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July 14, 2010

Gwendolyn Hallsmith
Director of Planning and Community Development
City of Montpelier
39 Main Street
Montpelier, VT 05602-2950

Re: The City of Montpelier

Dear Ms. Hallsmith:

In the following document Veolia Energy has responded to the questions and concerns brought forth by the City of Montpelier and the District Energy Committee regarding the initial Feasibility Study.

Per the City's request we have addressed technical questions surrounding plant capacity, pipe size and capacity, changes in the distribution piping and the layout of the City piping network, hot water distribution temperatures, anti-freeze (glycol), emissions and fuel storage.

Additionally, we have identified an approach forward to take the project from this initial Feasibility stage to a more developed and refined project in a logical manner.

As you know there are still many moving parts and challenges to bring this project to completion. The major challenges being the schedule and timelines associated with the City of Montpelier, the State of Vermont, the engineering work, permitting, financing and how it all relates with the Department of Energy and its grant timeline requirements.

With these items in mind we will continue to work with the City of Montpelier, State of Vermont, Department of Energy and other City of Montpelier contractors to understand and work towards meeting the requirements of these key components for success.

Thank you,

Brett A. Jacobson

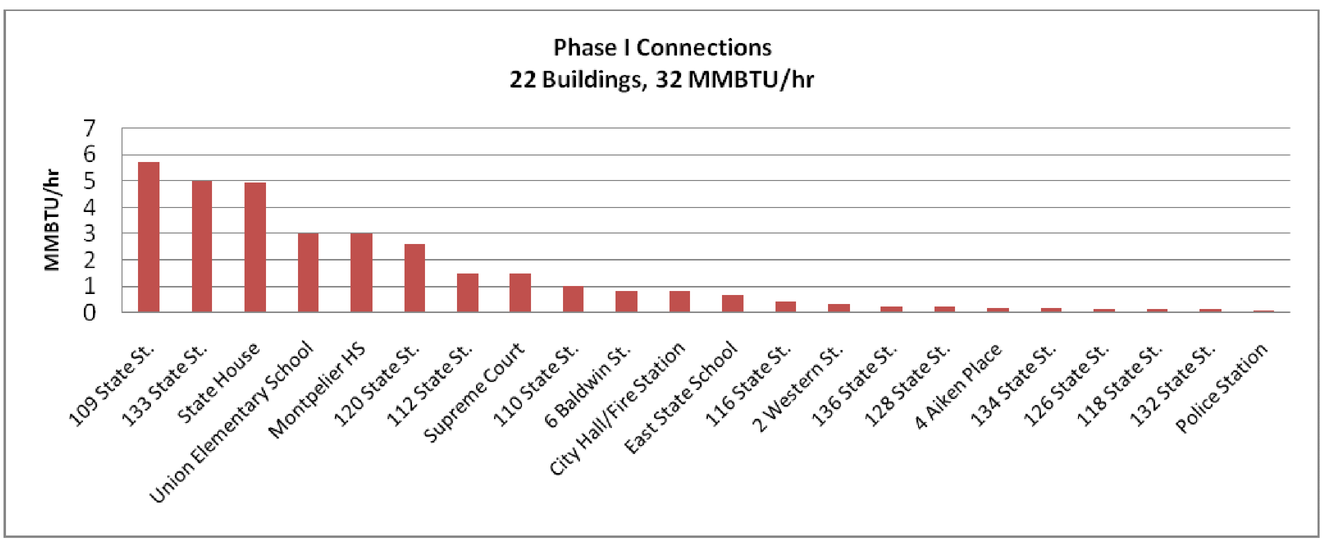
Brett Jacobson

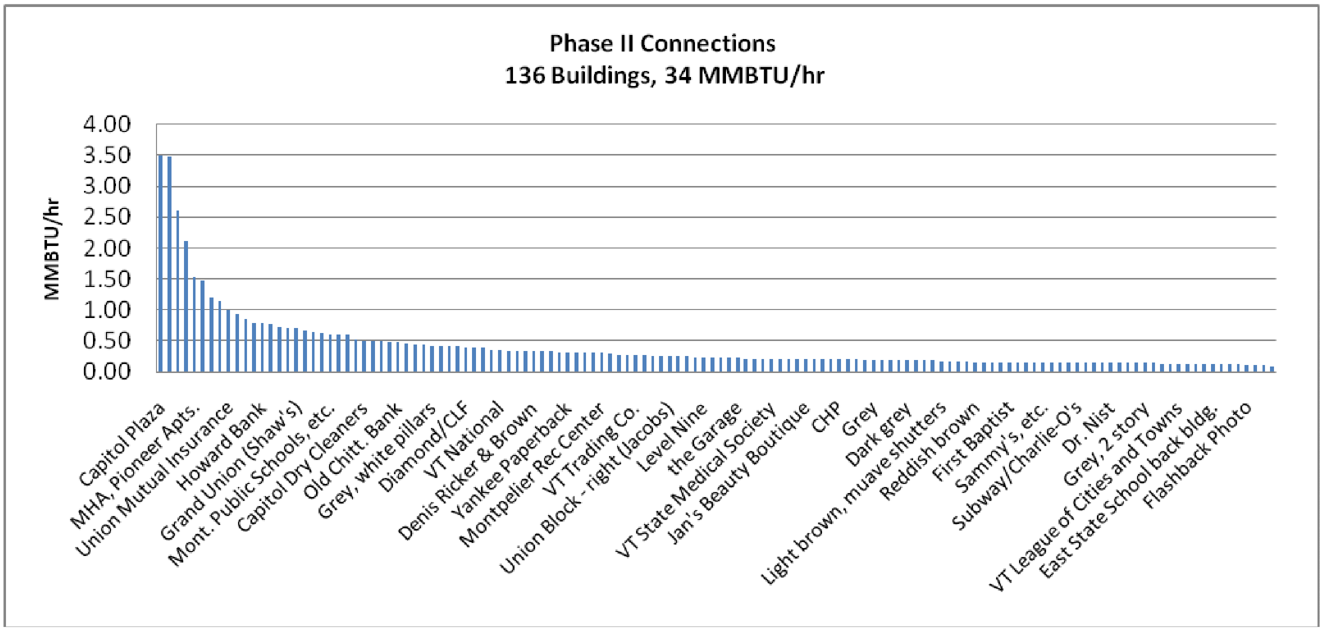
