research and case studies that demonstrate how fuel sourcing from local wood products contributes to wildfire reduction and this prevents forest fires occurring in the region, the Fire Chief could be persuaded to support biomass thermal applications.

Longstanding owners of large forest holdings have an interest in selling significant quantities of small, poor quality trees to retain productivity of their timber stands and improve overall value. The

traditional market for these trees has been for the manufacturing of pulp, paper, and engineered boards, such as particle boards. In recent years, many of these buyers have reduced their purchasing or have closed, leaving forest owners without an alternative to sell these low value by-products. The quantity of wood consistently used in local biomass thermal systems often meets the needs of low-grade timber producers. Additionally, prices of wood chips can offer better after-freight income to loggers and forest owners.

Although forest owners are likely to have an initial resistance to this non-traditional market, examples indicate that they can be persuaded by an opportunity that shows permanence, commitment, and value. The same opportunity can be presented to forest restoration organizations, some of whom have shown previous support for the concept[ix].

Planning commissions and zoning officials regularly make decisions that influence what new energy infrastructure must be installed, such as electricity transmission lines and natural gas pipelines. In many communities, these officials face limited generation or delivery pipe capacity. Biomass thermal systems have the potential to reduce strain on local power grids that have peak demand in the winter for space heating, or summer peaks due to cooling demand. These officials, if educated that biomass thermal systems offer a safe and reliable alternative to "grid growth", can become allies to biomass thermal systems. Ideally, they can implement codes and standards that require new commercial, residential, or mixed use developments to implement renewable systems for HVAC and service hot water[x].

The required education and development process for planning officials necessitates support from national associations of HVAC professionals, like the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), Association of Energy Engineers (AEE), and the American Society of Agricultural and Biological Engineers (ASABE). Governmental groups include state, federal energy, and natural resource agencies like U.S. Department of Energy, U.S. Department of Agriculture, Environmental Protection Agency, and National Renewable Energy Laboratory. In the end, this type of policy development will benefit the nation and manufacturers alike.

More Information

For more information on this document and the accompanying technical resource library, please visit www.biomassthermal.org. Other questions on biomass thermal energy may be directed towards info@biomassthermal.org, 202-596-3974, or to the following address:

Biomass Thermal Energy Council
1211 Connecticut Ave NW, Suite 600
Washington, DC 20036

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About

About the Biomass Thermal Energy Council

The Biomass Thermal Energy Council (BTEC) is an association of biomass fuel producers, appliance manufacturers and distributors, supply chain companies and non-profit organizations that view biomass thermal

energy as a renewable, responsible, clean and energy-efficient pathway to meeting America's energy needs. BTEC engages in research, education, and public advocacy for the fast growing biomass thermal energy industry. For more information, visit www.biomassthermal.org.

About Resource Professionals Group

Resource Professionals Group (RPG) is a consulting business with offices in Pennsylvania and North Carolina. RPG helps companies and communities select and implement renewable energy systems and build markets for natural resources they manage or have access to. For more information, visit www.resourceprofessionalsgroup.com.

About the Wood Education and Resource Center

The USDA Wood Education and Resource Center (WERC) is located in Princeton, WV, and is administered by the agency's Northeastern Area State and Private Forestry organization. The Center's mission is to work with the forest products industry toward sustainable forest products production for the eastern hardwood forest region. The Center provides state-of-the-art training, technology transfer, networking opportunities, applied information. For more information, visit www.na.fs.fed.us/werc.

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[i] In this paper, stakeholders are defined as the individuals who can influence the decision of whether or not to utilize biomass thermal energy systems. These people can be categorized into two groups; those who view biomass favorably and those who do not.
[ii] Opening address, Commercial Building Energy Alliances Supplier Summit, 2010, Orlando FL.
[iii] Energy Independence and Security Act (EISA 2007)
[iv] Executive Order EO 13423, Federal Leadership in Environmental, Energy, and Economic Performance (Oct. 5, 2009). http://www.biomassthermal.org/library/documents/49_ExecOrder13514.pdf
[v] Factors including skin surface to volume ratio, solar orientation, and neighboring structures, influence whether recognized renewable sources, such as solar thermal, photovoltaic, wind, or geothermal energy, will meet energy loads. Biomass thermal equipment is distinguished by the fact that it converts stored solar energy into usable heat, as noted by its acceptance under renewable energy based HVAC systems, listed under EISA and EO 13514.
[vi] Karakash and Richter, 2010. The Missing Link in Wood Energy: Architects and Energy Professionals. http://www.biomassthermal.org/library/documents/8_ArchitectsEnergyProfessionals.pdf
[vii] Traditional markets for biomass heating systems are homeowners or biomass products businesses that have access to free fuel in the form of "scrap biomass waste."
[viii] Use of the term "biomass energy projects" in this situation is meant to be inclusive of biomass thermal and larger biomass electric facilities.
[ix] Rainforest Alliance, Western PA Conservancy, and the Nature Conservancy have provided speakers in support of appropriately sized energy markets for wood products from forest restoration projects during a 2005 statewide conference in Pennsylvania cosponsored by the Society of American Foresters, USDOE, USDA and twelve other national and state agencies and organizations.
[x] See documents from Town of Leicester, UK for an excellent example that is directly transferrable to the United States. http://www.biomassthermal.org/library/documents/75_LeicesterCodeUpdated2011.pdf