



MOHAWK TRAIL WOODLANDS PARTNERSHIP SUPPORT SERVICES OF THE UMASS CLEAN ENERGY EXTENSION

BACKGROUND

UMass Clean Energy Extension (CEE) was established in 2015 under a service agreement with the state Department of Energy Resources (DOER). CEE provides research, market development, and technical assistance to support Massachusetts' clean energy goals and policies.

DOER has engaged CEE to work with the Franklin Regional Council of Governments (FRCOG) and Berkshire Regional Planning Commission (BRPC) to support the Mohawk Trail Woodlands Partnership (MTWP) to assess the viability, efficacy and potential air quality impacts of regional development of a wood energy economy as described in the MTWP Plan (Dec. 2015).

GOALS AND OBJECTIVES

In partnership with FRCOG and BRPC, CEE will collaborate closely with MTWP participating communities by offering objective research and analysis, and illuminating options and uncertainties regarding the Partnership's wood energy opportunities. CEE's ultimate goal is to support the Partnership's ability to make well-informed decisions that best serve the region and its constituent communities.

SCOPE OF WORK AND ENGAGEMENT WITH MTWP

CEE offers a scope of work with four distinct but interrelated activities. These activities are summarized on the following pages.

CONTACT INFORMATION

CEE is grateful for this opportunity to support the Commonwealth and the Mohawk Trail Woodlands Partnership region, and we look forward to collaborating as a technical resource and learning partner with FRCOG, BRPC, and MTWP participating communities on this exciting initiative. Our goal is to be available and responsive to questions, feedback, comments, or concerns. Please contact us using the following information:

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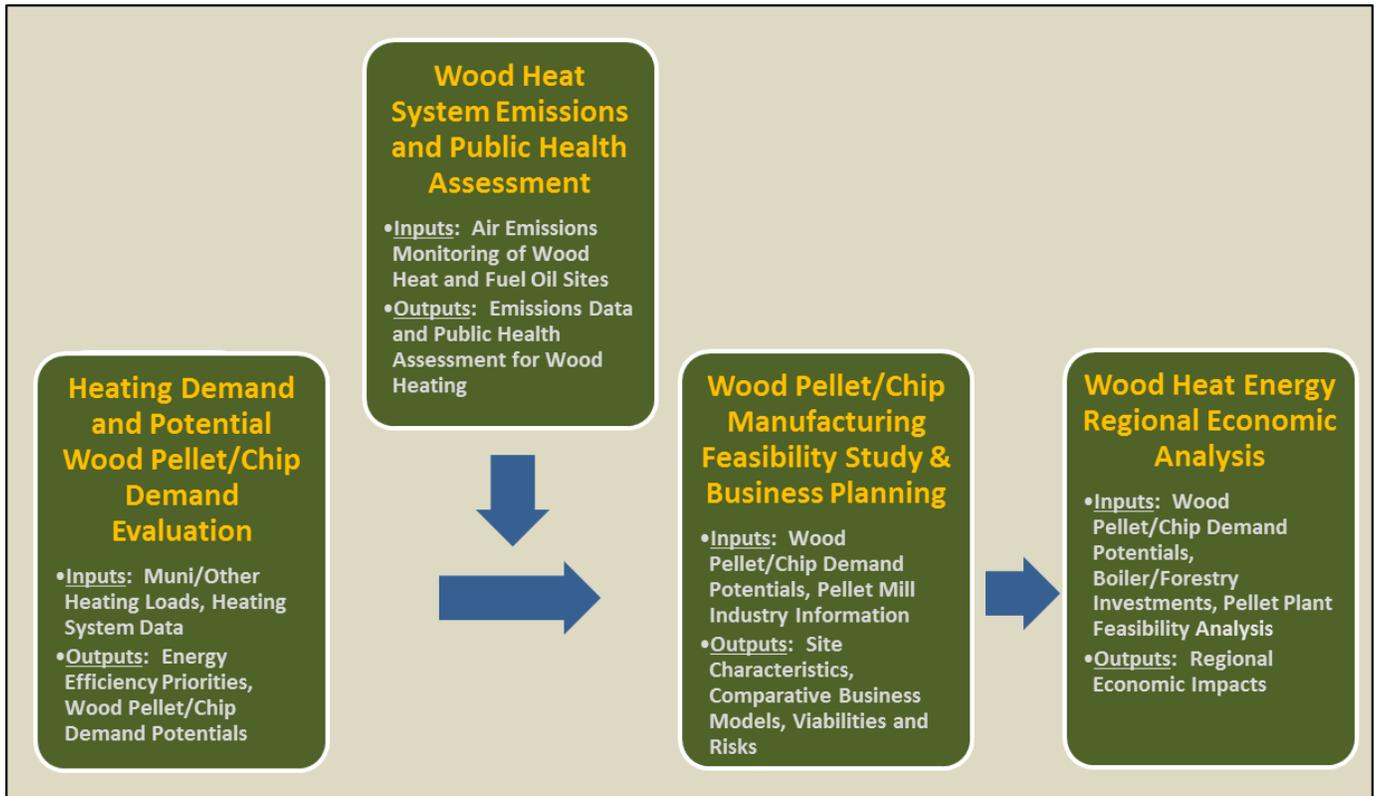
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Summary of Activities