Incorporating Veolia Energy's European Expertise

Veolia Energy owns and operates 60% of France's 150 biomass energy plants and operates seven Biomass CHP district energy systems located in Rennes, Strasburg, Orleans, Tours, Angers, Lens and Limoges France. As part of the standard design and development process, Veolia's European expertise has been leveraged on biomass boiler options, district energy system piping and fuel and ash handling systems. As the project continues to move forward, European expertise will continue to be integrated into the project.

Project Phase I and Phase Capacity Analysis

The centralized generating plant should be adequate to meet both phase I and phase II heating loads proposed by the City of Montpelier. The central generating plant houses two (2) 600 HP biomass boilers and two (2) 400 BHP oil fired boilers. In total, the centralized generating plant will be capable of generating 67 MMBTU/hr. A preliminary review of the phase I and phase II shows the total heating load will be 66 MMBTU/hr; the phase I heating load will be 32 MMBTU/hr and the phase II heating load will be 34 MMBTU/hr. During phase I, backup reliability (N+1) will be provided by the two 400 BHP oil fired boilers. During phase II, backup (N+1) reliability will be provided by the existing distributed generation.
Considering the information currently available, the proposed plant capacity should provide adequate heating to meet both phase I and phase II heating demands. However, plant capacity should be viewed as preliminary and will be further refined as the design effort continues.