Heating Demand and Potential Wood Pellet/Chip Demand Evaluation

1. **MassEnergyInsights Database:** CEE will engage with towns to use or develop MassEnergyInsights (MEI) accounts to collect heating load and fuel use data for all significant town/school buildings in partnership region. CEE will collect data on each building's existing heating system (boiler capacity, age, efficiency) and evaluate prospective wood pellet usage.
2. **Building Energy Efficiency Targeting:** CEE will provide each town with a report of the heating energy intensity (BTU/ft²) of its buildings and screen for those buildings that might be best targets for energy efficiency improvements. For a limited number of buildings across the region, CEE will coordinate energy audits, which it will do with its Energy Corps team of students.
3. **Wood Energy Boiler Screening:** In coordination with each town, CEE will identify 2-3 municipal buildings to screen for wood pellet boiler installations. The screening will evaluate pellet boiler capacity, system layout, performance, costs, incentives, and economics.
4. **Non-Municipal Wood Energy Potential:** Apart from and generally following the work on municipal buildings, CEE will assess wood heating potential from larger boilers in the commercial/industrial sector, public and multifamily housing, state facilities, and residential sectors. CEE will aggregate the potential opportunity for wood thermal energy across sectors and provide an assessment of potential demand for wood pellets and chips over the short, medium, and long terms.

Wood Heat System Emissions and Public Health Assessment

The consideration of wood heating options is confounded by a lack of science-based information on the emissions profile of modern wood heating systems and their impacts on public health. Prof. Richard Peltier in the Department of Environmental Health Sciences, in coordination with CEE, will conduct emissions tests and public health analyses of recent chip and pellet system installations in MA.

1. **Wood Energy Emissions Monitoring:** Monitoring of 3-5 wood energy systems, along with 2-3 comparable fuel oil systems, will be accomplished over the current and next winter heating seasons. The first monitoring is anticipated to start in February 2017. Emissions results will be used to assess impact on public health of proximate populations.
2. **Wood Energy Emissions Reporting:** Prof. Peltier will provide preliminary results following this winter's monitoring, and provide full results following the monitoring phase during the 2017-2018 heating season.

Wood Pellet/Chip Manufacturing Feasibility Study and Business Planning

The MTWP Plan calls for a study of the feasibility of a wood pellet manufacturing facility in the region to provide a market for low value wood and provide heating fuel to the region. Further interest was expressed to maintain local/public ownership of the pellet facility.

1. **Wood Pellet Manufacturing Technical Feasibility Assessment:** CEE will examine wood pellet manufacturing technologies, plant design, and economies of scale. CEE will also characterize the noise, transportation, waste, and emissions impacts of pellet plant and its relation to zoning, permitting, and siting needs. CEE will evaluate capital cost, operation and maintenance costs, operational logistics, inputs (labor, raw materials), and risk assessments. CEE will also consider potential demand for dried wood chips and the feasibility of co-location of a chip supply operation.
2. **Wood Pellet Manufacturing Economic Feasibility Assessment:** In coordination with the region's input, CEE will evaluate business model options for wood pellet (and dried chip) manufacturing, including third party and cooperative ownership, and assess pros and cons regarding financial viability, legal issues, benefits, and risks.

Wood Energy Regional Economic Analysis

1. **Regional Economic Analysis:** As the region considers adopting wood heating using local resources, a consideration is the economic impact this would bring to the region. CEE, in collaboration with Prof. Henry Renski in the Department of Landscape Architecture & Regional Planning, will establish projections for regional wood supply, demand, investments in forestry, boiler, and pellet production, prices, and economic base lines. Prof. Renski will examine regional economic impacts with appropriate models (IMPLAN) and analyze direct, indirect and induced economic impacts, and changes to gross regional product, employment, personal income, regional balance of payments.