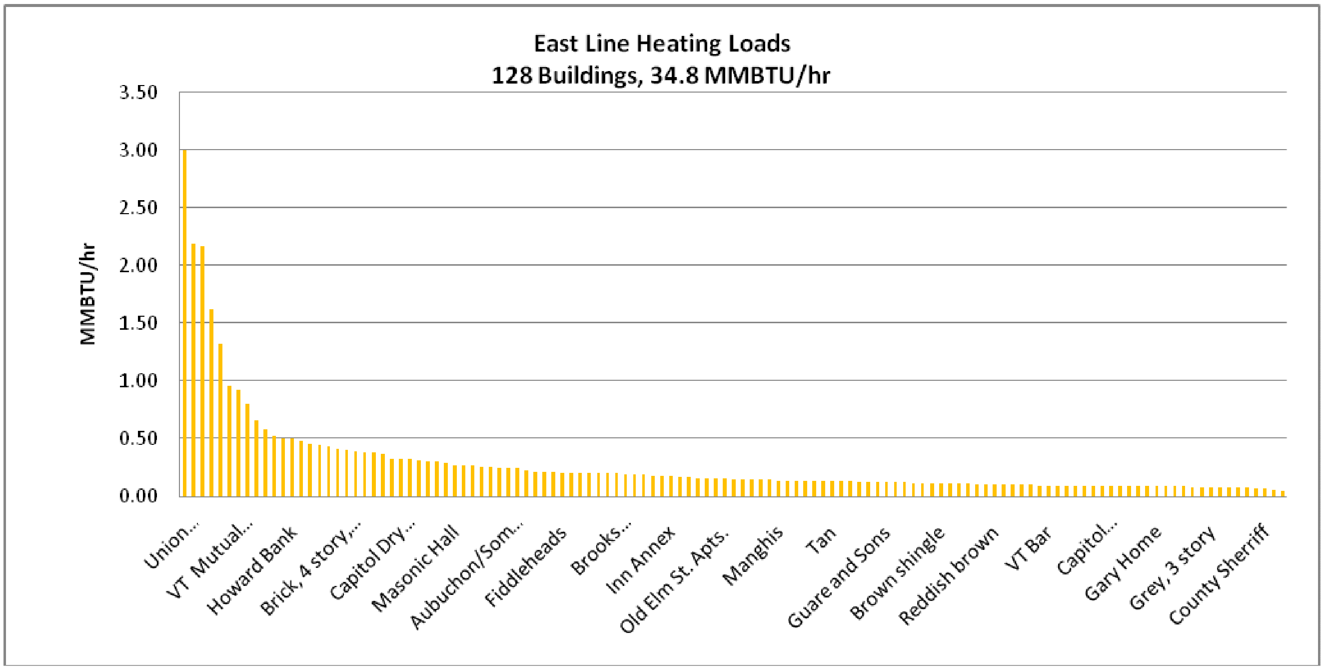


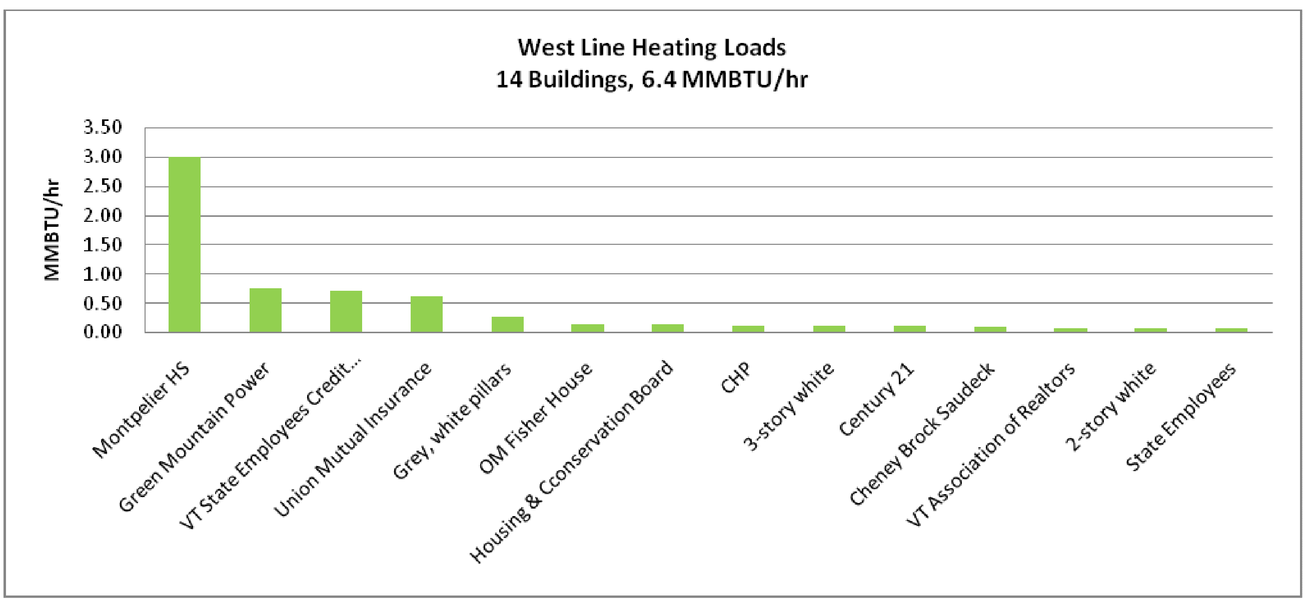
Piping Diameter Review

A single 6 inch diameter main distribution pipe supplying 240 °F hot water is capable of supporting approximately 37 MMBTU/hr of heating load. The east-bound 6 inch diameter distribution line is anticipated to carry an initial capacity of 4.5 MMBTU/hr during phase I and increased to 34.9 MMBTU/hr during phase II. The west-bound 6 inch diameter distribution line is anticipated to carry an initial capacity of 3.0 MMBTU/hr during phase I and increased to 6.3 MMBTU/hr during phase II.

Current information used to develop the conceptual design supports the use of 6" lines for the main distribution piping. However, considering the vision to continually expand the system the east-bound distribution line may be increased in diameter from 6" to 10". A 10" heating line is capable of supporting up to 100 MMBTU/hr and should provide the flexibility to add an additional 1.4 million square feet heating load. The increase in the east-bound distribution line diameter can be done at an incremental cost of 82 $/ft (compared to 27 $/ft for 6") with a total increase in distribution cost of approximately $400,000.

It should be noted that line sizes selected during conceptual development are preliminary and will be refined pending final selection of the distribution water temperature, routing requirements and further design review.





Review of Distribution System Routing

The distribution system routing has been reviewed and altered as requested by the City of Montpelier. The attached drawing depicts the new proposed routing of the system through the city. The new routing is expected to increase the overall project costs and presents new challenges of crossing the North Branch of the Winooski River. To address this new challenge, several options are being considered.

State Street Bridge River Crossing

The State Street Bridge was not considered a good candidate due to the low under bridge height along with the proximity to high water level. In addition, the general condition of the bridge is poor. The possibility of locating lines on top of the bridge in local retail spaces was considered, but rejected due to the poor condition of the bridge.

Langdon and School Street River Crossing

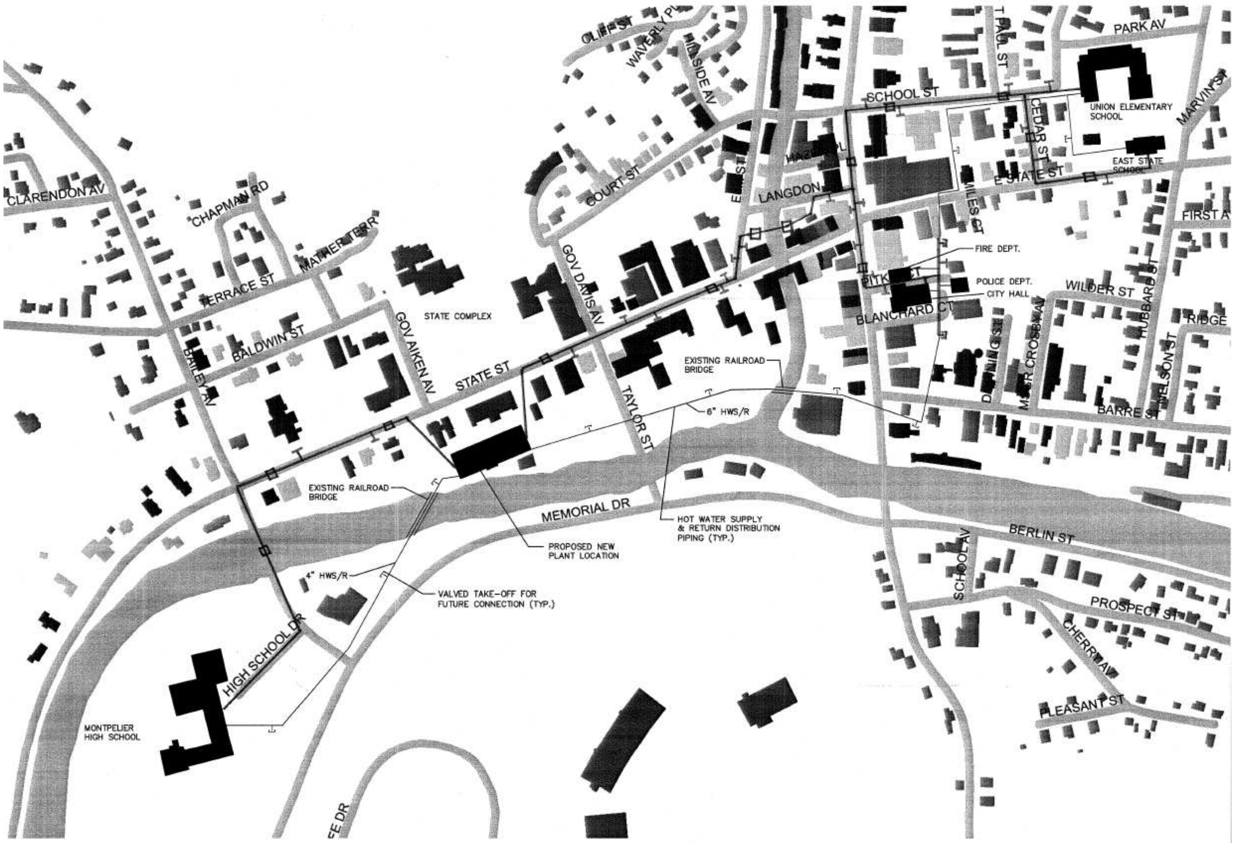
The river crossing at the Langdon and School Street bridges are similar to that of the State Street Bridge. The bridges appear to be in good condition. However, the difficulty lies in the proximity of the river protection wall and building foundations to the bridge footings. The bridge footings appear to abut the building foundations. In order for this design to work, the lines would need to penetrate the bridge abutments or come off the bridge and penetrate through the building foundations. While this solution is possible, it is not desired structurally, and presents additional complexity related to building re-enforcement.

Sub Surface Boring

The option that was chosen for this addendum is the use of combination deep excavations on either side of the river, along with directional boring under the river.

Other options

The possibility of a pipe bridge has been reviewed. However, this option would require contacting abutting land owners and application for easement. Additionally, this option may complicate the aesthetic requirements of the route.



Review of Distribution System Line Temperature

Lower temperature distribution systems were reviewed and not found to significantly reduce interconnect costs. A lower distribution temperature may allow for lower grade materials to be employed at interconnect points, but this advantage is offset by the need for a larger heat exchanger, higher system flows, and larger pipe diameters. The primary advantage of a low temperature distribution system, and the reason why these systems are mandated in many European counties, is the liability of steam flashing. Circulation water temperatures greater than 220 °F will flash to steam in the event of a system leak. The greater the water temperature is above 220 °F the greater the volatility of this reaction. This liability is strongly taken into consideration on systems with a high percentage of residential connections. Current information used to develop the conceptual design district energy system supports the use of a 240 °F temperature distribution system to improve the delivery efficiency of the system and minimize distribution system costs. **However, a further review of the end users to be connected to the system needs to be performed to further refine the ideal distribution water temperature.**

Review of Distribution System Anti-Freeze

A freeze protection additive improves distribution system reliability and reduces the potential liability that a distribution operator is exposed to. Unforeseen operation or end user practices that create a freeze condition and subsequent system leak may be avoided through the use of a freeze additive.

A freeze protection additive may be excluded, but additional measures will need to be installed to protect end users and distribution system operators from unforeseen freeze events. These measures, such as fail open valves or minimum flow systems, are expected to marginally increase the overall cost of the system, cost to operate the system and interconnection costs. The system may be deployed with no freeze protection measures, but it will require contractual language to address liability concerns associated with freezing.

Additional Control Technologies to Avoid Major Source Classification

The project potential to emit was again reviewed to determine the appropriate emission control technologies. However, considering the conceptual phase of the project the specification of emission control technologies required to avoid major source classification cannot be accurately determined at this time. The required emission control technology relies heavily on the boiler selected for the project. The selected boiler will not be available until a further engineering has been performed. As such, the exact cost of emission control equipment to avoid major source classification on an unlimited annual operating permit cannot be determined at this time.

In the event an SCR catalyst is added to the design, a common unit is anticipated to cost approximately $780,000.

Fuel Storage Analysis

Fuel storage requirements may be addressed by several scenarios. Storage needs may be met by modifying on-site storage, seeking off-site storage opportunities or a combination of both.

Off-Site Fuel Storage

Existing fuel storage capacity may be augmented by employing offsite fuel storage. Innovative Natural Resources has assessed that a number of fuel suppliers in the Montpelier area have the capability of providing adequate off-site storage even during the “mud season”. Currently, Cousineau Forest Products is supplying such services for the Montpelier School System. In off-site storage the supplier stores an adequate number of whole logs in anticipation of a supply curtailment. When the time comes for delivery, the logs are chipped and delivered. Employing such a system for the project would add approximately 1 $/ton to the incremental fuel cost.

On Site Fuel Storage
On-site fuel storage may be employed for some or all of the project fuel storage requirements. Entire on-site fuel storage lowers incremental fuel costs but increases footprint complications and may compromise aesthetic appeal of Capital District. Several possible on-site storage solutions are detailed below.

Option 1 – Use of silos as depicted in the original feasibility study
The design of the plant would require on-site storage of 600 tons of solid fuel (wood chips). The design includes (2) 300 ton silos with full fuel handling capabilities. The five day fuel storage will be accomplished with the combination of solid and liquid fuel. This implementation option provides the highest degree of technical certainty and lowest implementation costs. However, the size of the silos may compromise the aesthetic appeal of the Capital District.

Option 2 – Use of Silos with base of fuel containment silos below grade
Option 2 will require extensive review of the subsoil structure and flood plain requirements. As is noted later in this document, Section 716.B of the Zoning and Subdivision regulations lists “storage” as an acceptable use. Further review is necessary to assess the feasibility of this option. This option comes with some technical uncertainty, and elevated implementation costs, but may better preserve the aesthetic appeal of the Capital District.

Reuse of existing plant building for fuel storage
An additional option to be considered is reusing the existing State plant structure as a fuel storage facility. Per section 716.B of the Zoning and Subdivision regulations, the structure may be used for storage but it would require flood-proofing and considerable structural re-enforcing. However these additional costs may be partially or entirely offset by re-using an existing structure. In addition, the façade of the building would remain similar. Due to the amount of fuel storage, we would need to increase the height of the building approximately 40 ft, still less than the adjacent buildings. The below flood-grade portion of the structure could accommodate pre-fabricated storage cells. Fuel delivery would be accomplished with hydraulically driven augers. All electrical equipment would be located on the upper level for flood protection.

This option comes with a high degree of technical uncertainty, but would best preserve the aesthetic appeal of the Capital District through the re-use of a sixty year old building. This option would also require a rework of the initially proposed plant lay-out.

Section 716.B Excerpt:

"All new construction and substantial improvements with fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater. Enclosed areas below the lowest floor which are subject to flooding shall be used solely for parking of vehicles, building access or storage"

Approach for the Way Forward

The next project steps will focus to develop the documents necessary for equipment bids and to further refine anticipated capital expenditures. This work will complete approximately 30% of the overall design work required for the project and can be divided into two separate task groups.

Task 1 – Pre-Purchase Specifications

Technical and pre-purchase specification for plant equipment will be prepared. The specifications will facilitate assembly of equipment pricing from equipment vendors. Specifications will include:

- Biomass falsifier / boiler
- Economizer
- Back and baghouse
- Material handling equipment – fuel and ash
- Steam to water heat exchangers
- Deaerator
- Condensate tanks
- Distribution pumps
- Back pressure steam turbine generator
- Fuel tanks
- Electrical gear
- Black start generator
- Performance requirements for power, efficiency and emissions.

Electrical gear specifications will be based on the information currently available, and will be subject to change as the electrical interconnection application is processed. Assembly of equipment specifications will take three (3) weeks to complete upon receipt of air permit and fuel requirements.

Task 2 – EPC Request for Proposal Bid Documents

Technical specifications and scope of work documents will be assembled to form the required Engineer, Procure and Construct (EPC) technical documents. Complete scope of work packages will be available following this effort.

Work Package #1 – Site Piping

Prepare 30% design drawing for proposed distribution system from new biomass plant to property line of facilities to be connected to the distribution system. The design will include civil and mechanical piping drawing indicating required new work and required utilities relocations. The proposed river crossing between Langdon and State Street will be studied to determine the lowest cost and most feasible method. The options currently under consideration are Deep excavation and trenching under the river, or directional drilling under the river. Due to the technical uncertainty of the river crossing the Civil Engineering scope will be based on the "worse case", most engineering intensive river crossing method.

The civil design will be based on existing drawing information provided by Montpelier DPW. Only one route will be considered, the recent State Street and Main Street routing proposed by the City. Civil packages for routing will include 25% design completion level drawings (15 drawings) consisting of plans and profiles at 40 scale indicating location of proposed pipes and existing utilities. The Bailey Avenue Bridge crossing plan will include longitudinal profile, framing, typical cross section and abutment penetrations, proposed river crossing plan (including profile), river wall section, river bottom, trench and armoring concept. A preliminary coffer dam layout will be developed. General details on drawings will include:

- Typical section
- Trench section
- Hot water piping structure detail
- Pavement and surface restoration detail
- Erosion control detail

Basic geotechnical engineering is included. Geotechnical borings are not included. A Civil Engineer will be nominated an begin limited participation in working meetings.

Work Package #2 – Building Interconnection

The required scope of work to connect representative loads to the district heating system will be done. This work will determine the required scope of work to connect the Montpelier High School and the Union elementary School to the hot water system. Existing space and domestic hot water heating systems will be walked down and a Schematic Design package will be developed to identify required work to allow building to be served by the new biomass LTHW heating system. Plate frame energy transfer stations will be utilized in each building. In cases where existing building heat source can remain as backup, design will accommodate. If existing equipment cannot be utilized as backup after conversion, design will not include backup capacity.

Work Package #3 – Process Design

Processes will be developed for MEP design for the biomass system and associated fuel and combustion waste products material streams. The design is based on concepts developed during the feasibility study phase. Multiple gasifier and boiler vendor technologies will be evaluated to determine most appropriate technology. Design of material handling system will begin at truck weighing scale and end at fuel delivery inlet to gasifier. Fly ash system and bottom ash will be transferred via conveyer to central ash collection hopper for disposal. Live bottom fuel trucks will transfer chips to plant's material handling system for forwarding and storage.
Emission reduction equipment will be engineered to meet requirements developed in the environmental analysis. Required control technologies are expected to include multi-cone, fabric filter baghouse and flue gas recirculation, but are subject to change pending the final air permit. The oil fired plant will utilize existing relocated boiler and new unit with similar burner configuration. New underground fuel oil storage tanks will be capable of 40,000 gallons of storage. The control system will be a networked PLC system per Veolia's control system standard.
Architectural and structural design services will be completed to 30% design level for both the oil fired and biomass boiler buildings. Two (2) building plans and two (2) typical elevations suitable for planning board submissions will be developed. Narrative briefs describing major materials will be provided. Structural plans will include structural framing plans for each level. A foundation design concept will be provided based on available geotechnical data. An Architect will be nominated and begin limited participation in working meetings.

Deliverables

A 50% draft document will be prepared for each work package with Owner comments. Plant layout drawings and elevations will be developed for each trade. P&ID drawing will be developed for plant process systems. Specifications will be provided for all trades developed to 30% level.
It is anticipated that this effort will take eight (8) weeks. The Civil Engineering may take longer depending on the time duration required to obtain geotechnical and other field survey information.

Fee Proposal

The proposed fee structure including reimbursable expenses

Pre-purchase specifications:	$32,500
EPC Documents	
Site Piping:	$67,600
Building Interconnect:	$9,750
Process Design:	$97,500
Total:	$207,350

The above pricing excludes all work related to hazardous materials, any rework related to hidden or concealed conditions not shown on existing drawings, distribution surveying services.